

CITY OF ALBUQUERQUE ENVIRONMENTAL HEALTH DEPARTMENT AIR QUALITY PROGRAM

**Permit Modification Application
Air Quality Construction Permit #0456-M5-7TR**

**Western Refining Terminals, LLC
Albuquerque Products Terminal**

Prepared By:

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September 2026

Application Received September 11, 2026 *pp*



September 11, 2026

Pauline Padilla
Senior Environmental Health Scientist
Air Quality Program
Environmental Health Department
City of Albuquerque
PaulinePadilla@cabq.gov

RE: Air Quality Construction Permit Application #0456-M6 1st Administrative Incompleteness Determination

Dear Mrs. Padilla:

On behalf of Western Refining Terminals, LLC (Western), Trinity Consultants (Trinity) submitted an air quality construction permit application to the City of Albuquerque, Environmental Health Department, Air Quality Program (Program) on July 27, 2026, for the Albuquerque Products Terminal located at 3209 Broadway Blvd SE in Albuquerque, NM. The Program conducted an initial review of the application, and based on the information provided was unable to complete a thorough evaluation. As a result, the application was deemed administratively incomplete on August 26, 2026.

Enclosed is the revised and completed air quality construction permit application for the Albuquerque Products Terminal. This updated submission includes all required information as outlined in 20.11.41.13 NMAC. Below, we have provided the comments received from the Program along with detailed responses that demonstrate how the necessary updates were made to ensure compliance with the applicable standards.

1. Please provide the updated excel calculations file requested on August 17, 2026.
 - a. **An updated excel calculations file has been submitted with this updated application.**
2. The UTMs given for the location of the VCU in the Stack Parameters table differ from the location in the model. Where will the VCU operate on the APT property? Please make sure this information is correct because there could be a permit condition requiring the VCU to operate at its modeled location.
 - a. **The Stack Parameters table has been corrected to include the exact location the VCU was modeled in the air dispersion modeling analysis.**
3. The elevations for the surrounding sources in the one-hour NO₂ model were zero. Did Trinity run that model this way? If so, please update the model and the modeling report with the changes.
 - a. **AERMAP has been rerun on the one-hour NO₂ CIA model to ensure elevations are provided for all surrounding sources.**
4. The operating hours for the diesel engine at C&C Services included no hours for Mondays in March. Starting on Mondays in April, and going through every day and month for the rest of the factor set, this engine is modeled as operating 24 hours/day, 7 days/week. This does not match the provided surrounding source data and needs to be fixed.
 - a. **The operating hours for the diesel engine at C&C Services were corrected to match the required operating hours as specified in the surrounding source excel**

HEADQUARTERS

file received. Additionally, all other surrounding source operating hours were reviewed to ensure accuracy with this same document.

5. The new transmix tank, TK-25378, is listed in the modeling report and is present in the models. This tank was originally in the application but was removed with the updated application provided to the permit writer. If this tank is no longer part of the proposed modification, then please remove it from the models and modelling report if other changes are necessary.
 - a. **The transmix tank, which is no longer a part of the current application, has been removed from all air dispersion modeling.**

Sincerely,

Adam Erenstein
Principal Consultant

Trinity Project File: 233201.0185

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1. EXECUTIVE SUMMARY

This application is for the permit modification of the Albuquerque Products Terminal owned and operated by Western Refining Terminals, LLC (Western RT). The facility currently operates under Air Quality Construction Permit #0456-M5-7TR issued on February 23, 2025. The facility is located at 3209 Broadway Blvd SE in Albuquerque, NM.

A temporary vapor combustion unit (VCU) was installed at the facility to operate during the vapor recovery unit (VRU) downtimes. This was approved by EHD AQP on January 11, 2023 with the condition to permit it under the next significant revision application.

In addition to the VCU, this permit modification includes:

- ▶ Load rack optimization for the following:
 - Add two new diesel arms to Lanes 2 of the Loading Rack (Unit 1)
- ▶ Red Dye Injection (AST-9 of Unit 5)
 - Increase permitted throughput to 2000 gal/yr
- ▶ Diesel Storage Tanks (TK-29553 & TK-30796)
 - Increased permitted throughputs to 44,315,616 gal/yr per tank to bring loading rack throughput to 421,575,000 gal/yr
- ▶ The removal of one (1) additive storage tank (AST-1)
- ▶ The removal of butane blending at the facility
- ▶ The removal of the butane blending tank and butane blending at the loading rack
- ▶ The modification of startup, shutdown, and maintenance (SSM) activities

"All Products" refers to any material with a vapor pressure equal to or less than gasoline, including gasoline, ethanol, additives, and diesel fuel. In addition to the items above, Western RT requests the flexibility to replace the materials stored in the additive storage tanks (Tanks AST-2, AST-3, AST-4, AST-7, AST-8, and AST-9) with alternative additives, provided that such changes do not result in an increase in VOC or HAP emission rates beyond currently permitted thresholds.

Additionally, Western RT will modify the startup, shutdown, maintenance (SSM) – Tank Landings in the current permit to allow for one (1) tank landing and filling event per tank per year for all floating roof tanks (Units TK-25930, TK-25931, TK-25932, TK-25933, TK-31525, TK-31526, and TK-31527)

Finally, the calculation methodology for all storage tanks will be updated from using historic TANKS 4.09d reports, BR&E ProMax reports, and AP-42 Chapter 7.1 methodology to using only BREEZE TankESP Pro v5.4.0 simulation reports as this is the main simulation software used by Western RT for all of their annual reports. No changes to the physical design or operations of these tanks are proposed. All additive changes will be documented, and emissions will be evaluated to ensure continued compliance with applicable permit conditions.

In accordance with 20.11.41.13.E NMAC, this application submittal includes all of the requirements set forth by the department including:

- i. Application Forms
- ii. Owner and Operator's Name and Mailing Address
- iii. Application Date
- iv. Sufficient Attachments: Calculations, Potential Emission Rate, Nature of All Regulated Contaminants, Actual emissions

- v. Operational and Maintenance Strategy
- vi. Topographical Map
- vii. Aerial Photograph of proposed location
- viii. Complete Description of all Sources of Regulated Air Contaminants and Process Flow Diagram
- ix. Full Description of Air Pollution Control Equipment
- x. Description of Equipment or Methods used for emission measurement
- xi. Maximum and Normal Operating Time Schedules of the Source
- xii. Other Relevant Information
- xiii. Applicant Signature
- xiv. Accompanied by a Registration Fee
- xv. Proof of Public Notice Requirements

2. DESCRIPTION OF FACILITY AND EMISSIONS INFORMATION

The following section summarizes the emission factors and methodology used to estimate air pollutant emissions from the APT facility.

2.1 Description of the Facility

The facility is a products terminal for the storage and transfer of unleaded gasoline, butane, ethanol, diesel fuel and fuel additives. Fuels arrive at the facility by rail transfer, pipeline, and truck transfer. These materials are stored in several large storage tanks on the premises.

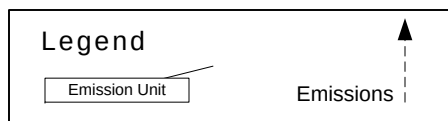
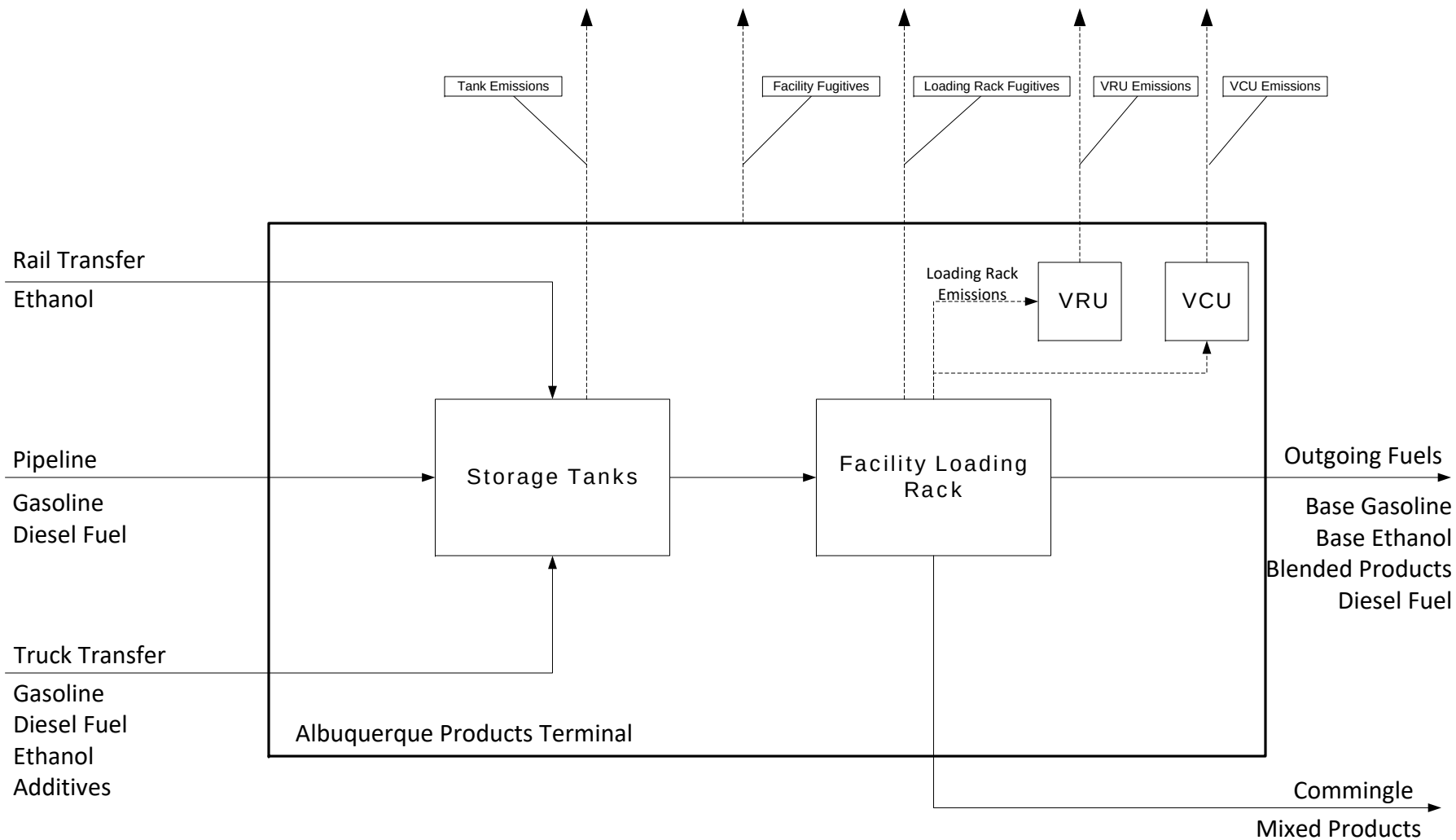
Tanker trucks arrive at the facility and load fuels at the loading rack. The loading rack delivers either base fuels (unmixed) or mixed fuels with additives and/or ethanol. Fuels loaded at the loading rack include base gasoline, base ethanol, blended products (gasoline mixed with ethanol and/or additives) and diesel fuel. The products from the products terminal are distributed by truck to gas stations, other terminals and other products plants.

Spilled, mixed materials (“commingle”) from tanks or from the loading rack are collected in sump tanks and commingle tanks. Rainwater runoff from the facility is collected in separate oily water storage tanks. Commingled materials are distributed by truck to refineries for processing.

This facility is a source of NO_x, CO, VOCs, SO₂, PM₁₀, PM_{2.5}, and HAPs.

2.2 Process Flow Diagram

The attached process flow diagram describes overall activities at the facility with respect to incoming and outgoing materials.



Block Flow Diagram
Albuquerque Products Terminal

2.3 Air Pollutant Emissions and Calculation Methodology

2.3.1 Storage, Additive, and Underground Spill tanks (Unit TANKS)

"All Products" refers to any material with a vapor pressure equal to or less than gasoline, including gasoline, ethanol, additives, and diesel fuel. Emissions were calculated using BREEZE TankESP PRO v5.4.0 simulation software for all tanks.

2.3.2 Loading Rack (Unit LR)

The facility employs a loading rack to load incoming trucks at the facility. All products that come into the facility and are stored in the tanks are removed via the loading rack. The annual loading rack capacity is being increased from the volume authorized under Permit 0456-M5-TR to 401,717,304 gal/yr. Emissions from the loading rack are calculated using Gasoline RVP¹³ as the material loaded at the permitted loading rack throughput as a conservative measure.

Uncontrolled emissions from the loading rack were calculated using the method outlined in AP-42 Section 5 [Section 5.2, "Transportation and Marketing of Petroleum Liquids," 1/95, AP-42]. The saturation factor was selected based on actual operation at the facility (submerged loading: dedicated vapor balance service). Physical data for each fuel (vapor pressure, loading temperature, molecular vapor weight) was taken from the TANKS calculations.

Calculations of controlled emissions at the loading rack are based on a requested limit of 10 mg TOC/L and the allowable loading rack throughput.

Operation of the loading rack is not assumed to have 100% capture efficiency by the VRU or the loading rack hoses. Therefore, it is assumed that there will be some fugitive emissions during loading rack operation. A capture efficiency of 99.2% is used for the vapor collection system is requested in this application. Vapors not collected by the vapor collection system ($100\% - 99.2\% = 0.8\%$) are assumed to be fugitive emissions from the loading rack hose. Fugitive loading rack emissions are therefore calculated here by multiplying uncontrolled emissions from the loading rack by the un-collected fraction (0.8%).

Startup, shutdown or malfunction emissions are not provided for the VRU because they are not expected to exceed emissions during normal operation. Further, in the event of a VRU startup, shutdown, maintenance, or malfunction, emissions from the loading racks will be directed to the new VCU where it will be combusted with a 99.48% DRE.

Copies of the loading rack calculations are attached in Section 2.4. Supporting documentation is in Section 2.6.

2.3.3 Fugitives (Unit FUG)

Fugitive emissions were calculated using EPA's Protocol for Equipment Leak Emission Estimates (November 1995) and AP-42 Section 5.2 [Section 5.2, "Transportation and Marketing of Petroleum Liquids," 1/95, AP-42]. A copy of the relevant section is attached in Section 2.5.

A total valve and fitting count was completed for the facility during a recent survey. All those fittings were assumed to be in light liquid duty. The counts were multiplied by the light liquid duty emission factors to get total fugitive emission rates, and a safety factor was added. For the VRU, component counts were obtained and all those components were assumed to be in gas/vapor service. The counts were multiplied by

the gas/vapor duty emission factors to get total fugitive emission rates, and a safety factor was added.

HAP emissions were calculated assuming all components servicing the maximum HAP-containing liquid (by mass) at the facility: unleaded gasoline. The HAP content of the liquid was assumed by summing the maximum HAP fractions from all MSDSs for unleaded gasoline. The HAP content was calculated by assuming that HAPs would comprise a fraction of the total VOC emissions. This method is conservative since some of the liquids in service will have a lower VOC and HAP content. Copies of all calculations for these sources are attached in Section 2.4.

Because of the nature of the operation, there is a potential for fugitive emissions from leaks and spills throughout the facility. Emissions from these are difficult to address; there is little emission factor data available to calculate emissions from this type of source. However, emissions from these minor sources are considered insignificant in comparison with emissions from other sources at the facility (tanks, loading rack).

2.3.4 Vapor Combustion Unit (Unit VCU)

Emissions from the new VCU are a result of the combustion of vapors from the VRU during startup, shutdown, maintenance, or malfunction events. NO_x, CO, and PM combustion emissions are based on emission factors from AP-42 Tables 1.4-1 & 2 [Section 1.4, "Natural Gas Combustion," 7/98, AP-42]. SO₂ emissions were calculated based on the assumed fuel sulfur content of 2 gr S/100 scf. It was assumed 100% of elemental sulfur was converted to SO₂ using a stoichiometric ratio. VOC and HAP emissions are based on the composition of the gas sent to the VRU. Controlled annual emissions are based on an assumed 1,080 hr/yr of VRU downtime.

2.4 Emission Calculations

The following pages contain the emission calculations for all sources of emission at the APT facility. For the BREEZE TankESP Pro reports, please refer to Section 2.5 Supporting Documentation.

Western Refining Terminals, LLC - Albuquerque Products Terminal

Emission Summary

Requested Uncontrolled Emissions															
Unit ID	Description	NO _x		CO		VOC		SO ₂		PM ₁₀		PM _{2.5}		HAP	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1	Loading Rack Fugitives (LR)	-	-	-	-	1,062.20	2,132.37	-	-	-	-	-	-	56.05	112.52
2	Facility Fugitives (FUG)	-	-	-	-	0.49	2.14	-	-	-	-	-	-	0.22	0.96
3	Storage, Additive, and Underground Spill Tanks (Tanks)	-	-	-	-	7.58	33.21	-	-	-	-	-	-	1.14	4.98
4	VRU Emissions (VRU)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Startup, Shutdown, Malfunction (SSM)	-	-	-	-	57.38	2.36	-	-	-	-	-	-	25.82	1.06
6	Vapor Combustion Unit	0.025	0.014	0.021	0.011	-	-	5.71E-04	3.09E-04	1.92E-03	1.03E-03	1.92E-03	1.03E-03	-	-
Total Site-Wide Emissions		0.025	0.014	0.021	0.011	1127.65	2170.08	5.71E-04	3.09E-04	1.92E-03	1.03E-03	1.92E-03	1.03E-03	83.23	119.53

Requested Controlled Emissions															
Unit ID	Description	NO _x		CO		VOC		SO ₂		PM ₁₀		PM _{2.5}		HAP	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1	Loading Rack Fugitives (LR)	-	-	-	-	8.50	17.06	-	-	-	-	-	-	0.52	0.90
2	Facility Fugitives (FUG)	-	-	-	-	0.49	2.14	-	-	-	-	-	-	0.22	0.96
3	Storage, Additive, and Underground Spill Tanks (Tanks)	-	-	-	-	7.58	33.21	-	-	-	-	-	-	1.14	4.98
4	VRU Emissions (VRU)	-	-	-	-	8.76	17.59	-	-	-	-	-	-	0.46	0.93
5	Startup, Shutdown, Malfunction (SSM)	-	-	-	-	57.38	2.36	-	-	-	-	-	-	25.82	1.06
6	Vapor Combustion Unit	1.33	0.72	1.11	0.60	0.46	0.25	5.71E-04	3.09E-04	0.10	0.054	0.10	0.054	5.71E-05	3.08E-05
Total Site-Wide Emissions		1.33	0.72	1.11	0.60	83.17	72.61	5.71E-04	3.09E-04	0.10	0.054	0.10	0.054	28.16	8.84

HAP Total CAP: 12.00

Permitted Emissions															
Unit ID	Description	NO _x		CO		VOC		SO ₂		PM ₁₀		PM _{2.5}		HAP	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1	Loading Rack Fugitives (LR)	-	-	-	-	6.80	16.25	-	-	-	-	-	-	0.43	0.86
2	Facility Fugitives (FUG)	-	-	-	-	0.49	2.14	-	-	-	-	-	-	0.22	0.96
3	Storage, Additive, and Underground Spill Tanks (Tanks)	-	-	-	-	4.59	20.12	-	-	-	-	-	-	0.94	4.12
4	VRU Emissions (VRU)	-	-	-	-	7.01	16.76	-	-	-	-	-	-	0.37	0.89
5	Startup, Shutdown, Malfunction (SSM)	-	-	-	-	67.44	1.98	-	-	-	-	-	-	30.35	0.89
Total Site-Wide Emissions		-	-	-	-	86.33	57.25	-	-	-	-	-	-	32.31	7.72

HAP Total CAP: 12.00

Updated on September, 30 2026 PP

Western Refining Terminals, LLC - Albuquerque Products Terminal

Emission Summary

Requested Uncontrolled Emissions															
Unit ID	Description	NO _x		CO		VOC		SO ₂		PM ₁₀		PM _{2.5}		HAP	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1	Loading Rack Fugitives (LR)	-	-	-	-	1,062.20	2,132.37	-	-	-	-	-	-	56.05	112.52
2	Facility Fugitives (FUG)	-	-	-	-	0.49	2.14	-	-	-	-	-	-	0.22	0.96
3	Storage, Additive, and Underground Spill Tanks (Tanks)	-	-	-	-	7.58	33.21	-	-	-	-	-	-	1.14	4.98
4	VRU Emissions (VRU)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Startup, Shutdown, Malfunction (SSM)	-	-	-	-	57.38	2.36	-	-	-	-	-	-	25.82	1.06
6	Vapor Combustion Unit	0.025	0.014	0.021	0.011	-	-	5.71E-04	3.09E-04	1.92E-03	1.03E-03	1.92E-03	1.03E-03	-	-
Total Site-Wide Emissions		0.025	0.014	0.021	0.011	1127.65	2170.08	5.71E-04	3.09E-04	1.92E-03	1.03E-03	1.92E-03	1.03E-03	83.23	119.53

Requested Controlled Emissions															
Unit ID	Description	NO _x		CO		VOC		SO ₂		PM ₁₀		PM _{2.5}		HAP	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1	Loading Rack Fugitives (LR)	-	-	-	-	8.50	17.06	-	-	-	-	-	-	0.52	0.90
2	Facility Fugitives (FUG)	-	-	-	-	0.49	2.14	-	-	-	-	-	-	0.22	0.96
3	Storage, Additive, and Underground Spill Tanks (Tanks)	-	-	-	-	7.58	33.21	-	-	-	-	-	-	1.14	4.98
4	VRU Emissions (VRU)	-	-	-	-	8.76	17.59	-	-	-	-	-	-	0.46	0.93
5	Startup, Shutdown, Malfunction (SSM)	-	-	-	-	57.38	2.36	-	-	-	-	-	-	25.82	1.06
6	Vapor Combustion Unit	1.33	0.72	1.11	0.60	0.46	0.25	5.71E-04	3.09E-04	0.10	0.054	0.10	0.054	0.027	0.015
Total Site-Wide Emissions		1.33	0.72	1.11	0.60	83.17	72.61	5.71E-04	3.09E-04	0.10	0.054	0.10	0.054	28.19	8.85

HAP Total CAP: 12.00

Permitted Emissions															
Unit ID	Description	NO _x		CO		VOC		SO ₂		PM ₁₀		PM _{2.5}		HAP	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
1	Loading Rack Fugitives (LR)	-	-	-	-	6.80	16.25	-	-	-	-	-	-	0.43	0.86
2	Facility Fugitives (FUG)	-	-	-	-	0.49	2.14	-	-	-	-	-	-	0.22	0.96
3	Storage, Additive, and Underground Spill Tanks (Tanks)	-	-	-	-	4.59	20.12	-	-	-	-	-	-	0.94	4.12
4	VRU Emissions (VRU)	-	-	-	-	7.01	16.76	-	-	-	-	-	-	0.37	0.89
5	Startup, Shutdown, Malfunction (SSM)	-	-	-	-	67.44	1.98	-	-	-	-	-	-	30.35	0.89
Total Site-Wide Emissions		-	-	-	-	86.33	57.25	-	-	-	-	-	-	32.31	7.72

HAP Total CAP: 12.00

Western Refining Terminals, LLC - Albuquerque Products Terminal**Temporary Vapor Combustion Unit**

Combustor Information	
Unit(s):	VCU
Description:	Vapor Combustor
VCU Capture Efficiency (%):	99.20%
VCU Combustion Efficiency (%):	99.48%
VCU Operating Time (hr/yr):	1080

Heat Input and Flow Rate Calculation			
Parameters	Value	Unit	Notes:
Maximum Hourly Flow Rate	4912.17	scf/hr	
Total Flow Rate	5.31	MMscf/yr	
Process Gas Heating Value*	2572	Btu/scf	AP-42
Short-Term Heating Rate	12.63	MMBtu/hr	
Total Heating Rate	13644.8	MMBtu/yr	
Short-Term Safety Factor	5%	%	Applied to account for short-term variations in heat content.
Annual Safety Factor	5%	%	Applied to account for variations in heat content.
Hourly Flow Rate with Safety Factor	5157.78	scf/hr	
Total Flow Rate with Safety Factor	5.57	MMscf/yr	
Weighted Heating Value	2572	Btu/scf	
Short-Term Heating Rate	13.27	MMBtu/hr	With short-term safety factor applied.
Total Heating Rate	14327.1	MMBtu/yr	With annual safety factor applied.
Pilot Input Information			
Hourly Volume Flow Rate	100	scf/hr	Conservative Assumption
Pilot Gas Heating Value*	2572	Btu/scf	Nominal
Pilot Operation	1080	hr/yr	Design Specification
Annual Volume Flow Rate	0.11	MMscf/yr	
Hourly Heat Rate	0.26	MMBtu/hr	
Total Heat Rate	277.78	MMBtu/yr	

Emission Summary									
	NO _x ¹	CO ¹	VOC ²	SO ₂ ³	PM ^{1,4}	n-Hexane ²	HAPs ²	Unit	Notes
Emission Factors	100	84			7.6			lb/MMscf	AP-42 Table 1.4-1 & 2
	252	212			19.2			lb/MMscf	Corrected Factor for Gas HV*
			0.46			4.42E-03	1.10E-02	lb/hr	Controlled Loading Emissions based on VRU Source Test dated 4/20/2021
			0.25			2.39E-03	5.93E-03	tpy	
				2.00				gr S/100scf	Fuel sulfur content (2gr/100scf)
Pilot Emissions				2.86E-03				lb S/ Mscf	2 gr S/100 scf * (1 lb/7000 gr) * (1000 scf/Mscf)
	0.025	0.021	-	5.71E-04	1.92E-03	-	-	lb/hr	
Process Emissions	0.01	0.01	-	3.09E-04	1.03E-03	-	-	tpy	
	1.30	1.09	0.46	-	0.099	2.30E-05	5.706E-05	lb/hr	
Total Emissions	0.70	0.59	0.25	-	0.053	1.24E-05	3.081E-05	tpy	
	1.33	1.11	0.46	5.71E-04	0.10	2.30E-05	5.706E-05	lb/hr	
	0.72	0.60	0.25	3.09E-04	0.054	1.24E-05	3.081E-05	tpy	720 hours/year

*Heating value of propane (2572 Btu/scf) was assumed for both process gas and pilot gas due to the VCU Source Test report utilizing propane as a basis for gas volume and VOC emissions calculations.

¹NO_x, CO and PM calculated using AP-42 Table 1.4-1 & 2 emission factors. Emission factors were corrected using the ratio of the heat value to the reference heat value (1020 Btu/scf).

lb/hr emissions = EF (lb/MMscf) * Flowrate (scf/hr) * Conversion Factor (1 MMscf/10⁶ scf)

ton/yr emissions = EF (lb/MMscf) * Flowrate (MMscf/yr) * Conversion Factor (1 ton/2000 lb)

²VOC, HAP and n-Hexane (single highest HAP) emissions are based on the mass flow from the loading rack routed to the combustor * (1 - DRE). VOC and HAP pilot emissions are not expected.

There are assumed to be no VOC or HAP pilot emissions associated with the combustion of pipeline natural gas.

Efficiency of the combustion of VOC and HAPs in combustor is: 99.48% DRE

³SO₂ pilot emissions are based on a fuel sulfur content of 2 gr S/100 scf.

SO₂ emissions = lb S/Mscf * Flowrate (scf/hr) * (Mscf/1000 scf) * (64 lb/lbmol SO₂ / 32 lb/lbmol S)

⁴Assumes PM₁₀ = PM_{2.5}

* Corrected emission factor for pilot gas = AP-42 Emission factor (lb/MMscf) * (Pilot Heat value/1020 Btu/scf)

** Corrected emission factor for process gas = AP-42 Emission factor (lb/MMscf) * (Process Stream Heat value/1020 Btu/scf)

Temporary Vapor Combustion Unit

Combustor Information	
Unit(s):	VCU
Description:	Vapor Combustor
VCU Capture Efficiency (%):	99.20%
VCU Combustion Efficiency (%):	99.48%
VCU Operating Time (hr/yr):	1080

Heat Input and Flow Rate Calculation			
Parameters	Value	Unit	Notes:
Maximum Hourly Flow Rate	4912.17	scf/hr	
Total Flow Rate	5.31	MMscf/yr	
Process Gas Heating Value*	2572	Btu/scf	AP-42
Short-Term Heating Rate	12.63	MMBtu/hr	
Total Heating Rate	13644.8	MMBtu/yr	
Short-Term Safety Factor	5%	%	Applied to account for short-term variations in heat content.
Annual Safety Factor	5%	%	Applied to account for variations in heat content.
Hourly Flow Rate with Safety Factor	5157.78	scf/hr	
Total Flow Rate with Safety Factor	5.57	MMscf/yr	
Weighted Heating Value	2572	Btu/scf	
Short-Term Heating Rate	13.27	MMBtu/hr	With short-term safety factor applied.
Total Heating Rate	14327.1	MMBtu/yr	With annual safety factor applied.
Pilot Input Information			
Hourly Volume Flow Rate	100	scf/hr	Conservative Assumption
Pilot Gas Heating Value*	2572	Btu/scf	Nominal
Pilot Operation	1080	hr/yr	Design Specification
Annual Volume Flow Rate	0.11	MMscf/yr	
Hourly Heat Rate	0.26	MMBtu/hr	
Total Heat Rate	2.78E-04	MMBtu/yr	

Emission Summary									
	NO _x ¹	CO ¹	VOC ²	SO ₂ ³	PM ^{1,4}	n-Hexane ²	HAPs ²	Unit	Notes
Emission Factors	100	84			7.6			lb/MMscf	AP-42 Table 1.4-1 & 2
	252	212			19.2			lb/MMscf	Corrected Factor for Gas HV*
			0.46					lb/hr	Controlled Loading Emissions based on VRU Source Test dated 4/20/2021
			0.25			0.72	2.85	tpy	
				2.00				gr S/100scf	Fuel sulfur content (2gr/100scf)
Pilot Emissions				2.86E-03				lb S/ Mscf	2 gr S/100 scf * (1 lb/7000 gr) * (1000 scf/Mscf)
	0.025	0.021	-	5.71E-04	1.92E-03	-	-	lb/hr	
Process Emissions	0.01	0.01	-	3.09E-04	1.03E-03	-	-	tpy	
	1.30	1.09	0.46	-	0.099	6.97E-03	0.027	lb/hr	
Total Emissions	0.70	0.59	0.25	-	0.053	3.76E-03	0.015	tpy	
	1.33	1.11	0.46	5.71E-04	0.10	6.97E-03	0.027	lb/hr	
	0.72	0.60	0.25	3.09E-04	0.054	3.76E-03	0.015	tpy	720 hours/year

*Heating value of propane (2572 Btu/scf) was assumed for both process gas and pilot gas due to the VCU Source Test report utilizing propane as a basis for gas volume and VOC emissions calculations.

¹NO_x, CO and PM calculated using AP-42 Table 1.4-1 & 2 emission factors. Emission factors were corrected using the ratio of the heat value to the reference heat value (1020 Btu/scf).

lb/hr emissions = EF (lb/MMscf) * Flowrate (scf/hr) * Conversion Factor (1 MMscf/10⁶ scf)

ton/yr emissions = EF (lb/MMscf) * Flowrate (MMscf/yr) * Conversion Factor (1 ton/2000 lb)

²VOC, HAP and n-Hexane (single highest HAP) emissions are based on the mass flow from the loading rack routed to the combustor * (1 - DRE). VOC and HAP pilot emissions are not expected.

There are assumed to be no VOC or HAP pilot emissions associated with the combustion of pipeline natural gas.

Efficiency of the combustion of VOC and HAPs in combustor is: 99.48% DRE

³SO₂ pilot emissions are based on a fuel sulfur content of 2 gr S/100 scf.

SO₂ emissions = lb S/Mscf * Flowrate (scf/hr) * (Mscf/1000 scf) * (64 lb/lbmol SO₂ / 32 lb/lbmol S)

⁴Assumes PM₁₀ = PM_{2.5}

* Corrected emission factor for pilot gas = AP-42 Emission factor (lb/MMscf) * (Pilot Heat value/1020 Btu/scf)

** Corrected emission factor for process gas = AP-42 Emission factor (lb/MMscf) * (Process Stream Heat value/1020 Btu/scf)

Tank Emission Summary

Site Tank ID:	Total:	3a	3b	3c	3d	3e	3f	3g	5b	5c	5d	5e	5f	5g	6a	6b
		25930	25931	25932	25933	31525	31526	31527	AST-2	AST-3	AST-4	AST-7	AST-8	AST-9	29553	30796
		Gasoline	Gasoline	Gasoline	Gasoline	Gasoline	Ethanol	Ethanol	Additive	Additive	Additive	Out of Service	Additive	Additive	Diesel	Diesel
Total Annual Throughput:	421,574,997	34,325,688	102,997,056	34,325,688	34,325,688	57,216,144	34,335,684	34,335,684	654,012	199,837	218,004	-	8,280	2,000	44,315,616	44,315,616
Standing Storage Losses (lb/yr)¹:	19,167	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8,513.45	3,050.92	3,353.34	--	4,249.02	254.4	151	151
Working Losses (lb/yr)¹:	8,541	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5,151.92	1,555.67	1,725.92	--	107.97	25.76	623	624
Rim Seal Losses (lb/yr)¹:	17,337	495	2,839	1,773	484	2,182	4,782	4,782	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Withdrawal Losses (lb/yr)¹:	1,081	132	243	129	129	183	132	132	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Deck Fitting Losses (lb/yr)¹:	18,455	4,090	1,198	361	1,088	4,125	3,796	3,796	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Deck Seam Losses (lb/yr)²:	0	0	N/A	N/A	N/A	0	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL VOC LOSSES (lb/yr):	66,411.08	4,716.52	4,279.97	2,263.44	1,700.94	6,490.73	8,710.63	8,710.63	13,665.37	4,606.59	5,079.25	0	4,356.99	280.17	774.41	775.45
TOTAL VOC LOSSES (lb/hr):	7.58															
TOTAL VOC LOSSES (tpy):	33.21															
TOTAL HAP LOSSES (lb/hr)³:	1.14															
TOTAL HAP LOSSES (tpy)³:	4.98															

1.) Standing and working losses for fixed roof tanks as well as withdrawal, deck fitting, and deck seam losses for floating roof tanks were determined with TankESP PRO v5.4.0 reports generated August 2026.

2.) Deck Seam Losses are zero for all internal floating roof tanks as they all have welded decks.

3.) Conservatively assumes that HAP emissions are 15% of VOC emissions.

Product Tank Throughput Distribution

Total Combined Tank Capacity:	7,811,060	gallons
Total Annual Throughput:	421,574,997	gal/yr

Tank:	3a	3b	3c	3d	3e	3f	3g	5b	5c	5d	5e	5f	5g	6a	6b
	25930	25931	25932	25933	31525	31526	31527	AST-2	AST-3	AST-4	AST-7	AST-8	AST-9	29553	30796
Contents:	Gasoline	Gasoline	Diesel	Gasoline	Gasoline	Ethanol	Ethanol	Additive	Additive	Additive	Out of Service	Additive	Additive	Diesel	Diesel
Nominal Capacity (gal) ¹ :	705,021	1,804,853	705,021	705,021	1,015,230	705,021	705,021	12,096	4,064	4,064	2,000	6,016	264	703,845	705,021
Annual Throughput (gal) ¹ :	34,325,688	102,997,056	34,325,688	34,325,688	57,216,144	34,335,684	34,335,684	654,012	199,837	218,004	-	8,280.00	2,000	44,315,616	44,315,616
Monthly Throughput (gal):	2,860,474	8,583,088	2,860,474	2,860,474	4,768,012	2,861,307	2,861,307	54,501	16,653	18,167	-	690	167	3,692,968	3,692,968

1.) Tank specification in TankESP PRO v5.4.0 reports generated August 2026.

Gasoline Loading Operations

Emission Unit: LR & VRU
Source Description: Worst Case of Unleaded Fuel Loading Rack Hose Fugitives and VRU emissions

VOC Emissions

Loading Rack Parameters

S	1.00		Saturation Factor (AP-42, Table 5.2-1)
P	6.76	psia	True Vapor Pressure
M	62.00	lb/lb-mol	Molecular Weight of Vapors
T	56.17	F	Temperature of Bulk Liquid Loaded
T	516.17	R	F+460
L _{LU}	10.12	lb/Mgal	Uncontrolled Loading Rack VOC Emissions

Notes

Dedicated Vapor Balance Service, Submerged Loading
TANKS 4.09d, RVP 13 gasoline
TANKS 4.09d, RVP 13 gasoline
TANKS 4.09d, Met. conditions for Albuquerque

L_{LU} = 12.46 (SPM)/T (AP-42 Sec. 5.2)

Loading Rack Throughput

421,574,997	gal/yr	Requested Throughput Limit
105,000	gal/hr	Loading Rack Maximum Hourly Throughput
27,500	bbl/day	Requested Throughput Limit
1,155,000	gal/day	bbl/day * 42 gal/bbl
27.5	Mgal/day	gal/day / 1000
105.00	Mgal/hr	gal/hr / 1000
421575	Mgal/yr	gal/yr / 1000

Uncontrolled Loading Rack Emissions

1062.20	lb/hr	L _{LU} (lb/Mgal) * Mgal/hr
2132.37	tpy	L _{LU} (lb/Mgal) * Mgal/yr * ton/2000

Loading Rack Hose Fugitives

99.2%		Loading Rack Collection Efficiency
0.8%	Remainder	1-Loading Rack Collection Efficiency
1062.20	lb/hr	Potential Uncontrolled VOC Emissions
2132.37	tpy	Potential Uncontrolled VOC Emissions
8.50	lb/hr	Fugitive Loading Rack VOC Emissions
17.06	tpy	Fugitive Loading Rack VOC Emissions

AP-42 Sec. 5.2

Calculated Above
Calculated Above
Uncontrolled Loading Rack Emissions * Remainder
Uncontrolled Loading Rack Emissions * Remainder

Loading Rack VRU Emissions

10	mg TOC/L gas	Requested limit
L _{LC} 0.0834	lb TOC/Mgal	10 ⁻³ g TOC/L gas * lb/453.59 g * 3.785 l/gal * 1000 gal/Mgal
8.76	lb/hr	L _{LC} (lb/Mgal) * Mgal/hr
17.59	tpy	L _{LC} (lb/Mgal) * Mgal/yr * ton/2000

Gasoline Loading Operations**Emission Unit:** LR & VRU**Source Description:** Worst Case of Unleaded Fuel Loading Rack Hose Fugitives and VRU emissions**HAP and TAP Emissions**

HAP	CAS No.	X_{VHAP}^4	Uncontrolled Emissions				Loading Rack VRU Emissions ¹				Loading Rack Hose Fugitive Emissions			
			E_c^3	E_c^3	E_{HAPc}^5	E_{HAPc}^6	E_c^3	E_c^3	E_{HAPc}^5	E_{HAPc}^6	E_c^3	E_c^3	E_{HAPc}^5	E_{HAPc}^6
			Uncontrolled lb/hr	Uncontrolled tpy	lb/hr	tpy	Controlled lb/hr	Controlled tpy	lb/hr	tpy	Loading Rack Fugitives lb/hr	Loading Rack Fugitives tpy	lb/hr	tpy
Benzene	71432	0.9	1062.20	2132.37	9.6	19.191	8.76	17.59	7.89E-02	0.158	8.50	17.06	7.65E-02	0.154
Ethyl Benzene	100414	0.1	1062.20	2132.37	1.1	2.132	8.76	17.59	8.76E-03	0.018	8.50	17.06	8.50E-03	0.017
Toluene	108883	1.3	1062.20	2132.37	13.8	27.721	8.76	17.59	1.14E-01	0.229	8.50	17.06	1.10E-01	0.222
Xylene	1330207	0.5	1062.20	2132.37	5.3	10.662	8.76	17.59	4.38E-02	0.088	8.50	17.06	4.25E-02	0.085
Hexane	110543	1.6	1062.20	2132.37	17.0	34.118	8.76	17.59	1.40E-01	0.281	8.50	17.06	1.36E-01	0.273
2, 2, 4 Trimethylpentane	540841	0.80	1062.20	2132.37	8.5	17.059	8.76	17.59	7.01E-02	0.141	8.50	17.06	6.80E-02	0.136
Cumene*	98828	0.08	1062.20	2132.37	0.8	1.602	8.76	17.59	6.58E-03	0.013	8.50	17.06	6.38E-03	0.013
Naphthalene*	91203	0.002	1062.20	2132.37	0.018	0.036	8.76	17.59	1.46E-04	2.93E-04	8.50	17.06	7.51E-02	2.84E-04
TOTAL					56.05	112.52			0.46	0.93			0.52	0.90

HAPS			
	Cumene	Naphthalene	
	0.8	0.8	
	6.672	6.672	
	7.211	9.513	
	5.21	2	%
X _{vi}	0.0751	0.0017	
C _{li}	5.63	2.85	%
MW _i	92	92	lb/lb-mol
P _i	0.089	0.0039	psia
TVP	9.9	9.9	psia
MW _v	62	62	lb/lb-mol

Where:

Specific gravity of gasoline at 15.6 C (dimensionless)

Density of gasoline at 15.6 C (lb/Gal)

Density of HAP at 60 F (lb/Gal)

Liquid volume percent of HAP

 X_{vi} = Vapor mass % of the species C_{li} = Liquid mass % of species MW_i = Molecular weight of liquid product P_i = True Vapor Pressure of the species (i) at storage temperature

TVP = True Vapor Pressure of the liquid at storage temperature

 MW_v = Vapor molecular weight**Source**

TANKS 4.09b (Gasoline RVP 13)

Specific gravity * Density of water

TANKS 4.09b

Maximum listed on MSDSs for all Unleaded Gasolines or Additive

 $X_{vi} = C_{li} \times (MW_i \times P_i) / (TVP \times MW_v)$ [API Document, Page 3-4]

Liquid volume % * Density of HAP / Density of Gasoline

TANKS 4.09d (MW of Gasoline RVP 13)

Antoine's equation calculation

TANKS 4.09d (Gasoline RVP 13)

TANKS 4.09d (MW of Gasoline RVP 13)

NOTES:

1 For emission estimate purposes, tank contents based on physical parameters of unleaded gasoline, as a conservative measure.

2 HAPs listed on MSDSs for Tank Contents (Source: MSDS Comparison). HAP profile based on HAP content of Unleaded Gasoline, the dominant species in the mixture.

3 E_c = VOC Emission Rate (Uncontrolled, Controlled, and Fugitive) calculated above.4 X_{VHAP} = Vapor mass fraction of HAP exiting control device, lb HAP/lb VOC [API Document Table 3-2]5 E_{HAPc} = Calculated HAP Emission Rate (lb/hr) = $(E_c)(X_{VHAP})$ [API Document Page 3-4]6 E_{HAPc} = Calculated HAP Emission Rate (tpy) = lb/hr x 8760hr/yr / 2000lb/ton* X_{VHAP} calculated separately for Cumene and Naphthalene because API data was not available

Fugitive Emissions

Emission Unit: FUG

Source Description: Fugitive Emissions from Fittings

VRU components

Gas/Vapor ¹	Component Count ²	Safety Factor	Revised Component Count ³	kg/hr/source ⁴	kg/hr	lb/hr	tpy
Fittings	86	50%	129	4.2E-05	5.42E-03	1.19E-02	5.22E-02
Flanges	120	50%	180	4.2E-05	7.56E-03	1.66E-02	7.28E-02
Pumps	2	50%	3	6.5E-04	1.95E-03	4.29E-03	1.88E-02
Compressors	1	50%	2	1.2E-04	1.80E-04	3.96E-04	1.73E-03
Valves	84	50%	126	1.3E-05	1.64E-03	3.60E-03	1.58E-02
other	0	50%	0	1.2E-04	0.00E+00	0.00E+00	0.00E+00
total	293				0.017	0.037	0.16
VOC fraction						100.0%	100.0%
VOC emissions						0.04	0.16
HAP fraction ⁵						45%	45%
HAP emissions						0.017	0.073
Safety factor						100%	100%
Total VOC fugitive emissions						0.074	0.32
Total HAP fugitive emissions						0.033	0.15

Notes

- 1 All VRU fittings assumed to be in gas/vapor service
- 2 Valve and fitting count taken from VRU at similar Western facility
- 3 Revised component count = component count * 1+ safety factor (to account for any additional components added)
- 4 Emission factors from EPA's "1995 Protocol for Equipment Leak Emission Estimates" [USEPA, Nov. 1995]
- 5 HAP fraction and HAP emissions based on maximum HAP-containing liquid (by mass) in service at the facility (Unleaded Gasoline)

Facility Components

Light Liquid Duty ¹	Component Count ²	Safety Factor	Revised Component Count ³	kg/hr/source ⁴	kg/hr	lb/hr	tpy
Fittings	2601	50%	3902	8.0E-06	0.031	0.069	0.30
Flanges	906	50%	1359	8.0E-06	0.011	0.024	0.10
Pump Seals	19	50%	29	5.4E-04	0.015	0.034	0.15
Valves	152	50%	228	4.3E-05	0.010	0.022	0.094
other	139	50%	209	1.3E-04	0.027	0.060	0.26
total	3817				0.094	0.21	0.91
VOC fraction						100.0%	100.0%
VOC emissions						0.21	0.91
HAP fraction ⁵						45%	45%
HAP emissions						0.093	0.41
Safety factor						100%	100%
Total VOC fugitive emissions						0.42	1.82
Total HAP fugitive emissions						0.19	0.82

Notes

- 1 All fittings assumed to be in light liquid duty.
- 2 Valve and fitting count taken from field survey of Western facility
- 3 Revised component count = component count * 1+ safety factor (to account for any additional components added)
- 4 Emission factors from EPA's "1995 Protocol for Equipment Leak Emission Estimates" [USEPA, Nov. 1995]
- 5 HAP fraction and HAP emissions based on maximum HAP-containing liquid (by mass) in service at the facility (Unleaded Gasoline)

Tank Landing Losses

Emission Unit: SSM

Source Description: SSM Emissions from Tank Landings

Tank Landing List

Tank ID	Product Stored	Tank Type
TK-25930	Gasoline	Internal Floating Roof
TK-25931	Gasoline	Domed External Floating Roof
TK-25932	Gasoline	Domed External Floating Roof
TK-25933	Gasoline	Domed External Floating Roof
TK-31525	Gasoline	Internal Floating Roof
TK-31526	Ethanol	Internal Floating Roof
TK-31527	Ethanol	Internal Floating Roof

Clingage Losses Floating Roof Tanks

Use Equation 3-11 in AP-42 Section 7 (Storage tanks)

$$L_{SL} = 0.042 * C_S * W_L * Area$$

 L_{SL} = standing idle loss from the drain-dry tank, lb

 C_S = clingage factor, bbl/1,000 ft² from AP-42 Table 7.1-10

 W_L = density of the liquid, lb/gal from AP-42 Table 7.1-2

 $Area$ = area of the tank bottom, ft² = $\pi * D^2 / 4$ from Equation 3-12

$$L_{SLmax} = 0.60 * (P_{VA} * V_V / R T_V) * M_V$$

 L_{SLmax} = maximum standing idle loss for drain-dry tanks due to clingage, lb

 P_{VA} = true vapor pressure of the liquid inside the tank, psia

 V_V = volume of the vapor space, ft³ (assuming legs at 7 ft)

 R = ideal gas constant, 10.731 (psia-ft³) / (lbmole-°R)

 T_V = average temperature of the vapor and liquid below the floating roof, °R (=T_{AA})

 M_V = stock vapor molecular weight, lb/lb-mole

Tank ID	Product Stored	Diameter (ft)	Area (ft ²)	C _S (bbl/1000 ft ²)	W _L (lb/gal)	L _{SL} (lb)	L _{c, max} (lb)
TK-25930	Gasoline	50	1963.50	0.0015	5.6	0.69	542.83
TK-25931	Gasoline	80	5026.55	0.0015	5.6	1.77	1377.14
TK-25932	Gasoline	50	1963.50	0.0015	5.6	0.69	537.78
TK-25933	Gasoline	50	1963.50	0.0015	5.6	0.69	537.78
TK-31525	Gasoline	60	2827.43	0.0015	5.6	1.00	782.48
TK-31526	Ethanol	50	1963.50	0.0015	5.6	0.69	542.83
TK-31527	Ethanol	50	1963.50	0.0015	5.6	0.69	542.83

Filling Loss for Drain Dry Tanks

Use Equation 3-18 in AP-42 Section 7 (Storage tanks)

$$L_{FL} = (P_{VA} * V_V / (R * T_V)) * M_V * (C_{gf} * S)$$

 P_{VA} = true vapor pressure of the liquid within the tank, psia

 T_V = average temperature of the vapor below the floating roof, °R

 V_V = volume of the vapor space, ft³ (assuming legs at 7ft)

 M_V = stock vapor molecular weight, lb/lb-mole

 C_{gf} = filling saturation correction factor for wind, dimensionless

 S = filling saturation factor, dimensionless

 R = ideal gas constant, 10.731 (psia-ft³) / (lbmole-°R)

Tank ID	Product stored	P _{VA} (psia)	V _V (ft ³)	T _V (°R)	M _V (lb/lb-mole)	C _{gf}	S	L _{FL} (lb)
TK-25930	Gasoline	7.54	10794.88	520.12	62	0.15		135.71
TK-25931	Gasoline	7.47	27634.89	519.60	62	0.15		344.28
TK-25932	Gasoline	7.47	10794.88	519.59	62	0.15		134.45
TK-25933	Gasoline	7.47	10794.88	519.59	62	0.15		134.45
TK-31525	Gasoline	7.55	15544.63	520.18	62	0.15		195.62
TK-31526	Ethanol	7.54	10794.88	520.12	62	0.15		135.71
TK-31527	Ethanol	7.54	10794.88	520.12	62	0.15		135.71

From AP-42 Chapter 7.1 "A drain-dry tank would be most similar to a tank that was cleaned before filling because a cleaned tank also lacks "arrival" losses. The emission factor (0.33 lb/1000 gallons) for this kind of tank can be converted to a saturation factor by assuming a pressure of 8 psia (the same assumption used in the formulation of the emission factor) and substituting the molecular weight of gasoline (64 lb/lb-mole). The resulting saturation factor of 0.15 is applied as the filling saturation factor for drain-dry tanks regardless of the stored liquid."

Total Tank Landing Emissions**Tank VOC Landing Loss Emissions**

Year	Tank Name	Tank Type	Clingage Losses		Refilling Time (hrs) ²	Refilling Losses		Landing Losses	
			(lb/hr) ¹	(tpy) ³		(lb/hr) ²	(tpy) ³	(lb/hr) ^{1,2}	(tpy) ³
All	TK-25930	Internal Floating Roof	22.62	0.27	4.04	33.61	0.068	33.61	0.34
	TK-25931	Domed External Floating Roof	57.38	0.69	10.34	33.31	0.17	57.38	0.86
	TK-25932	Domed External Floating Roof	22.41	0.27	4.04	33.30	0.067	33.30	0.34
	TK-25933	Domed External Floating Roof	22.41	0.27	4.04	33.30	0.067	33.30	0.34
	TK-31525	Internal Floating Roof	32.60	0.39	5.81	33.65	0.098	33.65	0.49
	TK-31526	Internal Floating Roof	22.62	0.27	4.04	33.61	0.068	33.61	0.34
	TK-31527	Internal Floating Roof	22.62	0.27	4.04	33.61	0.068	33.61	0.34
	TK-31527	Internal Floating Roof	22.62	0.27	4.04	33.61	0.068	33.61	0.34

¹ Hourly loss assumes 24 hour landing time² Refilling time assumes vapor space filling rate is 20,000 gal/hr³ Annual loss assumes one (1) landing event per tank per year**Tank HAP Landing Loss Emissions¹**

Year	Tank Name	Tank Type	HAP Content (wt %)	HAP Landing Losses	
				(lb/hr)	(tpy)
All	TK-25930	Internal Floating Roof	45%	15.12	0.15
	TK-25931	Domed External Floating Roof	45%	25.82	0.39
	TK-25932	Domed External Floating Roof	45%	14.98	0.15
	TK-25933	Domed External Floating Roof	45%	14.98	0.15
	TK-31525	Internal Floating Roof	45%	15.14	0.22
	TK-31526	Internal Floating Roof	45%	15.12	0.15
	TK-31527	Internal Floating Roof	45%	15.12	0.15
	TK-31527	Internal Floating Roof	45%	15.12	0.15

¹HAP fraction and HAP emissions based on maximum HAP-containing liquid (by mass) in service at the facility (Unleaded Gasoline)

2.5 Supporting Information

The following is a list of supporting information for this application. This information also carries forward documentation from previous technical revisions. Please refer to Appendix B for all documentation.

- ▶ VCU manufacturer specification sheet
- ▶ Copy of sections from API Publication 1673, Compilation of Air Emission Factors for Petroleum Distribution and Retail Marketing Facilities.
- ▶ EPA's Protocol for Equipment Leak Emission Estimates
- ▶ BREEZE TankESP PRO v5.4.0 reports (generated u u t 2026)
- ▶ Current version of AP-42 located online at: [US EPA AP-42 Compilation of Air Emissions Factors](#)
 - Specific sections used in this application:
 - ◆ AP-42 Section 1.4: Natural Gas Combustion – Tables 1.4-1 & 1.4-2
 - ◆ AP-42 Section 5.2: Transportation and Marketing of Petroleum Liquids
- ▶ Safety Data Sheets for the following:
 - Western Refining Gasoline
 - Denatured Fuel Ethanol
 - Fuel Additives
 - Chevron OGA 72050 Additive
 - Red Dye Additive

3. OPERATIONAL PLAN – AIR EMISSIONS DURING SSM

Emissions during startups, shutdowns, and malfunctions will be minimized through the use of industry standard and/or manufacturer recommended operating practices. Western engineers and trained technicians are responsible for the timely and effective execution of these actions. In addition, equipment at the facility is equipped with safety devices that will aid in minimizing excess emissions during non-routine operating conditions. The following summarizes Western's operational plans for minimizing excess emissions.

Key to minimizing excess emissions during non-routine operating conditions is minimizing the occurrence of such conditions. To this end, Western has taken a pro-active approach to facility and equipment maintenance and environmental awareness. Operations personnel are aware of the importance of proper and efficient operation of equipment, and of the potential liabilities associated with improper operation. Moreover, Western recognizes the economic incentives to maintain and operate equipment efficiently. Malfunctioning equipment wastes resources and costs money.

Equipment at the facility is maintained in accordance with manufacturers' recommendations, industry best operating practices, and Western's own practices designed to minimize downtime and non-routine operations. Procedures exist for maintenance of each major piece of equipment; personnel are trained in proper procedures; and Western's own internal review processes ensure that procedures are followed. As a result, non-routine operational events and consequent excess emissions are minimized.

In the event that a startup, shutdown, or malfunction event violates an applicable requirement or results in emissions greater than the allowable emission rate for the affected emissions unit(s) considered over an averaging time consistent with the averaging time for the most stringent applicable emissions limit, Western will report such an event.

4. AIR DISPERSION MODELING ANALYSIS

The following pages contain the information below regarding air dispersion modeling analysis for the APT facility:

- ▶ Air Dispersion Modeling Protocol
- ▶ Email from CABQ EHD of Approval of the Submitted Modeling Protocol
- ▶ Air Dispersion Modeling Report

AIR DISPERSION MODELING PROTOCOL

ATC Permit Modification Application

Western Refining Terminals, LLC

Albuquerque Products Terminal

ATC Permit No. 0456-M5-6TR

Prepared By:

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July 2024

Project 233201.0185



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1. FACILITY INFORMATION

Western Refining Terminals, LLC (Western Refining) will be submitting an application for a permit modification for their Albuquerque Products Terminal (APT) facility to the City of Albuquerque (CABQ) Environmental Health Department (EHD), Air Quality Program (AQP). This document includes all required components requested for Modeling Protocols pursuant to Attachment B of the CABQ EHD's Air Dispersion Modeling Guidelines (published May 2024).

1.1 Facility Description and Requested Modification

The APT facility is located at 3209 Broadway SE, Albuquerque, New Mexico 87105 (13S UTM 349,691 m E, 3,879,427 m N) and operates under ATC #0456-M5-6TR. The proposed modification includes the addition of a vapor combustion unit (VCU) (Unit 6) that operates during the permitted loading rack vapor recovery unit (VRU) (Unit 4) downtime, the addition of a new 30,000 bbl tank, and various loading rack and tank optimizations.

The only source at this facility proposed to be modeled is the VCU. All other sources at the site do not emit pollutants for which a national Ambient Air Quality Standard (NAAQS) or New Mexico Ambient Air Quality Standard (NMAAQs) has been established.

1.2 Facility Maps

The maps requested by Attachment B of CABQ's Modeling Guidelines are reported in Figures 1 through 3 of this section.

Figure 1 displays an aerial image of the facility. The figure includes the location of the temporary VCU which is the only source of criteria pollutants to be modeled. The figure also displays the entire layout of buildings at the facility.

Figure 1. An Aerial Image of the APT Facility and Labels Specifying Affected Modeled Source Location and Facility Fence Line Obtained from Google Earth



Figure 2 displays a map obtained from the CABQ's Advanced Map Viewer. All available layers are displayed in this figure. Background imagery is displayed for 2018. The facility is located within the city limits. From the Advanced Map Viewer, it was determined that the APT is surrounded by industrial sites, low-density residential areas, and unincorporated areas.

Figure 2. An Aerial Image Obtained from the City of Albuquerque's Advanced Map Viewer



Figure 3 displays an aerial image obtained from Google Maps. The imagery in this figure is dated 2024.

Figure 3. An Aerial Image of the Facility and Surroundings Obtained from Google Maps



1.3 Operating Hours

The APT facility is authorized to operate continuously; all hours will be modeled.

2. EMISSIONS AND STANDARDS MODELED

2.1 Facility Emissions

Emission rates for all pollutants will increase with this modification. The current permitted and requested facility-wide emissions are reported in Table 1. Please note that the requested emissions may change slightly during development of the permit application.

Table 1. Permitted Emissions, Requested Emissions, and the Net Change in Emission Associated with this Permitting Action

	NO_x (lb/hr)	CO (lb/hr)	SO₂ (lb/hr)	PM₁₀ (lb/hr)	PM_{2.5} (lb/hr)
Permitted Total*	-	-	-	-	-
Requested Total	1.33	1.11	5.71E-04	0.10	1.10
Requested Total	+1.33	+1.11	+5.71E-04	+0.10	+1.10

* There are no combustion devices currently permitted at the facility. As a result, only VOC and HAP emission were reported previously.

2.2 Standards Modeled

The pollutants and standards to be modeled are shown in Table 2. Note that some standards are surrogates that demonstrate compliance for other averaging periods (e.g., SO₂ 1-hr NAAQS is a surrogate that demonstrates compliance for SO₂ 3-hr, 24-hr and annual) per the NMED Air Dispersion Modeling Guidance.¹

Table 2. Proposed Pollutants and Averaging Periods to be Modeled

Pollutant	Averaging Period	Not Emitted	Surrogate Modeled	Modeled
CO	8-hr			☑
	1-hr			☑
H ₂ S	1-hr	☑		
Pb	Quarterly	☑		
NO ₂	Annual			☑
	24-hr		☑	
	1-hr			☑
PM _{2.5}	Annual			☑
	24-hr			☑
PM ₁₀	Annual			☑
	24-hr			☑

¹ New Mexico Environment Department Air Quality Bureau, New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines. Revised June 2024, Table 19.

Pollutant	Averaging Period	Not Emitted	Surrogate Modeled	Modeled
SO ₂	Annual		☑	
	24-hr		☑	
	3-hr		☑	
	1-hr			☑

2.3 Impacts and Results

2.3.1 Significant Impact Level (SIL) Analysis

Western Refining will conduct a screen analysis to determine if the High 1st High modeled impacts of each standard exceed the significance thresholds listed in Table 18 of the NMED Air Dispersion Modeling guidelines.² The significance levels for the modeled pollutants are reported in Table 3. The only source at this facility proposed to be modeled is the vapor combustion unit. The maximum potential hourly emission rate from the unit will be used to demonstrate compliance. All pollutants and standards shown in Table 3 will be modeled to assess significance.

Table 3. Significant Levels of Pollutants that Will be Modeled

Pollutant	Averaging Period	Significance Level (µg/m ³)
CO	8-hr	500
	1-hr	2,000
NO ₂	Annual	1.0
	24-hr	5.0
	1-hr	7.52
PM _{2.5}	Annual	0.13
	24-hr	1.2
PM ₁₀	Annual	1.0
	24-hr	5.0
SO ₂	Annual	1.0
	24-hr	5.0
	3-hr	25.0
	1-hr	7.8

² Ibid, Table 18.

2.3.2 Cumulative Impact Analysis (CIA)

If the significance analysis predicts that modeled concentrations will exceed a SIL, a cumulative impact analysis (CIA) will be conducted. Western Refining proposed to use the prescribed design value of each modeled standard as described in Table 18 and Table 20 of the NMED Air Dispersion Modeling guidelines³. Modeling will only be performed for receptors where the SIL is in exceedance based on the significant impacts modeling results.

Table 4. Cumulative Impact Analysis Design Values of Each Modeled Standard

Pollutant	Averaging Period	Modeled Concentration	Add Background Sources	Surrounding Sources Modeled	NAAQS Standard (µg/m³)	NMAAQs Standard (µg/m³)
CO	8-hr	High 1st High	☑	☑		9,960.1
	1-hr	High 1st High	☑	☑		14,997.5
NO ₂	Annual	Annual Average*	☑	☑		94.02
	1-hr	High 8th High	☑	☑	188.03	
PM _{2.5}	Annual	Annual Average*	☑	☑	9	
	24-hr	High 8th High	☑	☑	35	
PM ₁₀	Annual	Annual Average*	☑	☑		
	24-hr	High 2nd High	☑	☑	150	
SO ₂	Annual	Annual Average*	☑	☑		52.4
	1-hr	High 4th High	☑	☑	196.4	

* The average of the three highest annual impacts from the five year met data set will be compared against the standard.

The proposed total NO₂ and SO₂ emission rates of modeled unit (Unit 6) are 1.33 tpy and 5.71E-04 tpy, respectively. As the modeled emission rates for these pollutants do not exceed 40 tpy, secondary particulate formation will not be evaluated as part of this modeling.⁴

³ Ibid, Table 18 and Table 20.

⁴ Ibid, Section 2.6.6.2.

3. MODELING SET-UP

3.1 Source Modification Summary

As described in Section 1.1, this modification will authorize the installment of a VCU (Unit 6) that operates during VRU (Unit 10) downtime.

3.2 Sources and Emission Rates Modeled

The only source at this facility proposed to be modeled is the VCU (Unit 6). All other sources at the site do not emit pollutants for which a NAAQS or NMAAQS has been established. All loading racks, fugitives, tanks, VRUs, SSM events (Units 1 through 5) at the facility will be sources of only VOC and HAP emissions. Western Refining has accurately represented the location of the modeled emission source (Unit 6) in Figure 1 of this Protocol.

Table 5 reports the hourly emissions rates that will be modeled for each unit. Please note that the requested emissions may change slightly during development of the permit application.

Table 5. Modeled Emission Rates

Unit No.	Description	NO _x (lb/hr)	CO (lb/hr)	SO ₂ (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)
11	VCU	1.33	1.11	5.71E-04	0.10	1.10
Total		1.33	1.11	5.71E-04	0.10	1.10

As this facility will continue to be authorized to operate continuously, emissions will not be averaged over non-operational hours and emission factors will not be modified using the protocols defined in 40 CFR 51 Appendix W Table 8-1.

3.3 Source Types and Stack Parameters

Unit 6 will be modeled as a point source using the stack parameters provided in Table 5. No other stack parameters will be modified.

Table 6. Point Source Stack Parameters

Unit No.	UTM Coordinates	Exit Direction	Height Above Ground (ft)	Exhaust Temperature (°F)	Exhaust Velocity (ft/s)	Inside Diameter (ft)	Rain Cap?
11	349756 m E 3879448 m N	Vertical	13.33	800	0.55	6.5	No

This facility will run continuously and will not require any operational flexibility. No volume or area sources will be modeled for this project.

3.4 Buildings and Downwash

There are several buildings and structures located at the APT facility. Building Profile Input Program for PRIME (BPIPPRM) will be run in all models to address building downwash associated with the tanks and structures at this facility.

Western Refining proposes to include onsite buildings and tanks in the downwash analysis. Nearby structures will be considered only if they are anticipated to encompass the new VCU stack within the Good Engineering Practice (GEP) 5L area of influence.^{5,6}

The GEP 5L area of influence for each structure is determined by measuring a distance of five times 'L' from each edge of the structure, where 'L' is the lesser of the building height or projected building width. Only those stacks within the area of influence are affected by building wake effects. There is only one building offsite north of the APT that could be within the GEP 5L area of influence of the new VCU.

Assuming the building is 40 feet tall, based on measurement of satellite imagery, the GEP 5L area of influence is determined to be 200 ft. Figure 4 demonstrates that the space between the closest offsite building and the VCU stack is approximately 215 ft which exceeds the GEP 5L area. However, as a conservative measure, the nearby structure will be included in the building downwash analysis. The dimensions and coordinates of all buildings to be included in the model are detailed in Tables 7 through 9.

Figure 4. Assessment of Nearby Offsite Structures for Potential Downwash



⁵ EPA-454/R-93-038. User's Guide to the Building Profile Input Program. Revised February 8, 1995.

⁶ Electric Power Research Institute. Addendum to ISC3 User's Guide: The prime Plume Rise and Building Downwash Model. November 1997.

Table 7. Rectangular Building Dimensions

ID	UTM Coordinates	Height (ft)	X Length (ft)	Y Length (ft)	Angle (deg.)
BLDG-1 (Office Warehouse)	349640 m E 3879417 m N	28.00	140.42	82.68	102
BLDG-2 (Utility Shed)	349634 m E 3879370 m N	10.50	19.03	21.65	97
BLDG-3 (Sample Room)	349672 m E 3879346 m N	9.42	15.09	21.98	92.7
BLDG-4 (BOL Building)	349717 m E 3879475 m N	9.42	8.53	12.80	90

Table 8. Circular Building Dimensions

ID	UTM Coordinates	Height (ft)	Radius (ft)	Corners
TK-31525	349632 m E 3879304 m N	48	30	24
TK-30796	349654 m E 3879314 m N	48	25	24
TK-29553	349648 m E 3879287 m N	47.92	25	24
TK-25930	349676 m E 3879287 m N	48	25	24
TK-29531	349682 m E 3879314 m N	48	40	24
TK-25933	349709 m E 3879314 m N	48	25	24
TK-25932	349705 m E 3879287 m N	48	25	24
TK-31526	349663 m E 3879433 m N	48	25	24
TK-31527	349669 m E 3879466 m N	48	25	24
TK-25375	349710 m E 3879328 m N	32	5	24
TK-25376	349715 m E 3879328 m N	32	5	24
TK-25377	349720 m E 3879328 m N	32	5	24
TK-25934	349737 m E 3879399 m N	48	32.5	24

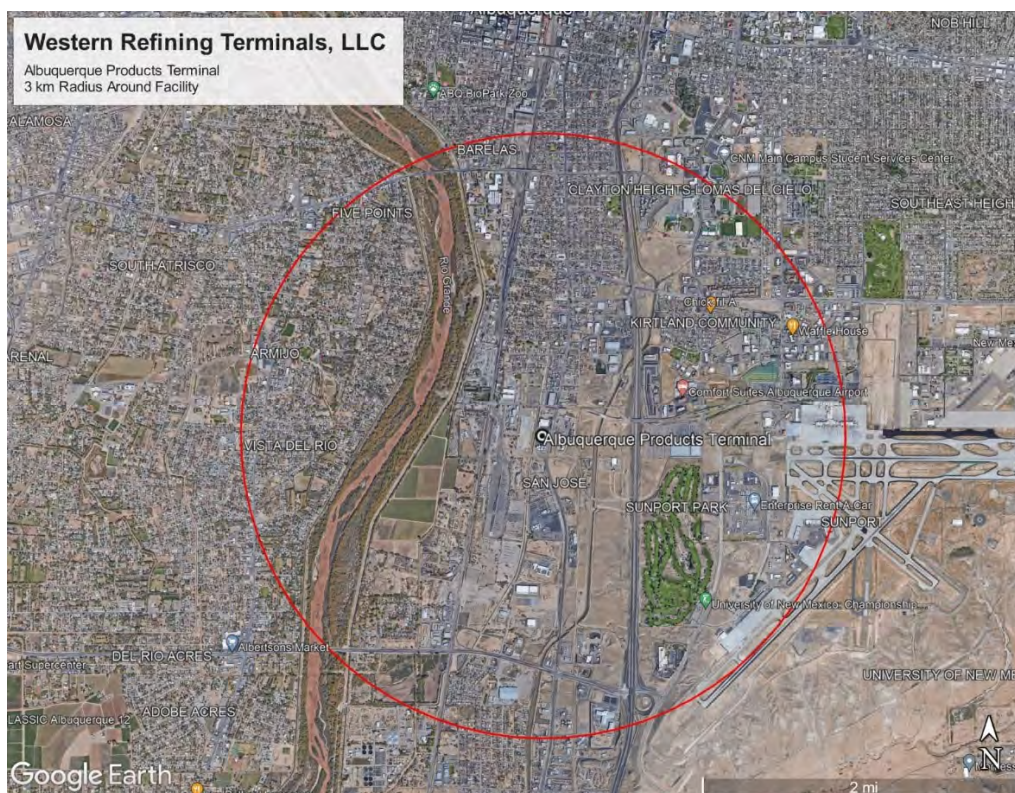
Table 9. Polygon Building Dimensions

Bldg. ID	Height (ft)	Corner	X Coordinate (m)	Y Coordinate (m)	Corner	X Coordinate (m)	Y Coordinate (m)
BLDG-5 (Nearby Building)	40	1	349647	3879503	6	349741	3879510
		2	349651	3879549	7	349659	3879517
		3	349660	3879549	8	349658	3879502
		4	349663	3879579	9	349647	3879503
		5	349747	3879573			

3.5 Model and Options Used

The most recent executable of AERMOD (v23132) will be used to perform air dispersion modeling. All regulatory default options will be used for air dispersion modeling at this facility. As seen in Figure 4, based on satellite imagery and the CABQ Advanced Map Viewer⁷, the land use in a 3 km radius around the facility is less than 50% industrial, commercial, or compact residential, as defined in the CABQ EHD modeling guidance; therefore, rural dispersion coefficients will be used.

Figure 5. An Aerial Image of the Facility Circumscribed by a 3 km Radius



⁷ City of Albuquerque Environmental Health Department Air Quality Program Permitting Division, Air Dispersion Modeling Guidelines for Air Quality Permitting, Revised May 2024, Attachment A.

The Tier 2, Ambient Ratio Method 2 (ARM2) will be used to model ambient impact of NO₂. The national default minimum ambient ratio of 0.5 and maximum ambient ratio of 0.9 will be used.⁸ Tier III methods (OLM or PVMRM) may be used if required. If Tier III methods are used, Western Refining will apply the in-stack ratios provided by the CABQ EHD and summarized in Table 10. The South Valley 2014 to 2018 ozone data set would be used, if needed.

Table 10. Department-Approved In-Stack Ratios

Sources	In-Stack Ratio Value Accepted by the AQP
Diesel-fired RICE engines	0.15
Natural gas-fired boilers	0.2
Other sources at facility seeking permit	0.5
Other sources 1-3 km from fence of facility seeking permit	0.2
Other sources <1 km from fence of facility seeking permit	0.3

3.6 Meteorological Data

Meteorological data from the Albuquerque Airport from 2014 to 2018 provided by the CABQ EHD will be used for this air dispersion modeling. This meteorological data is assumed to be adequately representative of conditions at the APT, based on the CABQ EHD modeling guidelines.⁹

3.7 Background Concentrations

Background concentrations were provided by the CABQ EHD on December 29, 2023 and will be used as applicable. This can be found in Appendix B.

In the memo titled “Background Values of Air Dispersion Modeling” found in Appendix C of the CABQ EHD modeling guidelines¹⁰, it was stated that using data from the PM_{2.5} in the South Valley (2ZV) results in a double counting of fine particulate emissions from industry. Using the PM_{2.5} background values calculated from the Del Norte monitor data nearly eliminates double counting. This is also true for other pollutants, such as PM₁₀ and NO₂, measured by the South Valley monitor. Like the South Valley monitor, the Jefferson, North Valley, and Foothills monitors are also not ideally located for calculating background values from monitored data. Additionally, the memo emphasized that background values for all pollutants should normally come from the Del Norte monitor and be used across the Albuquerque metro area within the jurisdiction of the Air Quality Program.

⁸ New Mexico Environment Department, New Mexico Air Quality Bureau, Air Dispersion Modeling Guidelines. Revised March 2024, Section 2.6.4.3.

⁹ City of Albuquerque Environmental Health Department Air Quality Program Permitting Division, Air Dispersion Modeling Guidelines for Air Quality Permitting, Revised May 2024

¹⁰ City of Albuquerque Environmental Health Department Air Quality Program Permitting Division, Air Dispersion Modeling Guidelines for Air Quality Permitting, Revised May 2024, Page 12.

Table 11 shows the background concentrations proposed to be used from the Del Norte monitor.

Table 11. Background Concentrations of Pollutants Proposed for Modeling

Pollutant	Standard	Background Concentration ($\mu\text{g}/\text{m}^3$)
CO	8-hr	1,336
	1-hr	1,870
NO ₂	Annual	18
	1-hr	83.1
PM _{2.5}	Annual	6.4
	24-hr	16.0
PM ₁₀	24-hr	22.9
SO ₂	1-hr	13.1

3.8 Receptor Grid and Elevation Data

AERMOD will be run using a rectangular grid receptor array. Spacing will follow CABQ EHD modeling guidelines:

- ▶ Fence line spacing: 25 meters
- ▶ Very fine grid spacing: 50 meters from the facility fenceline out to 250 meters
- ▶ Fine grid spacing: 100 meters from 250 meters to 1000 meters out from the facility fenceline
- ▶ Medium grid spacing: 250 meters from 1000 meters to 3000 meters out from the facility fenceline.
- ▶ Course grid spacing: 500 meters from 3000 meters to 5000 meters out from the facility fenceline.

This facility will use the USGS 1 arc-second national elevation data (NED) provided on the CABQ EHD website.¹¹ AERMAP, a terrain data preprocessor that incorporates complex terrain using USGS NED data, will be used to integrate all elevations and process the complex terrain in the model. All receptors will be used for Significant Impact Limits (SIL) modeling. Cumulative Impacts Analysis (CIA) modeling will only be performed for receptors where the SIL is exceeded based on the SIL modeling results.

3.9 Nearby Permits and Surrounding Sources

Surrounding Source data is requested from CABQ EHD for the APT at this time. The data provided will be included in the models as provided, unless specific approval to adjust the surrounding sources is granted. There are no other air quality permits for the APT facility.

¹¹ City of Albuquerque. Dispersion Modeling Guidelines. (n.d.) <https://www.cabq.gov/airquality/air-quality-permits/dispersion-modeling-guidelines>

APPENDIX A. FACILITY PLOT PLAN

Daniel Dolce

From: Tumpane, Kyle <ktumpane@cabq.gov>
Sent: Wednesday, September 4, 2024 3:29 PM
To: Daniel Dolce
Cc: Adam Erenstein; Garza, Margaret A.; Stonesifer, Jeff W.; McKinstry, Michael W.
Subject: Western Refining Albuquerque Products Terminal Modeling Protocol Approval

Mr. Dolce,

The City of Albuquerque Air Quality Program (AQP) has finished reviewing the modeling protocol submitted on July 24, 2024 on behalf of Western Refining for the proposed modification to permit #0456-M5-6TR. The modeling protocol is approved with a few comments and questions.

- Why is the proposed PM_{2.5} emission rate 1 lb/hr higher than PM₁₀ for a combustion source? The AQP understands that the emission rates are still being finalized but the PM emission rates are typically the same for a combustion source.
- Why aren't the two wider VRU tanks and the one taller/thinner VRU tank proposed to be included in the model as buildings/tanks for downwash? They are relatively small but they are right next to the proposed VCU location. Please include these in the model. These tanks are identified in the Google Maps street view image below.



A follow-up email will be sent with the surrounding sources to be included in the modeling. Please submit the application and modeling as soon as you are ready.

Let us know if you have any questions.

Thank you,



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AIR DISPERSION MODELING REPORT

Air Quality Construction Permit Modification

**Western Refining Terminals, LLC
Albuquerque Products Terminal**

Prepared By:

Adam Erenstein – Principal Consultant

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September 2026

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Updated Modeling Report Received September 30, 2026 *pp*



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I. APPLICANT AND CONSULTANT INFORMATION

This modeling report is being submitted as part of an air quality construction permit modification application submitted pursuant to 20.11.41.29 NMAC for the Albuquerque Products Terminal owned and operated by Western Refining Terminals, LLC. This report and accompanying modeling files are being submitted to the City of Albuquerque (CABQ) Environmental Health Department (EHD), Air Quality Program (AQP) to satisfy the requirements of 20.11.41.13.E NMAC. This report includes all required components outlines in the "Completeness Requirements" section of the CABQ EHD AQP Air Dispersion Modeling Guidelines (revised May 2024)¹.

a. Name of Facility and Company

Facility Name: Albuquerque Products Terminal

Company: Western Refining Terminals, LLC

b. Permit Numbers Currently Registered for the Facility

This facility is permitted under Air Quality Construction Permit **#0456-M5-7TR** issued on January 23, 2025.

c. Contact Information for Modeling Questions

Contact Name: Adam Erenstein

Phone Number: (505) 266-6611

E-mail Address: AErenstein@trinityconsultants.com

¹ City of Albuquerque, Environmental Health Department, Air Quality Program. (May 2024). *Air Dispersion Modeling Guidelines For Air Quality Permitting*, revised May 2024, 16-17, <https://www.cabq.gov/airquality/air-quality-permits/dispersion-modeling-guidelines>

II. FACILITY AND OPERATIONS DESCRIPTION

a. Narrative Summary of Proposed Modification

As part of this permit modification, the facility proposes to install a new vapor combustion unit (VCU) to serve as a backup control device during periods when the existing loading rack vapor recovery unit (VRU) is offline for maintenance or other downtime events. The proposed VCU represents a new emission source of NO_x , CO, $\text{PM}_{2.5}$, PM_{10} , and SO_2 . Air dispersion modeling has been conducted as part of this application to demonstrate compliance with the applicable National Ambient Air Quality Standards (NAAQS) and New Mexico Ambient Air Quality Standards (NMAAQs).

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The APT is located 3209 Broadway Blvd SE, Albuquerque, NM 87105 (UTM Zone 13, 349,691 meters E and 3,879,427 meters N).

c. Duration of Time that the Facility will be Located at This Location

The facility will be at this location for more than one (1) year.

d. Facility Maps – Google Earth Imagery Dated August 24, 2023

Figure 1. Location of the Facility



Figure 2. On-Site Buildings



Figure 3. Location of Emission Points



Figure 4. Location of Fence Line



Figure 5. Location of Property Boundary



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a. List of Pollutants Requiring NAAQS and/or NMAAQs Modeling

This air dispersion modeling evaluation is for a permit modification that will authorize the addition of a point source with combustion emissions. As such, averaging periods will be evaluated for CO, NO₂, PM_{2.5}, PM₁₀, and SO₂. There are no sources of lead or H₂S at this facility and therefore these pollutants will not be modeled.

Table 1. Modeled Pollutants and Averaging Periods to Show Compliance with the NAAQS and NMAAQs

Pollutant	Averaging Periods	Waiver Granted	Modeled
CO	8-hr		☒
	1-hr		☒
H ₂ S	1/2-hr		
Pb	Quarterly		
NO ₂	Annual		☒
	1-hr		☒
PM _{2.5}	Annual		☒
	24-hr		☒
PM ₁₀	24-hr		☒
SO ₂	1-hr		☒

b. Additional Modeling Required

No additional New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), or Prevention of Significant Deterioration (PSD) modeling is required as part of this modification application. The APT is located in an area that is classified by the EPA as in attainment with the National Ambient Air Quality Standard (NAAQS) for all regulated pollutants.

IV. MODELING INPUTS

a. General Modeling Approach

i. Models Used and Justification

The most recent executable of AERMOD (v26135) was used to perform all air dispersion modeling. All models were run in regulatory default mode and Building Profile Input Program (BPIP) Prime was used to address building downwash associated with the tanks and structures located at this facility as well as the surrounding area.

ii. Operational Flexibility

No operational flexibility is required for the modeling of the APT.

iii. Source Groups

Only the new/modified units of this project (Unit 6 VCU) were included in the SIL source group. This source group is used for the Significant Impacts Level analysis. The FACILITY source group contains all sources at the APT. The NAAQS source group contains all surrounding sources provided by the AQP as well as all sources from the APT. Both of these source groups will be used in the Cumulative Impacts Analysis .

iv. Hourly Emission Factors

No hourly emission factors were used as part of the air dispersion modeling evaluation. All hourly emissions rates were calculated as the maximum and conservative concentration for each of the sources.

v. Gravitational Settling/Plume Depletion

Neither wet nor dry depletion were used to model ambient impacts of PM₁₀ and PM_{2.5}.

vi. Reduction of NO_x to NO₂

The Tier 2, Ambient Ratio Method 2 (ARM2) was used to model ambient impacts of NO₂. The default minimum ambient ratio of 0.5 and maximum ambient ratio of 0.9 was used.

vii. Background Concentrations

Background concentrations were provided by the AQP via email on March 20, 2026 and have been preserved as provided. Background concentrations shown in Table 2 have been added to the calculated facility and neighboring source impacts for each pollutant and averaging period.

Table 2. Background Concentrations from the Del Norte Monitor

Pollutant	Averaging Periods	Value (µg/m ³)
CO	8-hr	992
	1-hr	1565
NO ₂	Annual	18
	1-hr	83.1

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	24-hr	14.3
PM ₁₀	24-hr	22.3
SO ₂	Annual	0
	24-hr	0
	1-hr	13.1

viii. Method for Demonstrating Compliance in Nearby Facilities

Discrete receptors were included in all surrounding sources and facilities. Receptors were only deleted inside the Albuquerque Terminal fenceline.

b. Meteorological and Ozone Data

i. Discussion of Meteorological and Ozone Data

The most recent meteorological data set from the Albuquerque Airport from 2014 to 2018 provided by the CABQ was used for the air dispersion modeling. The airport is located nearby, and this meteorological data is assumed to be adequately representative of conditions at the APT.

ii. Actual Data

No further justification is required as the data was provided by the AQP.

c. Receptor and Terrain Discussion

i. Spacing of Receptor Grids

AERMOD will be run using a rectangular grid receptor array. Spacing will follow CABQ EHD modeling guidelines:

- ▶ Fence line spacing: 25 meters
- ▶ Very fine grid spacing: 50 meters from the facility fenceline out to 250 meters
- ▶ Fine grid spacing: 100 meters from 250 meters to 1000 meters out from the facility fenceline
- ▶ Medium grid spacing: 250 meters from 1000 meters to 3000 meters out from the facility fenceline.
- ▶ Course grid spacing: 500 meters from 3000 meters to 5000 meters out from the facility fenceline.

ii. Terrain Discussion

USGS National Elevation Dataset (NED) 1 arc-second data files were provided on the CABQ EHD dispersion modeling guidelines website². These files were imported into AERMAP (version 24142) to determine elevations for sources, receptors, and buildings. There is no complex terrain requiring modifications to air dispersion modeling inputs.

² City of Albuquerque, Air Dispersion Modeling Guidelines.

iii. **Reduction in Receptor Grid Size**

The full receptor grid was utilized for all SIL models. Receptors not exceeding significance thresholds per Table 18 of the NMED Air Dispersion Modeling Guidelines³ were removed for all CIA modeling.

d. **Emission Sources**

i. **Description of Sources at Facility**

1. *Source Types*

Table 3. Modeled Point Source Types

Model ID	Description	Vertical	Horizontal	Rain Capped
TEMP_VCU	Temporary VCU	☒		

2. *Emission Rates and Stack Parameters*

Table 4. Source Emission Rates and Stack Parameters

ID	NO ₂ (lb/hr)	CO (lb/hr)	SO ₂ (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	Height (ft)	Temp. (°F)	Velocity (ft/s)	Diameter (ft)
TEMP_VCU	1.33	1.11	0.00057	0.10	0.10	13.33	800	11.83	6.50

3. *Summary of Actual and Modeled Dimensions of Volume Sources*

There are no volume sources located at the APT.

4. *Table of Proposed Changes*

Table 5. Proposed Changes in Emission Rates

ID	NO ₂ (lb/hr)	CO (lb/hr)	SO ₂ (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)
TEMP_VCU	+1.33	+1.11	+0.00057	+0.10	+0.10

5. *Treatment of Operating Hours*

No reductions were claimed to represent non-continuous annual operation for any of the new emission sources located on site.

6. *Particle Size Characteristics*

No particle size distribution characteristics were included in the particulate matter modeling.

³ New Mexico Air Quality Bureau. (July 2024). *Air Dispersion Modeling Guidelines*. New Mexico Environment Department. <https://www.env.nm.gov/air-quality/modeling-publications/>

7. Discrepancies Between Modeled Parameters and Those in the Application

Modeled stack parameters and those represented in the application are identical.

8. Flare Calculations

N/A – There are no flares at the APT.

9. Cross-Reference of Model Input Numbers and Names

The Model ID TEMP_VCU corresponds to Unit 6 VCU in the permit application.

e. Building Downwash

i. Dimension of Buildings

Table 6. Rectangle Building Dimensions and Locations

Model ID	Description	X Coordinate (m)	Y Coordinate (m)	Height (ft)	X Length (ft)	Y Length (ft)	Angle
BLDG1	Office Warehouse	349637	3879417	28.0	140.4	82.7	102.0
	Garage						
BLDG2	Utility Shed	349632	3879372	10.5	19.0	21.7	97.0
BLDG3	Sample Room	349671	3879347	9.4	15.1	22.0	92.7
BLDG4	BOL Building	349717	3879475	9.4	8.5	12.8	90.0

Table 7. Circular Building Dimensions and Locations

Model ID	Description	X Coordinate (m)	Y Coordinate (m)	Height (ft)	Radius (ft)	Corners
TK-31525		349632	3879306	48.0	30.0	24
TK-30796		349652	3879316	48.0	25.0	24
TK-29553		349647	3879290	47.9	25.0	24
TK-25930		349675	3879289	48.0	25.0	24
TK-29531		349680	3879317	48.0	40.0	24
TK-25933		349708	3879316	48.0	25.0	24
TK-25932		349703	3879288	48.0	25.0	24
TK-31526		349663	3879435	48.0	25.0	24
TK-31527		349671	3879467	48.0	25.0	24
TK-25375		349709	3879328	32.0	5.0	24
TK-25376		349713	3879328	32.0	5.0	24
TK-25377		349718	3879328	32.0	5.0	24

Table 8. Polygon Building Dimensions and Locations

Model ID	Description	X Coordinate	Y Coordinate	Height
BLDG-5	Nearby Building	349648	3879507	40.0
		349652	3879553	
		349662	3879553	

Model ID	Description	X Coordinate	Y Coordinate	Height
		349664	3879583	
		349749	3879577	
		349743	3879514	
		349661	3879521	
		349659	3879506	
		349648	3879507	

ii. Discussion in Included and Excluded Buildings

The APT contains on-site office buildings as well as numerous all-products storage tanks. The APT also contains various awnings or open structures for their various loading activities. All buildings modeled were identified as completely enclosed structures. One neighboring building was included in the model as a conservative measure even though it was not within the Good Engineering Practices (GEP) 5L area of influence from the VCU point source.

V. MODELING FILES DESCRIPTION

a. List of File Names

Table 9. Modeling Files and Description

Name	Description
APT_CO SIL_v3.0_2026 0929	CO 1hr and 8hr SIL model
APT_NO2 SIL_v3.0_2026 0929	NO ₂ 1hr, 24hr, and Annual SIL model
APT_PM2.5 SIL_v3.0_2026 0929	PM _{2.5} 24hr, and Annual SIL model
APT_PM10 SIL_v3.0_2026 0929	PM ₁₀ 24hr, and Annual SIL model
APT_SO2 SIL_v3.0_2026 0929	SO ₂ 1hr, 3hr, 24hr, and Annual SIL model
APT_NO2 1hr CIA_v3.0_2026 0929	NO ₂ 1-hr NAAQS CIA model
APT_PM2.5 24hr CIA_v3.0_2026 0929	PM _{2.5} 24-hr NAAQS CIA model

b. Description of Scenarios

All files labeled "SIL" correspond to the Significance Impact Level (SIL) analysis. Only the new/modified units at the APT were included in the SIL modeling. The results indicate that the modeled concentrations are below the SIL thresholds for all pollutants and averaging periods except for the NO₂ 1-hour and PM_{2.5} 24-hour averaging periods. Therefore, a Cumulative Impacts Analysis (CIA) is required.

All files labeled "CIA" correspond to the Cumulative Impacts Analysis. These files included all other sources of the at the facility in addition to all surrounding sources provided by the AQP.

VI. MODELING RESULTS

a. Summary of Modeling Results

Table 10. Significant Impact Level Analysis

Pollutant	Averaging Period	Significance Level ($\mu\text{g}/\text{m}^3$)	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Percent of Significance	Location of Maximum Concentration		Elevation (m)
					X	Y	
CO	8-hr	500	68.18	13.64%	349749	3879375	1508.27
	1-hr	2000	128.80	6.44%	349725	3879359	1508.04
NO ₂	Annual	1.0	0.948	94.81%	349749	3879375	1508.27
	24-hr	5.0	32.23	Significant ¹	349749	3879375	1508.27
	1-hr	7.52	121.22	Significant	349725	3879359	1508.04
PM _{2.5}	Annual	0.13	0.0792	60.93%	349749	3879375	1508.27
	24-hr	1.2	2.69	Significant	349749	3879375	1508.27
PM ₁₀	Annual	1.0	0.0792	7.92%	349749	3879375	1508.27
	24-hr	5.0	2.69	53.84%	349749	3879375	1508.27
SO ₂	Annual	1.0	0.00045	0.045%	349749	3879375	1508.27
	24-hr	5.0	0.0154	0.31%	349749	3879375	1508.27
	3-hr	25	0.0492	0.20%	349749	3879375	1508.27
	1-hr	7.8	0.0661	0.85%	349725	3879359	1508.04

1. Per the CABQ EHD AQP Air Dispersion Modeling Guidelines (revised May 2024), "Demonstration of compliance with the 1-hour NO₂ NAAQS is automatically a demonstration of compliance with the 24-hour NMAAQs for NO₂."

Table 11. Cumulative Impact Analysis Comparison to NAAQS/NMAAQs Thresholds

Pollutant	Averaging Period and Standard	NAAQS ($\mu\text{g}/\text{m}^3$)	Facility and Surrounding Sources Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Background Concentration ¹ ($\mu\text{g}/\text{m}^3$)	Cumulative Total	Percent of Standard
NO ₂	1-hr NAAQS	188.03	67.70	83.1	150.80	80.20%
			67.71		150.81	80.20%
PM _{2.5}	24-hr NAAQS	188.03	1.38	14.3	15.68	44.79%
			1.38		15.68	44.79%

1. Surrounding sources also included two possible locations of a vapor combustion unit at a neighboring facility.

VII.SUMMARY/CONCLUSIONS

a. Modeling Statement

The submitted air dispersion modeling and report demonstrate compliance with the National and New Mexico Ambient Air Quality Standards. All requirements have been satisfied. There are no exceedances which would prohibit approval of the permit modification.

b. Expected Permit Conditions

The new vapor combustion unit will be operated up to 1080 hr/yr with no permit conditions.

AIR DISPERSION MODELING REPORT

Air Quality Construction Permit Modification

Western Refining Terminals, LLC
Albuquerque Products Terminal

Prepared By:

Adam Erenstein – Principal Consultant

TRINITY CONSULTANTS

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September 2026

Project 233201.0185



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	1-hr		☒
PM _{2.5}	Annual		☒
	24-hr		☒
PM ₁₀	24-hr		☒
SO ₂	1-hr		☒

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Discrete receptors were included in all surrounding sources and facilities. Receptors were only deleted inside the Albuquerque Terminal fenceline.

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AERMOD will be run using a rectangular grid receptor array. Spacing will follow CABQ EHD modeling guidelines:

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USGS National Elevation Dataset (NED) 1 arc-second data files were provided on the CABQ EHD dispersion modeling guidelines website². These files were imported into AERMAP (version 24142) to determine elevations for sources, receptors, and buildings. There is no complex terrain requiring modifications to air dispersion modeling inputs.

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1. Source Types

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Model ID	Description	Vertical	Horizontal	Rain Capped
TEMP_VCU	Temporary VCU	☒		

2. Emission Rates and Stack Parameters

Table 4. Source Emission Rates and Stack Parameters

ID	NO ₂ (lb/hr)	CO (lb/hr)	SO ₂ (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)	Height (ft)	Temp. (°F)	Velocity (ft/s)	Diameter (ft)
TEMP_VCU	1.33	1.11	0.00057	0.10	0.10	13.33	800	55	6.50

3. Summary of Actual and Modeled Dimensions of Volume Sources

There are no volume sources located at the APT.

4. Table of Proposed Changes

Table 5. Proposed Changes in Emission Rates

ID	NO ₂ (lb/hr)	CO (lb/hr)	SO ₂ (lb/hr)	PM ₁₀ (lb/hr)	PM _{2.5} (lb/hr)
TEMP_VCU	+1.33	+1.11	+0.00057	+0.10	+0.10

5. Treatment of Operating Hours

No reductions were claimed to represent non-continuous annual operation for any of the new emission sources located on site.

6. Particle Size Characteristics

No particle size distribution characteristics were included in the particulate matter modeling.

³ New Mexico Air Quality Bureau. (July 2024). *Air Dispersion Modeling Guidelines*. New Mexico Environment Department. <https://www.env.nm.gov/air-quality/modeling-publications/>

7. Discrepancies Between Modeled Parameters and Those in the Application

Modeled stack parameters and those represented in the application are identical.

8. Flare Calculations

N/A – There are no flares at the APT.

9. Cross-Reference of Model Input Numbers and Names

The Model ID TEMP_VCU corresponds to Unit 6 VCU in the permit application.

e. Building Downwash

i. Dimension of Buildings

Table 6. Rectangle Building Dimensions and Locations

Model ID	Description	X Coordinate (m)	Y Coordinate (m)	Height (ft)	X Length (ft)	Y Length (ft)	Angle
BLDG1	Office Warehouse	349637	3879417	28.0	140.4	82.7	102.0
	Garage						
BLDG2	Utility Shed	349632	3879372	10.5	19.0	21.7	97.0
BLDG3	Sample Room	349671	3879347	9.4	15.1	22.0	92.7
BLDG4	BOL Building	349717	3879475	9.4	8.5	12.8	90.0

Table 7. Circular Building Dimensions and Locations

Model ID	Description	X Coordinate (m)	Y Coordinate (m)	Height (ft)	Radius (ft)	Corners
TK-31525		349632	3879306	48.0	30.0	24
TK-30796		349652	3879316	48.0	25.0	24
TK-29553		349647	3879290	47.9	25.0	24
TK-25930		349675	3879289	48.0	25.0	24
TK-29531		349680	3879317	48.0	40.0	24
TK-25933		349708	3879316	48.0	25.0	24
TK-25932		349703	3879288	48.0	25.0	24
TK-31526		349663	3879435	48.0	25.0	24
TK-31527		349671	3879467	48.0	25.0	24
TK-25375		349709	3879328	32.0	5.0	24
TK-25376		349713	3879328	32.0	5.0	24
TK-25377		349718	3879328	32.0	5.0	24

Table 8. Polygon Building Dimensions and Locations

Model ID	Description	X Coordinate	Y Coordinate	Height
BLDG-5	Nearby Building	349648	3879507	40.0
		349652	3879553	
		349662	3879553	

Model ID	Description	X Coordinate	Y Coordinate	Height
		349664	3879583	
		349749	3879577	
		349743	3879514	
		349661	3879521	
		349659	3879506	
		349648	3879507	

ii. Discussion in Included and Excluded Buildings

The APT contains on-site office buildings as well as numerous all-products storage tanks. The APT also contains various awnings or open structures for their various loading activities. All buildings modeled were identified as completely enclosed structures. One neighboring building was included in the model as a conservative measure even though it was not within the Good Engineering Practices (GEP) 5L area of influence from the VCU point source.

V. MODELING FILES DESCRIPTION

a. List of File Names

Table 9. Modeling Files and Description

Name	Description
APT_CO SIL_v2.0_2026 0902	CO 1hr and 8hr SIL model
APT_NO2 SIL_v2.0_2026 0902	NO ₂ 1hr, 24hr, and Annual SIL model
APT_PM2.5 SIL_v2.0_2026 0902	PM _{2.5} 24hr, and Annual SIL model
APT_PM10 SIL_v2.0_2026 0902	PM ₁₀ 24hr, and Annual SIL model
APT_SO2 SIL_v2.0_2026 0902	SO ₂ 1hr, 3hr, 24hr, and Annual SIL model
APT_NO2 1hr CIA_v2.0_2026 0902	NO ₂ 1-hr NAAQS CIA model

b. Description of Scenarios

All files labeled "SIL" correspond to the Significance Impact Level (SIL) analysis. Only the new/modified units at the APT were included in the SIL modeling. The results indicate that the modeled concentrations are below the SIL thresholds for all pollutants and averaging periods with the exception of the NO₂ 1-hour averaging period. Therefore a Cumulative Impacts Analysis (CIA) is required.

All files labeled "CIA" correspond to the Cumulative Impacts Analysis. These files included all other sources of the at the facility in addition to all surrounding sources provided by the AQP.

VI. MODELING RESULTS

a. Summary of Modeling Results

Table 10. Significant Impact Level Analysis

Pollutant	Averaging Period	Significance Level ($\mu\text{g}/\text{m}^3$)	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Percent of Significance	Location of Maximum Concentration		Elevation (m)
					X	Y	
CO	8-hr	500	5.06	1.01%	349621	3879391	1507.69
	1-hr	2000	12.56	0.63%	349621	3879391	1507.69
NO ₂	Annual	1.0	0.057	5.71%	349525	3879368	1507.26
	24-hr	5.0	3.11	62.23%	349575	3879368	1507.44
	1-hr	7.52	13.54	Significant	349621	3879391	1507.69
PM _{2.5}	Annual	0.13	0.0048	3.67%	349525	3879368	1507.26
	24-hr	1.2	0.26	21.66%	349575	3879368	1507.44
PM ₁₀	Annual	1.0	0.0048	0.48%	349525	3879368	1507.26
	24-hr	5.0	0.26	5.20%	349575	3879368	1507.44
SO ₂	Annual	1.0	0.00003	0.0030%	349525	3879368	1507.26
	24-hr	5.0	0.0015	0.030%	349575	3879368	1507.44
	3-hr	25	0.0057	0.023%	349621	3879391	1507.69
	1-hr	7.8	0.0065	0.083%	349621	3879391	1507.69

Table 11. Cumulative Impact Analysis Comparison to NAAQS/NMAAQs Thresholds

Pollutant	Averaging Period and Standard	NAAQS ($\mu\text{g}/\text{m}^3$)	Facility and Surrounding Sources Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Background Concentration ¹ ($\mu\text{g}/\text{m}^3$)	Cumulative Total	Percent of Standard
NO ₂	1-hr NAAQS	188.03	25.82	83.1	108.92	57.93%
			25.82		108.92	57.93%

1. Surrounding sources also included two possible locations of a vapor combustion unit at a neighboring facility.

VII.SUMMARY/CONCLUSIONS

a. Modeling Statement

The submitted air dispersion modeling and report demonstrate compliance with the National and New Mexico Ambient Air Quality Standards. All requirements have been satisfied. There are no exceedances which would prohibit approval of the permit modification.

b. Expected Permit Conditions

The new vapor combustion unit will be to operate continuously with no permit conditions.

5. APPLICABLE REGULATIONS

5.1 Applicable City of Albuquerque Regulations

5.1.1 20.11.41 NMAC – Construction Permits

This facility is required to have a permit pursuant to 20.11.41.2 NMAC and is currently operating under ATC Permit #0456-M5-7TR.

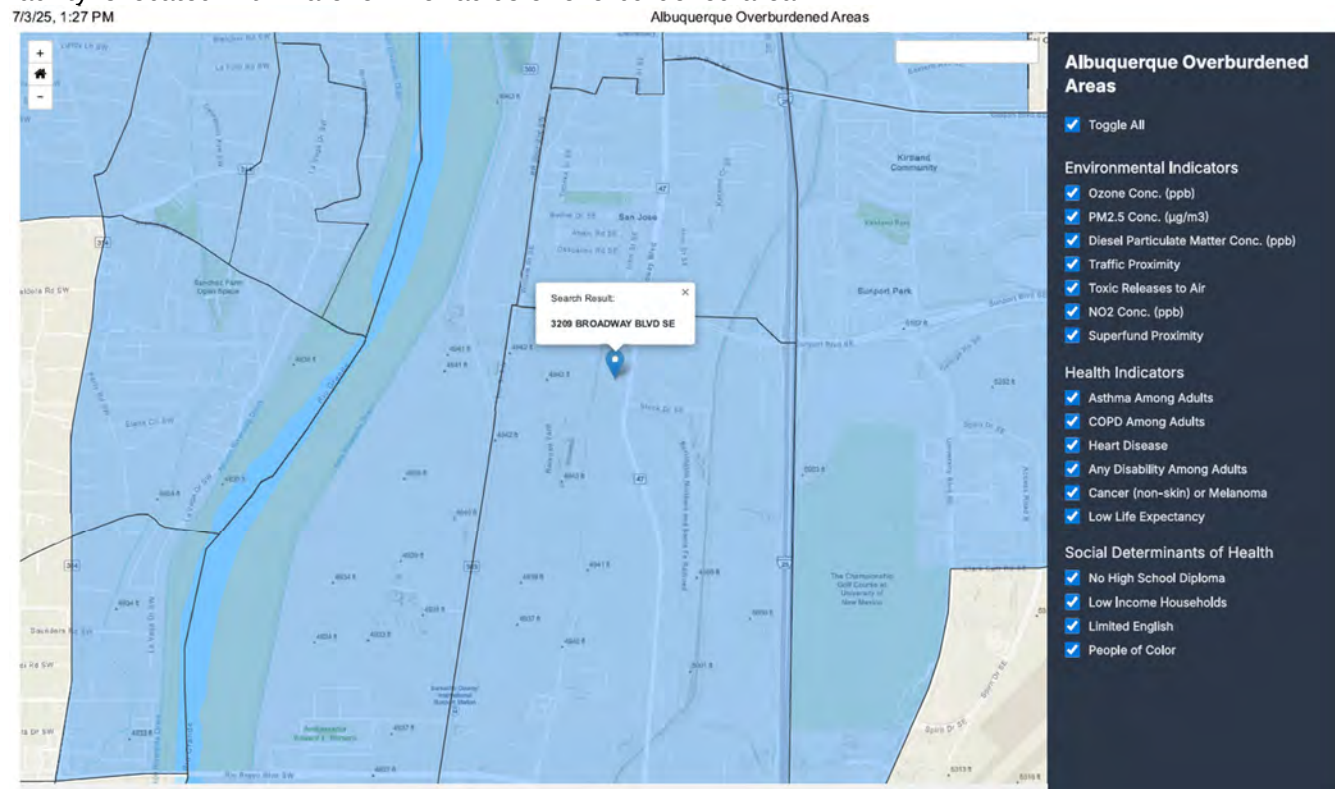
5.1.2 20.11.65 NMAC – Volatile Organic Compounds

Tanks designated under process equipment #5 (AST-2, AST-3, AST-4, AST-7, AST-8, and AST-9) shall be equipped as specified in 20.11.65.12.A. NMAC.

5.1.3 20.11.72 NMAC - Health, Environment and Equity Impacts

This regulation establishes additional permitting requirements for new or modified stationary sources of air pollution located within a one-mile radius of an overburdened area, as defined in 20.11.72.7.D NMAC. Per 20.11.72.8.C NMAC, the Department shall require every new or modified stationary source subject to permitting under 20.11.41 NMAC that is located in or within a one-mile radius of an overburdened area—based on the Overburdened Areas Map in effect as of the permit application date—to apply Best Available Control Technology (BACT).

The following image shows the facility in relation to the nearest overburdened areas, as identified using the latest version of the Overburdened Areas Map from the CABQ EHD website (accessed July 3, 2025). The facility is located within a one-mile radius of overburdened area.



In accordance with 20.11.72.8.D NMAC, the Department shall require BACT for new or modified stationary sources throughout Bernalillo County that emit any one or combination of the following 15 hazardous air pollutants: acetaldehyde, acrolein, benzene, 1,3-butadiene, carbon tetrachloride, ethylbenzene, ethylene oxide, formaldehyde, hydrochloric acid, methyl bromide, methylene chloride, naphthalene, toluene, vinyl chloride, and xylenes.

The vapor combustion unit (Unit VCU) is a source of HAPs listed in 20.11.72.8.D NMAC. Therefore, this unit is subject to the BACT requirements of this rule.

5.2 Applicable Federal Regulations

With this permit modification, there are no triggers for new federal regulation reviews. The following regulations are already subject to this facility and their respective units.

5.2.1 40 CFR 60 Subpart A

Those portions of the facility subject to 40 CFR 60, Subparts Kb and XX are also subject to this NSPS.

5.2.2 40 CFR 60 Subpart Kb

Storage tanks TK-25930, TK-31526, and TK-31527 from Unit 3 are subject to this NSPS because they were constructed or modified after July 23, 1984, have capacities greater than 75 m³, and are used to store volatile organic liquids.

5.2.3 40 CFR 60 Subpart XX

The loading rack (Unit 1) and fugitives (Unit 2) are subject to this NSPS because they are a bulk gasoline terminal, it delivers gasoline into gasoline tank trucks, and it was modified after December 17, 1980.

5.2.4 40 CFR 63, Subpart A

Those portions of the facility subject to 40 CFR 63, Subpart BBBBBB are also subject to this regulation.

5.2.5 40 CFR 63, Subpart BBBBBB

The facility loading rack (Unit 1) is subject to this GACT because it is an area source gasoline distribution bulk terminal. The affected source is the bulk gasoline terminal and it is an existing source because it commenced construction before November 9, 2006.

CITY OF ALBUQUERQUE ENVIRONMENTAL HEALTH DEPARTMENT AIR QUALITY PROGRAM

HAP BACT Analysis

Western Refining Terminals, LLC Albuquerque Products Terminal

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Project 233201.0185



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1. EXECUTIVE SUMMARY

The Albuquerque Products Terminal facility (APT), owned and operated by Western Refining Terminals, LLC (Western RT) is located at 3209 Broadway Blvd SE in Albuquerque, New Mexico and operates under Authority to Construct (ATC) Permit #0456-M5-7TR, issued on February 23, 2025. In January 2023, Western RT requested the installation of a temporary vapor combustion unit (VCU) to operate during vapor recovery unit (VRU) downtime. This was approved by the City of Albuquerque's Environmental Health Department Air Quality Program (EHD AQP) with the condition to permit it under the next significant revision application. Additional modifications to the loading rack and one (1) above ground storage tank (AST-9) are represented in this BACT determination.

In accordance with New Mexico Administrative Code (NMAC) rule 20.11.72.8, each new or modified stationary source which is subject to permitting and within a 1 mile radius of an overburdened area is required to conduct a Best Available Control Technology (BACT) analysis for all new and modified sources which have the potential to emit one or any combination of the following fifteen Hazardous Air Pollutants (HAP): acetaldehyde, acrolein, benzene, 1,3-butadiene, carbon tetrachloride, ethyl benzene, ethylene oxide, formaldehyde, hydrochloric acid, methyl bromide, methylene chloride, naphthalene, toluene, vinyl chloride, and xylenes. Of these HAPs, APT only has the potential to emit benzene, ethylbenzene, naphthalene, toluene, and xylenes.

1.1 Definition of BACT

NMAC 20.11.61.7.M Contains the following definition of BACT:

"Best available control technology (BACT)" means an emissions limitation ... based on the maximum degree of reduction for each regulated [New Source Review] NSR pollutant which would be emitted from any proposed major stationary source or major modification, which the director on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

This definition is consistent with federal regulations as codified in 40 CFR 52.21(b)(12) which goes on to define an NSR pollutant to be any pollutant for which a National Ambient Air Quality Standard (NAAQs) has been established, including Volatile Organic Compounds (VOC) as a precursor to ozone emissions.¹ In order to appropriately apply federal guidance and national resources, APT has used VOC as a surrogate for the HAP listed within the regulation. VOC is an appropriate surrogate because the listed HAP also meet the definition of a VOC:

Volatile organic compounds (VOC) means any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions.²

¹ 40 CFR 52.21(b)(50)(i)(B)

² 40 CFR 51.100(s)

The chemical structure of benzene, ethylbenzene, naphthalene, toluene, and xylene are variations of a six-sided carbon ring and have the potential to participate in atmospheric chemical reactions, thus they can be classified as VOC. Any control device with the potential to reduce VOC emissions will naturally reduce emissions from the target HAP.

The BACT definition goes on to add the following baseline:

In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60 and 61.

Control technologies for VOC specific to tanks and loading racks, similar to those at APT, are listed within the Federal Regulations (40 CFR Parts 60, 61, and 63), Reasonably Available (RACT)/BACT/Lowest Available Emission Rate (LAER) Clearinghouse (RBLC) and EPA published guidance. These resources establish national BACT standards and were reviewed in preparation of this report.

1.2 Description of Source and Processes

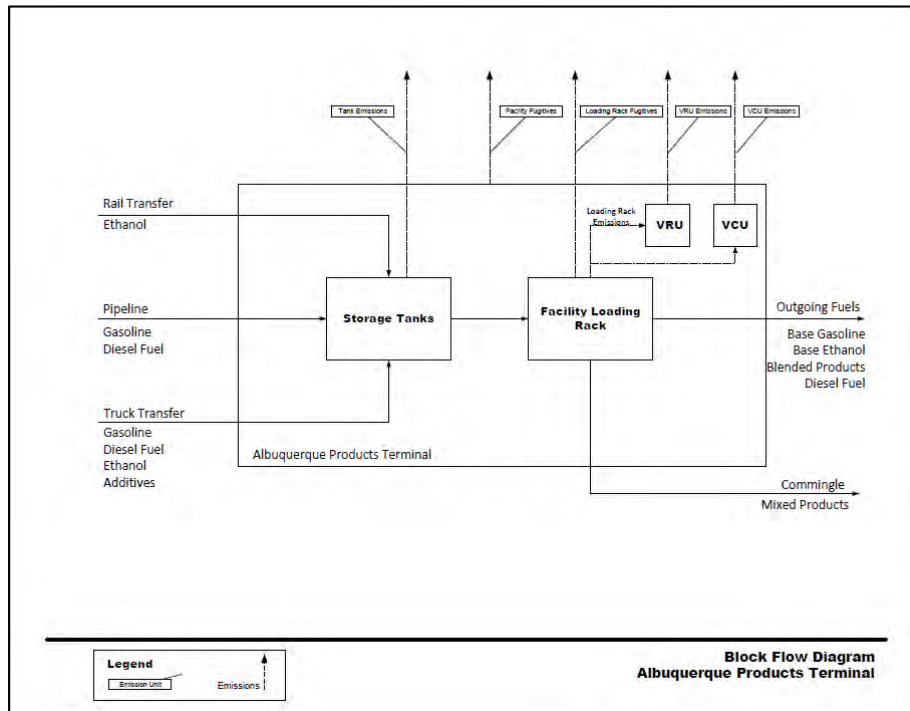
The facility is a products terminal for the storage and transfer of unleaded gasoline, butane, ethanol, diesel fuel and fuel additives. Fuels arrive at the facility by rail transfer, pipeline, and truck transfer. These materials are stored in several large storage tanks on the premises.

Tanker trucks arrive at the facility and load fuels at the loading rack. The loading rack delivers either base fuels (unmixed) or mixed fuels with additives and/or ethanol. Fuels loaded at the loading rack include base gasoline, base ethanol, blended products (gasoline mixed with ethanol and/or additives) and diesel fuel. The products from the products terminal are distributed by truck to gas stations, other terminals and other products plants.

Spilled, mixed materials ("commingle") from tanks or from the loading rack are collected in sump tanks, commingle tanks, and off-spec fuel (transmix) tanks. Rainwater runoff from the facility is collected in separate oily water storage tanks. Commingled materials are distributed by truck to refineries for processing.

A high-level process flow diagram is contained in Figure 1.

Figure 1. Process Flow Diagram



The proposed modification includes the addition of a vapor combustion unit (VCU) (Unit 11) that operates during the permitted loading rack vapor recovery unit (VRU) (Unit 10) downtime, an increase in the throughput of the red dye injection tank (AST-9), and the modification of the loading rack (LR) (Unit 1). Each of these modifications has the potential to emit the target HAP as demonstrated in Figure 2.

Figure 2. Potential to Emit of Target HAP

Unit ID	Description	Requested Controlled HAP Emissions													
		HAP lb/hr	tpy	2,2,4 TMP lb/hr	tpy	Benzene lb/hr	tpy	Cumene lb/hr	tpy	Ethylbenzene lb/hr	tpy	Naphthalene lb/hr	tpy	Toluene lb/hr	tpy
1	Loading Rack Fugitives (LR)	0.52	0.86	0.068	0.13	0.076	0.15	6.38E-03	0.012	8.50E-03	0.016	0.075	2.71E-04	0.11	0.21
2	Facility Fugitives (FUG)	0.22	0.96	-	-	-	-	-	-	-	-	-	-	-	-
3	Storage, Additive, and Underground Spill Tanks (Tanks)	0.63	2.76	-	-	-	-	-	-	-	-	-	-	-	-
4	VRU Emissions (VRU)	0.46	0.88	0.070	0.13	0.079	0.15	6.58E-03	0.013	8.76E-03	0.017	1.46E-04	2.79E-04	0.11	0.22
5	Startup, Shutdown, Malfunction (SSM)	30.35	0.89	-	-	-	-	-	-	-	-	-	-	-	-
6	Vapor Combustion Unit	0.027	0.015	2.23E-03	1.20E-03	3.81E-03	2.06E-03	4.38E-04	2.37E-04	7.90E-04	4.27E-04	6.97E-03	3.76E-03	4.09E-03	2.21E-03
Total Site-Wide Emissions		32.21	6.37	0.14	0.27	0.16	0.30	0.013	0.025	0.018	0.033	0.082	4.31E-03	0.23	0.43

2.1 Storage and Loading Equipment BACT

Benzene, Ethylbenzene, Naphthalene, Toluene, and Xylene emissions result from storage tanks and loading equipment as the materials stored evaporate and the air within the equipment is displaced. APT has installed several control technologies to both limit evaporation and treat emission laden air which is displaced. The focus of this BACT analysis is the installation of a temporary VCU unit to control VRU downtime emissions and modifications to specific tanks and the loading rack.

Per 40 CFR 60 Kc, if the primary seal is a mechanical shoe seal, the secondary seal must be rim mounted.³ Therefore, this technology is considered technically feasible.

2.1.1 Treat Emissions from Tanks and Loading Rack

The BACT definition utilizes Federal, and by extension local regulations, to establish a BACT baseline for tanks and loading racks. Applicable regulations include the following:

- ▶ NMAC 20.11.65,
- ▶ NSPS Subpart XX (Gasoline Distribution Technology Review and Standards of Performance for Bulk Gasoline Terminals Review), and
- ▶ National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart BBBB (Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities).

These regulations limit VOC or Total Organic Carbon (TOC) Vapors to the following limits:

- ▶ 1.24lbs of VOC per 1,000 gallons for organic fluids ⁴
- ▶ Less than 80 milligrams of TOC per liter of gasoline loaded for a VRU⁵
- ▶ Less than 35 milligrams of TOC per liter of gasoline loaded for a VCU⁶

These emission limits are achieved through the use of the following technologies:

- ▶ Vapor Recovery System /Vapor Collection System (VRU)
- ▶ Vapor Combustion Unit (VCU)

Vapor Recovery Unit

A VRU is a system designed to capture and remove hydrocarbons from gases or vapors in order to remove emissions and recycle resources. The process begins when vapors through the VRU unit from the emission unit (in this case, storage tanks and loading rack), and are filtered through a carbon vessel. In the carbon vessel, carbon absorbs the hydrocarbons from the vapors, cleaning the air in the process. To reuse the carbon, a vacuum system is used to remove the captured hydrocarbons in a process called desorption. After desorption, the hydrocarbons are separated and sent to an absorber, where they are converted back into

³ 40 CFR Part 60 Subpart Kc – Standards of Performance for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced After October 4, 2023. Per 60.112c(b)(2)(iii).

⁴ 20.11.65.13 (B)(1)

⁵ NSPS Subpart XX, 60.502(c)

⁶ NSPS Subpart XX, 60.502(b)

liquid form and returned to the storage tank from which they originally came from. If the hydrocarbons cannot be economically recovered or reused, they are routed to the VCU for destruction.

The facility is routing all storage tank and loading rack emissions to a VRU; therefore, this control technology is technically feasible.

Vapor Combustion Unit

A VCU is a control technology that is designed to destroy VOCs and HAPs. The technology requires adequate fuel and air supply in order to have enough oxygen to burn VOCs and HAPs, among other hydrocarbons. If the tank is subject to 40 CFR 60 Subpart Kc and has a maximum true vapor pressure greater than or equal to 76.6 kPa (11.1 psia), VOC emissions are required to be reduced by 98% through a closed vent system routed to a control device.⁷

The control technology is being used during VRU downtime at the facility. It requires that the unit can handle sufficient pressure and flow rate changes during alternate operating scenarios. The control technology is technically feasible.

Conclusion

As seen in Figure 1, all vapors produced from storage tanks and the loading rack which contain HAP emissions are directed first to a Vapor Recovery Unit (VRU). Should the VRU be down for maintenance or malfunction, emissions can be routed to a Vapor Combustion Unit (VCU) to combust VOCs and HAPs into less harmful substances. Since APT complies with all federal regulations and implements all available control technologies, APT proposes that the tanks and loading rack meet BACT as currently designed.

2.2 Fugitives BACT

Fugitive emissions are unintentional releases of vapors or gases that occur during facility operations. Unlike emissions that are actively captured and controlled through designated venting systems, fugitive emissions escape into the atmosphere due to inherent system limitations. These emissions can originate from a variety of sources, including leaky fugitive components (such as valves, flanges, connectors, and pump seals), storage tanks, piping systems, ventilation systems, and loading/unloading operations. Because these emissions cannot be routed through a controlled collection system, achieving 100% capture efficiency is not feasible. However, through BACT, facilities implement stringent measures to minimize fugitive emissions as much as possible.

At a products terminal, the primary sources of fugitive emissions stem from storage tanks, piping systems, and loading operations. To mitigate emissions from storage tanks, the facility implements regular maintenance programs and ensures that all tanks are equipped with high-integrity seals (such as rim seals for floating roof tanks or pressure-vacuum vents for fixed roof tanks). These measures help contain vapors and significantly reduce unintended atmospheric releases from the tanks, which is a critical aspect of controlling fugitive emissions.

In the case of piping systems to the VRU, vapors that could otherwise be emitted from piping components are actively managed through a closed vent system (CVS). This system is designed to capture and route vapors to a designated control device, preventing direct atmospheric release. Managing pressure fluctuations within the CVS is also critical—not only to optimize emissions control but also to maintain worker safety and system integrity. By carefully regulating pressure, the system ensures that fugitive

⁷ 40 CFR Part 60 Subpart Kc – Standards of Performance for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced After October 4, 2023. Per 60.112c (d)(3).

emissions are safely captured and sent to a recovery or treatment system, thus preventing unintentional releases.

By implementing these control measures in alignment with BACT, the facility ensures that fugitive emissions are minimized to the greatest extent technically feasible.

APPENDIX A. APPLICATION FORMS

The following pages contain:

- ▶ Air Quality Permit Application (Updated February 2022)
- ▶ Permit Application Review Fee Checklist (Updated Review Fees for January 1, 2026 through December 31, 2026. Updated Form March 2026)
- ▶ Permit Application Checklist (Updated May 2026)
- ▶ Compliance History Disclosure Form (Updated March 2026)



**City of Albuquerque – Environmental Health Department
Air Quality Program**

Please mail this application to **P.O. Box 1293, Albuquerque, NM 87103**
or hand deliver between 8:00 am – 5:00 pm Monday – Friday to:
3rd Floor, Suite 3023 – One Civic Plaza NW, Albuquerque, NM 87102
(505) 768-1972 aqd@cabq.gov



**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Submittal Date: September 3, 2026

Owner/Corporate Information ☐ Check here and leave this section blank if information is exactly the same as Facility Information below.

Company Name: Western Refining Terminals, LLC			
Mailing Address: 539 South Main St. ATTN: Terminals HESS	City: Findlay	State: OH	Zip: 45840
Company Phone: (419) 421-2629	Company Contact: Angela S Brown		
Company Contact Title: Vice President	Phone: (419) 421-2629	E-mail: ASBrown@marathonpetroleum.com	

Stationary Source (Facility) Information: Provide a plot plan (legal description/drawing of the facility property) with overlay sketch of facility processes, location of emission points, pollutant type, and distances to property boundaries.

Facility Name: Albuquerque Products Terminal			
Facility Physical Address: 3209 Broadway SE	City: Albuquerque	State: NM	Zip: 87105
Facility Mailing Address (if different): N/A	City: N/A	State: N/A	Zip: N/A
Facility Contact: Margaret Garza	Title: Senior Environmental Specialist		
Phone: (480) 532-1434	E-mail: MGarza4@marathonpetroleum.com		
Authorized Representative Name ¹ : Margaret Garza	Authorized Representative Title: Senior Environmental Specialist		

Billing Information ☐ Check here if same contact and mailing address as corporate ☐ Check here if same as facility

Billing Company Name: Western Refining Terminals, LLC			
Mailing Address: 539 South Main St. ATTN: HES&S	City: Findlay	State: OH	Zip: 45840
Billing Contact: Dan Sidle	Title: Analytical Processor		
Phone: (419) 421-2782	E-mail: dmsidle@marathonpetroleum.com		

Preparer/Consultant(s) Information ☐ Check here and leave section blank if no Consultant used or Preparer is same as Facility Contact.

Name: Adam Erenstein	Title: Manager of Consulting Services		
Mailing Address: 9400 Holly Ave., Bldg. 3, Ste. B	City: Albuquerque	State: NM	Zip: 87122
Phone: (505) 266-6611	Email: AErenstein@trinityconsultants.com		

1. See 20.11.41.13(E)(13) NMAC.

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

General Operation Information (if any question does not pertain to your facility, type N/A on the line or in the box)

Permitting action being requested (please refer to the definitions in 20.11.40 NMAC or 20.11.41 NMAC):				
☐ New Permit	☒ Permit Modification Current Permit #: 0456-M5-7TR	☐ Technical Permit Revision Current Permit #:	☐ Administrative Permit Revision Current Permit #:	
☐ New Registration Certificate	☐ Modification Current Reg. #:	☐ Technical Revision Current Reg. #:	☐ Administrative Revision Current Reg. #:	
UTM coordinates of facility (Zone 13, NAD 83): 349,691 meters E and 3,879,427 meters N				
Facility type (<i>i.e.</i> , a description of your facility operations): Bulk Petroleum Products Terminal				
Standard Industrial Classification (SIC Code #): 5171		North American Industry Classification System (NAICS Code #): 424710		
Is this facility currently operating in Bernalillo County? Yes		If YES , list date of original construction: 1955 If NO , list date of planned startup: N/A		
Is the facility permanent? Yes		If NO , list dates for requested temporary operation: From N/A Through N/A		
Is the facility a portable stationary source? No		If YES , is the facility address listed above the main permitted location for this source? N/A		
Is the application for a physical or operational change, expansion, or reconstruction (<i>e.g.</i> , altering process, or adding, or replacing process or control equipment, etc.) to an existing facility? Yes				
Provide a description of the requested changes: The addition of a vapor combustion unit, loading rack and tank optimizations, and SSM modifications.				
What is the facility's operation? ☒ Continuous ☐ Intermittent ☐ Batch				
Estimated percent of production/operation:	Jan-Mar: 25%	Apr-Jun: 25%	Jul-Sep: 25%	Oct-Dec: 25%
Requested operating times of facility:	24 hours/day	7 days/week	4 weeks/month	12 months/year
Will there be special or seasonal operating times other than shown above? This includes monthly- or seasonally-varying hours. No				
If YES , please explain: N/A				
List raw materials processed: N/A				
List saleable item(s) produced: N/A				

USE INSTRUCTIONS: For the forms on the following pages, please do not alter or delete the existing footnotes or page breaks. If additional footnotes are needed then add them to the end of the existing footnote list for a given table. Only update the rows and cells within tables as necessary for your project. Unused rows can be deleted from tables. If multiple scenarios will be represented then the Uncontrolled and Controlled Emission Tables, and other tables as needed, can be duplicated and adjusted to indicate the different scenarios.

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Regulated Emission Sources Table

(E.g., Generator-Crusher-Screen-Conveyor-Boiler-Mixer-Spray Guns-Saws-Sander-Oven-Dryer-Furnace-Incinerator-Haul Road-Storage Pile, etc.) Match the Units listed on this Table to the same numbered line if also listed on Emissions Tables & Stack Table.

Unit Number and Description ¹		Manufacturer	Model #	Serial #	Manufacture Date	Installation Date	Modification Date ²	Process Rate or Capacity (Hp, kW, Btu, ft ³ , lbs, tons, yd ³ , etc.) ³	Fuel Type
Unit 1	Loading Rack (LR)	Texaco	N/A	N/A	1955	1955	2025	27,500 bpd	Electric Pump
Unit 2	Fugitives (FUG)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Unit 3	All Products Storage Tank (TK-25930)	TBD	TBD	TBD	TBD	1955	N/A	705,021 gal	N/A
	All Products Storage Tank (TK-25931)	TBD	TBD	TBD	TBD	1955	N/A	1,804,853 gal	N/A
	All Products Storage Tank (TK-25932)	TBD	TBD	TBD	TBD	1955	N/A	705,021 gal	N/A
	All Products Storage Tank (TK-25933)	TBD	TBD	TBD	TBD	1955	2024	705,021 gal	N/A
	All Products Storage Tank (TK-31525)	TBD	TBD	TBD	TBD	1971	N/A	1,015,230 gal	N/A
	All Products Storage Tank (TK-31526)	TBD	TBD	TBD	TBD	1990	N/A	705,021 gal	N/A
	All Products Storage Tank (TK-31527)	TBD	TBD	TBD	TBD	1990	N/A	705,021 gal	N/A
Unit 5	Additive Storage Tank (AST-2)	TBD	TBD	TBD	TBD	TBD	N/A	12,096 gal	N/A
	Additive Storage Tank (AST-3)	TBD	TBD	TBD	TBD	2013	N/A	4,064 gal	N/A
	Additive Storage Tank (AST-4)	TBD	TBD	TBD	TBD	2013	N/A	4,064 gal	N/A
	Additive Storage Tank (AST-7)	This Unit is Out of Service				2013	N/A	2,000 gal	N/A
	Additive Storage Tank (AST-8)	TBD	TBD	TBD	TBD	2021	N/A	6,016 gal	N/A
	Additive Storage Tank (AST-9)	TBD	TBD	TBD	TBD	TBD	2024	264 gal	N/A
Unit 6	Distillate Storage Tank (TK-29553)	TBD	TBD	TBD	TBD	1955	N/A	703,845 gal	N/A
	Distillate Storage Tank (TK-30796)	TBD	TBD	TBD	TBD	1955	N/A	705,021 gal	N/A
Unit 7	Underground Spill East Sump (USS-8)	This Unit is Out of Service						8,000 gal	N/A
	Underground Spill East Sump (USS-6)	This Unit is Out of Service						6,000 gal	N/A
	Storage Tank (TK-25375)	This Unit is Out of Service						17,300 gal	N/A

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Unit Number and Description ¹		Manufacturer	Model #	Serial #	Manufacture Date	Installation Date	Modification Date ²	Process Rate or Capacity (Hp, kW, Btu, ft ³ , lbs, tons, yd ³ , etc.) ³	Fuel Type
	Storage Tank (TK-25376)	This Unit is Out of Service						17,300 gal	N/A
	Storage Tank (TK-25377)	This Unit is Out of Service						17,300 gal	N/A
Unit 8	Oily Water Storage Tank (UTK-1)	This Unit is Out of Service						7,800 gal	N/A
Unit 9	Vapor Knockout Storage Tank (UVPT-8)	This Unit is Out of Service						200 gal	N/A
	Vapor Knockout Storage Tank (UVPT-9)	This Unit is Out of Service						250 gal	N/A
Unit 10	Vapor Recovery Unit (VRU)	John Zink	AAT/7-609-9-8-82/5	VR-913077	1988	2014	N/A	N/A	N/A
Unit 11	Vapor Combustion Unit (VCU)	R.A. Nichols Engineering (RANE)	1P4E11DB	E19/B9	TBD	TBD	TBD	40 MMBtu/hr	N/A

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

- Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.
- To determine whether a unit has been modified, evaluate if changes have been made to the unit that impact emissions or that trigger modification as defined in 20.11.41.7(U) NMAC. If not, put N/A.
- Basis for Equipment Process Rate or Capacity (e.g., Manufacturer's Data, Field Observation/Test, etc.) **Manufacturer Specification Sheets**
Submit information for each unit as an attachment.

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Emissions Control Equipment Table

Control Equipment Units listed on this Table should either match up to the same Unit number as listed on the Regulated Emission Sources, Controlled Emissions and Stack Parameters Tables (if the control equipment is integrated with the emission unit) or should have a distinct Control Equipment Unit Number and that number should then also be listed on the Stack Parameters Table.

Control Equipment Unit Number and Description		Controlling Emissions for Unit Number(s)	Manufacturer	Model # Serial #	Date Installed	Controlled Pollutant(s)	% Control Efficiency ¹	Method Used to Estimate Efficiency	Rated Process Rate or Capacity or Flow
Unit 10	Vapor Recovery Unit (VRU)	Loading Rack Fugitives	John Zink	AAT/7-609-9-8-82/5 VR-913077	2014	VOCs	99.2%	Manufacturer Specification Sheet	N/A
Unit 11	Vapor Combustion Unit (VCU)	Loading Rack Fugitives (during VCU downtime)	R.A. Nichols Engineering (RANE)	1P4E11DB E19/B9	TBD	VOCs	99.48%	Manufacturer Specification Sheet	40 MMBtu/hr

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Basis for Control Equipment % Efficiency (e.g., Manufacturer's Data, Field Observation/Test, AP-42, etc.). **Manufacturer Specification Sheets**
Submit information for each unit as an attachment.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Exempted Sources and Exempted Activities Table

See 20.11.41 NMAC for exemptions.

Unit Number and Description	Manufacturer	Model #	Serial #	Manufacture Date	Installation Date	Modification Date ¹	Process Rate or Capacity (Hp, kW, Btu, ft ³ , lbs, tons, yd ³ , etc.) ²	Fuel Type
No Exempt Equipment at this Facility								

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. To determine whether a unit has been modified, evaluate if changes have been made to the unit that impact emissions or that trigger modification as defined in 20.11.41.7(U) NMAC. Also, consider if any changes that were made alter the status from exempt to non-exempt. If not, put N/A.
2. Basis for Equipment Process Rate or Capacity (e.g., Manufacturer's Data, Field Observation/Test, etc.) **N/A**
Submit information for each unit as an attachment.

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Uncontrolled Emissions Table

(Process potential under physical/operational limitations during a 24 hr/day and 365 day/year = 8760 hrs)

Regulated Emission Units listed on this Table should match up to the same numbered line and Unit as listed on the Regulated Emissions and Controlled Tables. List total HAP values per Emission Unit if overall HAP total for the facility is ≥ 1 ton/yr.

Unit Number*	Nitrogen Oxides (NO _x)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO ₂)		Particulate Matter $\leq$ 10 Microns (PM ₁₀)		Particulate Matter $\leq$ 2.5 Microns (PM _{2.5})		Hazardous Air Pollutants (HAPs)		Method(s) used for Determination of Emissions (AP-42, Material Balance, Field Tests, etc.)
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	
Unit 1 Loading Rack (Unit LR)	-	-	-	-	1062.20	2132.37	-	-	-	-	-	-	56.05	112.52	Ap-42 Chapter 5, Section 5.2
Unit 2 Fugitives (Unit FUG)	-	-	-	-	0.49	2.14	-	-	-	-	-	-	0.22	0.96	EPA's Protocol for Equipment Leak Emission Estimates
Unit 3 All Products Tanks (Unit Tanks)	-	-	-	-	7.58	33.HM	-	-	-	-	-	-	1.14	4.98	TankESP PRO v5.4.0 reports generated August 2026
Unit 5 Additive Tanks (Unit Tanks)															
Unit 6 Distillate Tanks (Unit Tanks)															
Unit 7 Underground Spill Sump & Commingle Tanks (Unit Tanks)															
Unit 8 Oily Water Tank (Unit Tanks)															
Unit 9 Vapor Knockout Tanks (Unit Tanks)															

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Unit Number*	Nitrogen Oxides (NO _x)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO ₂)		Particulate Matter ≤ 10 Microns (PM ₁₀)		Particulate Matter ≤ 2.5 Microns (PM _{2.5})		Hazardous Air Pollutants (HAPs)		Method(s) used for Determination of Emissions (AP-42, Material Balance, Field Tests, etc.)
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	
Unit 10 Vapor Recovery Unit (Unit VRU)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/A
Unit 11 Vapor Combustion Unit (Unit VCU)	0.025	0.014	0.021	0.011	-	-	5.71E-04	3.09E-04	1.92E-03	1.03E-03	1.92E-03	1.03E-03	-	-	Manufacturer's Specification Sheet AP-42 Chapter 1, Section 1.4
Unit 12 Startup, Shutdown, and Maintenance (Unit SSM)	-	-	-	-	57.38	2.36	-	-	-	-	-	-	25.82	1.06	Ap-42 Chapter 7
Totals of Uncontrolled Emissions	0.025	0.014	0.021	0.011	1127.65	2170.08	5.71E-04	3.09E-04	1.92E-03	1.03E-03	1.92E-03	1.03E-03	83.23	119.53	

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

*A permit is required and this application along with the additional checklist information requested on the Permit Application checklist must be provided if:

- (1) any one of these process units or combination of units, has an uncontrolled emission rate greater than or equal to (≥) 10 lbs/hr or 25 tons/yr for any of the above pollutants, excluding HAPs, based on 8,760 hours of operation; or
- (2) any one of these process units or combination of units, has an uncontrolled emission rate ≥ 2 tons/yr for any single HAP or ≥ 5 tons/yr for any combination of HAPs based on 8,760 hours of operation; or
- (3) any one of these process units or combination of units, has an uncontrolled emission rate ≥ 5 tons/yr for lead (Pb) or any combination of lead and its compounds based on 8,760 hours of operation; or
- (4) any one of the process units or combination of units is subject to an Air Board or federal emission limit or standard.

* If all of these process units, individually and in combination, have an uncontrolled emission rate less than (<) 10 lbs/hr or 25 tons/yr for all of the above pollutants (based on 8,760 hours of operation), but > 1 ton/yr for any of the above pollutants, then a source registration is required. A Registration is required, at minimum, for any amount of HAP emissions. Please complete the remainder of this form.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Controlled Emissions Table

(Based on current operations with emission controls OR requested operations with emission controls)

Regulated Emission Units listed on this Table should match up to the same numbered line and Unit as listed on the Regulated Emissions and Uncontrolled Tables. List total HAP values per Emission Unit if overall HAP total for the facility is ≥ 1 ton/yr.

Unit Number	Nitrogen Oxides (NO _x)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO ₂)		Particulate Matter ≤ 10 Microns (PM ₁₀)		Particulate Matter ≤ 2.5 Microns (PM _{2.5})		Hazardous Air Pollutants (HAPs)		Control Method	% Efficiency ¹
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr		
Unit 1 Loading Rack (Unit LR)	-	-	-	-	8.50	17.06	-	-	-	-	-	-	0.52	0.90	Unit 10 / Unit 11	99.2%
Unit 2 Fugitives (Unit FUG)	-	-	-	-	0.49	2.14	-	-	-	-	-	-	0.22	0.96	N/A	N/A
Unit 3 All Products Tanks (Unit Tanks)	-	-	-	-	7.58	33.21	-	-	-	-	-	-	1.14	4.98	N/A	N/A
Unit 5 Additive Tanks (Unit Tanks)																
Unit 6 Distillate Tanks (Unit Tanks)																
Unit 7 Underground Spill Sump & Commingle Tanks (Unit Tanks)																
Unit 8 Oily Water Tank (Unit Tanks)																
Unit 9 Vapor Knockout Tanks (Unit Tanks)																

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Unit Number	Nitrogen Oxides (NO _x)		Carbon Monoxide (CO)		Nonmethane Hydrocarbons/Volatile Organic Compounds (NMHC/VOCs)		Sulfur Dioxide (SO ₂)		Particulate Matter ≤ 10 Microns (PM ₁₀)		Particulate Matter ≤ 2.5 Microns (PM _{2.5})		Hazardous Air Pollutants (HAPs)		Control Method	% Efficiency ¹
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr		
Unit 10 Vapor Recovery Unit (Unit VRU)	-	-	-	-	8.76	17.59	-	-	-	-	-	-	0.46	0.93	N/A	N/A
Unit 11 Vapor Combustion Unit (Unit VCU)	1.33	0.72	1.11	0.60	0.46	0.25	5.71E-04	3.09E-04	0.10	0.054	0.10	0.054	5.71E-05	3.08E-05	N/A	99.48%
Unit 12 Startup, Shutdown, and Maintenance (Unit SSM)	-	-	-	-	57.38	2.36	-	-	-	-	-	-	25.82	1.06	N/A	N/A
Totals of Controlled Emissions	1.33	0.72	1.11	0.60	83.17	72.61	5.71E-04	3.09E-04	0.10	0.054	0.10	0.054	28.16	8.84		

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Basis for Control Method % Efficiency (*e.g.*, Manufacturer's Data, Field Observation/Test, AP-42, etc.). **Manufacturer Specification Sheets**
Submit information for each unit as an attachment.

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Hazardous Air Pollutants (HAPs) Emissions Table

Report the Potential Emission Rate for each HAP from each source on the Regulated Emission Sources Table that emits a given HAP. Report individual HAPs with ≥ 1 ton/yr total emissions for the facility on this table. Otherwise, report total HAP emissions for each source that emits HAPs and report individual HAPs in the accompanying application package in association with emission calculations. If this application is for a Registration solely due to HAP emissions, report the largest HAP emissions on this table and the rest, if any, in the accompanying application package.

Unit Number	Total HAPs															
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Unit 1 Loading Rack (Unit LR)	0.52	0.90														
Unit 2 Fugitives (Unit FUG)	0.22	0.96														
Unit 3 All Products Tanks (Unit Tanks)	1.14	4.98														
Unit 5 Additive Tanks (Unit Tanks)																
Unit 6 Distillate Tanks (Unit Tanks)																
Unit 7 Underground Spill Sump & Commingle Tanks (Unit Tanks)																
Unit 8 Oily Water Tank (Unit Tanks)																
Unit 9 Vapor Knockout Tanks (Unit Tanks)	0.46	0.93														
Unit 10 Vapor Recovery Unit (Unit VRU)																

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Unit Number	Total HAPs															
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Unit 11 Vapor Combustion Unit (Unit VCU)	5.71E-05	3.08E-05														
Unit 12 Startup, Shutdown, and Maintenance (Unit SSM)	25.82	1.06														
Totals of HAPs for all units:	28.16	8.84														

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

Use Instructions: Copy and paste the HAPs table here if need to list more individual HAPs.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Purchased Hazardous Air Pollutant Table*

Product Categories (Coatings, Solvents, Thinners, etc.)	Hazardous Air Pollutant (HAP), or Volatile Hazardous Air Pollutant (VHAP) Primary To The Representative As Purchased Product	Chemical Abstract Service (CAS) Number of HAP or VHAP from Representative As Purchased Product	HAP or VHAP Concentration of Representative As Purchased Product (pounds/gallon, or %)	Concentration Determination (CPDS, SDS, etc.) ¹	Total Product Purchases For Category	(-)	Quantity of Product Recovered & Disposed For Category	(=)	Total Product Usage For Category
See Attached HAP Emission Calculations									
TOTALS					lb/yr	(-)	lb/yr	(=)	lb/yr
					gal/yr		gal/yr		gal/yr

NOTE: To add extra rows in Word, click anywhere in the second-to-last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

NOTE: Product purchases, recovery/disposal and usage should be converted to the units listed in this table. If units cannot be converted please contact the Air Quality Program prior to making changes to this table.

1. Submit, as an attachment, information on one (1) product from each Category listed above which best represents the average of all the products purchased in that Category. CPDS = Certified Product Data Sheet; SDS = Safety Data Sheet

*** A Registration is required, at minimum, for any amount of HAP or VHAP emission.**

Emissions from purchased HAP usage should be accounted for on previous tables as appropriate.

A permit may be required for these emissions if the source meets the requirements of 20.11.41 NMAC.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Material and Fuel Storage Table

(E.g., Tanks, barrels, silos, stockpiles, etc.)

Storage Equipment		Product Stored	Capacity (bbls, tons, gals, acres, etc.)	Above or Below Ground	Construction (Welded, riveted) & Color	Installation Date	Loading Rate ¹	Offloading Rate ¹	True Vapor Pressure	Control Method	Seal Type	% Eff. ²
Unit 3a TK-25930	Tank	Gasoline	705,021 gal	Above	Welded White	1955	N/A	N/A	7.54	N/A	Mechanical Shoe Rim-Mounted	N/A
Unit 3b TK-25931	Tank	Gasoline	1,804,853 gal	Above	Welded White	1955	N/A	N/A	7.47	N/A	Vapor-Mounted Rim-Mounted	N/A
Unit 3c TK-25932	Tank	Diesel	705,021 gal	Above	Welded White	1955	N/A	N/A	7.47	N/A	Vapor-Mounted Rim-Mounted	N/A
Unit 3d TK-25933	Tank	Gasoline	705,021 gal	Above	Welded White	1955	N/A	N/A	7.47	N/A	Mechanical Shoe Rim-Mounted	N/A
Unit 3e TK-31525	Tank	Gasoline	1,015,230 gal	Above	Welded White	1971	N/A	N/A	7.55	N/A	Vapor-Mounted Rim-Mounted	N/A
Unit 3f TK-31526	Tank	Ethanol	705,021 gal	Above	Welded White	1990	N/A	N/A	7.54	N/A	Mechanical Shoe None	N/A
Unit 3g TK-31527	Tank	Ethanol	705,021 gal	Above	Welded White	1990	N/A	N/A	7.54	N/A	Mechanical Shoe None	N/A
Unit 5b TK-AST-2	Tank	Additive	12,096 gal	Above	N/A White	TBD	N/A	N/A	7.47	N/A	N/A	N/A
Unit 5c TK-AST-3	Tank	Additive	4,064 gal	Above	N/A Tan	2013	N/A	N/A	6.56	N/A	N/A	N/A
Unit 5d TK-AST-4	Tank	Additive	4,064 gal	Above	N/A White	2013	N/A	N/A	7.29	N/A	N/A	N/A
Unit 5f TK-AST-8	Tank	Additive	6,016 gal	Above	N/A White	2021	N/A	N/A	7.28	N/A	N/A	N/A
Unit 5g TK-AST-9	Tank	Additive	264 gal	Above	N/A (Unpainted)	TBD	N/A	N/A	7.18	N/A	N/A	N/A
Unit 6a TK-29553	Tank	Diesel	703,845 gal	Above	N/A White	1955	N/A	N/A	0.0074	N/A	N/A	N/A
Unit 6b TK-30796	Tank	Diesel	705,021 gal	Above	N/A White	1955	N/A	N/A	0.0074	N/A	N/A	N/A

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

1. Basis for Loading/Offloading Rate (e.g., Manufacturer's Data, Field Observation/Test, etc.). **N/A**
Submit information for each unit as an attachment.
2. Basis for Control Method % Efficiency (e.g., Manufacturer's Data, Field Observation/Test, AP-42, etc.). **N/A**
Submit information for each unit as an attachment.

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Stack Parameters Table

If any equipment from the Regulated Emission Sources Table is also listed in this Stack Table, use the same numbered line for the emission unit on both tables to show the association between the Process Equipment and its stack.

Unit Number and Description		Pollutant (CO, NO _x , PM ₁₀ , etc.)	UTM Easting (m)	UTM Northing (m)	Stack Height (ft)	Stack Exit Temp. (°F)	Stack Velocity (fps)	Stack Flow Rate (acfm)	Stack Inside Diameter (ft)	Stack Type
Unit 11	Vapor Combustion Unit (Unit VCU)	NO _x , CO, SO ₂ , PM ₁₀ , PM _{2.5}	349722.1	3879384.7	13.33	800	11.83	23560	6.50	Vertical

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

Updated page Received September 30, 2026 *PP*

Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)

Stack Parameters Table

If any equipment from the Regulated Emission Sources Table is also listed in this Stack Table, use the same numbered line for the emission unit on both tables to show the association between the Process Equipment and its stack.

Unit Number and Description		Pollutant (CO, NOx, PM ₁₀ , etc.)	UTM Easting (m)	UTM Northing (m)	Stack Height (ft)	Stack Exit Temp. (°F)	Stack Velocity (fps)	Stack Flow Rate (acfm)	Stack Inside Diameter (ft)	Stack Type
Unit 11	Vapor Combustion Unit (Unit VCU)	NO _x , CO, SO ₂ , PM ₁₀ , PM _{2.5}	349722.1	3879384.7	13.33	800	55	1100	6.50	Vertical

NOTE: To add extra rows in Word, click anywhere in the last row. A plus (+) sign should appear on the bottom right corner of the row. Click the plus (+) sign to add a row. Repeat as needed.

**Application for Air Pollutant Sources in Bernalillo County
Source Registration (20.11.40 NMAC) and Construction Permits (20.11.41 NMAC)**

Certification

NOTICE REGARDING SCOPE OF A PERMIT: The Environmental Health Department's issuance of an air quality permit only authorizes the use of the specified equipment pursuant to the air quality control laws, regulations and conditions. Permits relate to air quality control only and are issued for the sole purpose of regulating the emission of air contaminants from said equipment. Air quality permits are not a general authorization for the location, construction and/or operation of a facility, nor does a permit authorize any particular land use or other form of land entitlement. It is the applicant's/permittee's responsibility to obtain all other necessary permits from the appropriate agencies, such as the City of Albuquerque Planning Department or Bernalillo County Department of Planning and Development Services, including but not limited to site plan approvals, building permits, fire department approvals and the like, as may be required by law for the location, construction and/or operation of a facility. For more information, please visit the City of Albuquerque Planning Department website at <https://www.cabq.gov/planning> and the Bernalillo County Department of Planning and Development Services website at <https://www.bernco.gov/planning>.

NOTICE REGARDING ACCURACY OF INFORMATION AND DATA SUBMITTED: Any misrepresentation of a material fact in this application and its attachments is cause for denial of a permit or revocation of part or all of the resulting registration or permit, and revocation of a permit for cause may limit the permittee's ability to obtain any subsequent air quality permit for ten (10) years. Any person who knowingly makes any false statement, representation, or certification in any application, record, report, plan or other document filed or required to be maintained under the Air Quality Control Act, NMSA 1978 §§ 74-2-1 to 74-2-17, is guilty of a misdemeanor and shall, upon conviction, be punished by a fine of not more than ten thousand dollars (\$10,000) per day per violation or by imprisonment for not more than twelve months, or by both.

I, the undersigned, hereby certify that I have knowledge of the information and data represented and submitted in this application and that the same is true and accurate, including the information and data in any and all attachments, including without limitation associated forms, materials, drawings, specifications, and other data. I also certify that the information represented gives a true and complete portrayal of the existing, modified existing, or planned new stationary source with respect to air pollution sources and control equipment. I understand that there may be significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. I also understand that the person who has applied for or has been issued an air quality permit by the Department is an obligatory party to a permit appeal filed pursuant to 20.11.81 NMAC. Further, I certify that I am qualified and authorized to file this application, to certify the truth and accuracy of the information herein, and bind the source. Moreover, I covenant and agree to comply with any requests by the Department for additional information necessary for the Department to evaluate or make a final decision regarding the application.

Signed this 9 day of September, 20 26

Angela Brown

Vice President

Print Name

Print Title

X
Signature

Role:



Owner



Operator



Other Authorized Representative



City of Albuquerque Environmental Health Department Air Quality Program



Permit Application Review Fee Checklist Instructions

All source registration and construction permit applications for stationary or portable sources shall be charged an application review fee according to the fee schedule in 20.11.2 NMAC. These filing fees are required for both new construction, reconstruction, and permit modification/revision applications. Most air quality notification (AQN) applications shall be charged an application review fee according to 20.11.39 NMAC. Qualified small businesses as defined in 20.11.2 NMAC may be eligible to pay one-half of the application review fees and 100% of all applicable federal program review fees.

Please fill out the permit application review fee checklist completely and submit with a check or money order payable to the "City of Albuquerque Fund 242" and:

1. Deliver it in person to the Albuquerque Environmental Health Department, 3rd Floor, Room 3023, Albuquerque-Bernalillo County Government Center, South Building, One Civic Plaza NW, Albuquerque, NM 87102; or
2. Mail it to Albuquerque Environmental Health Department, Air Quality Program, Permitting Division, P.O. Box 1293, Albuquerque, NM 87103; or
3. Online fee payments are now accepted as well. Application must be submitted first, then Department will provide invoice for online payment. Fill out form completely and mark check box below fee amount due on last page to request an invoice to pay the fee online.

The Department will provide a receipt of payment to the applicant. The person delivering or filing a submittal shall attach a copy of the receipt of payment to the submittal as proof of payment. Application review fees shall not be refunded without the written approval of the manager. If a refund is requested, a reasonable professional service fee to cover the costs of staff time involved in processing such requests shall be assessed. Please refer to 20.11.2 NMAC (effective January 10, 2011) for more detail concerning the "Fees" regulation as this checklist does not relieve the applicant from any applicable requirement of the regulation.

Special Instructions for Sections II and III

If your facility is applying for a new construction permit or modification subject to 20.11.41 NMAC, check either the review fee for stationary sources subject to 20.11.41 NMAC and not subject to proposed allowable emission rates **OR** check one of the review fees based on proposed allowable emission rates.

Then also check any additional Federal Program or Major Modification Review Fees that apply.

The Federal Program Review Fees apply to each subpart review that is triggered by this permitting action. Enter the number of subparts on the applicable line. For example, if you are installing a new boiler subject to 40 CFR 60, Subpart Dc, and a new emergency engine subject to 40 CFR 60, Subpart IIII, you would need to pay the 40 CFR 60 NSPS Federal Program Review Fee twice. The same would apply if units are being modified or replaced. However, if you are installing two emergency engines subject to 40 CFR 60, Subpart IIII, you would only pay the fee once because the fee is 'per subpart' not 'per unit'.

For modifications, the Federal Program fees only apply if a unit being modified is subject to federal regulations.



City of Albuquerque
Environmental Health Department
Air Quality Program



Permit Application Review Fee Checklist Effective January 1, 2026 – December 31, 2026

Please completely fill out the information in each section. Incompleteness of this checklist may result in the Albuquerque Environmental Health Department not accepting the application review fees. If you have any questions concerning this checklist, please call (505) 768-1972.

I. COMPANY INFORMATION:

Company Name	Western Refining Terminals, LLC		
Company Address	539 South Main St. ATTN: Terminals HESS, Findlay, OH 45840		
Facility Name	Albuquerque Products Terminal		
Facility Address	3209 Broadway SE, Albuquerque, NM 87105		
Contact Person	Margaret Garza		
Contact Person Phone Number	(480) 532-1434	Email	MGarza4@marathonpetroleum.com
Are these application review fees for an existing permitted source located within the City of Albuquerque or Bernalillo County?		Yes ☒	No ☐
If yes, what is the current permit/registration/AQN number for this facility?		Permit # 0456-M5-7TR	
Is this application review fee for a Qualified Small Business as defined in 20.11.2 NMAC? (See Definition of Qualified Small Business on Page 4)		Yes ☐	No ☒

II. STATIONARY SOURCE APPLICATION REVIEW FEES:

If the application is for a new stationary source facility, please check all that apply. If this application is for a modification to an existing permit please see Section III. For revisions or relocations please see Sections IV or V.

Check All That Apply	Stationary Sources	Review Fee	Program Element
Air Quality Notifications			
☐	AQN New Application	\$720	2801
☐	AQN Technical Amendment	\$393	2802
☐	AQN Transfer of a Prior Authorization	\$393	2803
☒	Not Applicable	See Sections Below	
Stationary Source Review Fees			
☐	Source Registration required by 20.11.40 NMAC	\$734	2401
☐	A stationary source that requires a permit pursuant to 20.11.41 NMAC or other board regulation and is not subject to the below proposed allowable emission rates	\$1,467	2301
	A stationary source that requires a permit pursuant to 20.11.41 NMAC and is subject to review fees based on the proposed allowable emission rate for the single highest fee pollutant	Check the appropriate tpy range below	
☐	Proposed Allowable Emission Rate equal to or greater than 1 tpy and less than 5 tpy	\$1,101	2302
☐	Proposed Allowable Emission Rate equal to or greater than 5 tpy and less than 25 tpy	\$2,201	2303
☐	Proposed Allowable Emission Rate equal to or greater than 25 tpy and less than 50 tpy	\$4,402	2304
☐	Proposed Allowable Emission Rate equal to or greater than 50 tpy and less than 75 tpy	\$6,603	2305
☐	Proposed Allowable Emission Rate equal to or greater than 75 tpy and less than 100 tpy	\$8,804	2306
☐	Proposed Allowable Emission Rate equal to or greater than 100 tpy	\$11,005	2307
☒	Not Applicable	See Sections Below	

Federal Program Review Fees for each subpart (In addition to the Stationary Source Application Review Fees above)				
☐	40 CFR 60 – “New Source Performance Standards” (NSPS)	x	\$1,467	2308
☐	40 CFR 61 – “National Emission Standards for Hazardous Air Pollutants” (NESHAPs)	x	\$1,467	2309
☐	40 CFR 63 – (NESHAPs) Promulgated Standards	x	\$1,467	2310
☐	20.11.64 – (NESHAPs) Case-by-Case MACT Review (Major HAP sources)	x	\$14,674	2311
☐	20.11.61 NMAC – Prevention of Significant Deterioration (PSD) Permit	x	\$7,337	2312
☐	20.11.60 NMAC – Non-Attainment Area Permit	x	\$7,337	2313
	Total Federal Program Review Fees		\$	
☒	Not Applicable		Not Applicable	

III. MODIFICATION TO EXISTING PERMIT APPLICATION REVIEW FEES:

If the application is for a modification to an existing permit, please check all that apply. If this application is for a new stationary source facility, please see Section II. For revisions or relocations please see Sections IV or V.

Check All That Apply	Modifications	Review Fee	Program Element	
Modification Application Review Fees				
☐	Proposed modification to an existing stationary source that requires a permit pursuant to 20.11.41 NMAC or other board regulation and is not subject to the below proposed allowable emission rates	\$1,467	2321	
	Proposed modification to an existing stationary source that requires a permit pursuant to 20.11.41 NMAC and is subject to review fees based on the proposed allowable emission rate for the single highest fee pollutant	Check the appropriate tpy range below		
☐	Proposed Allowable Emission Rate equal to or greater than 1 tpy and less than 5 tpy	\$1,101	2322	
☐	Proposed Allowable Emission Rate equal to or greater than 5 tpy and less than 25 tpy	\$2,201	2323	
☐	Proposed Allowable Emission Rate equal to or greater than 25 tpy and less than 50 tpy	\$4,402	2324	
☒	Proposed Allowable Emission Rate equal to or greater than 50 tpy and less than 75 tpy	\$6,603	2325	
☐	Proposed Allowable Emission Rate equal to or greater than 75 tpy and less than 100 tpy	\$8,804	2326	
☐	Proposed Allowable Emission Rate equal to or greater than 100 tpy	\$11,005	2327	
☐	Not Applicable	See Sections Below		
Major Modifications Review Fees (In addition to the Modification Application Review Fees above)				
☐	20.11.60 NMAC – Permitting in Non-Attainment Areas	\$7,337	2333	
☐	20.11.61 NMAC – Prevention of Significant Deterioration	\$7,337	2334	
☒	Not Applicable	Not Applicable		
Federal Program Review Fees for each subpart (This section applies only if a Federal Program Review is triggered by the proposed modification) (These fees are in addition to the Modification and Major Modification Application Review Fees above)				
☐	40 CFR 60 – “New Source Performance Standards” (NSPS)	x	\$1,467	2328
☐	40 CFR 61 – “National Emission Standards for Hazardous Air Pollutants” (NESHAPs)	x	\$1,467	2329
☐	40 CFR 63 – (NESHAPs) Promulgated Standards	x	\$1,467	2330
☐	20.11.64 – (NESHAPs) Case-by-Case MACT Review (Major HAP sources)	x	\$14,674	2331
☐	20.11.61 NMAC – Prevention of Significant Deterioration (PSD) Permit	x	\$7,337	2332
☐	20.11.60 NMAC – Non-Attainment Area Permit	x	\$7,337	2333
	Total Federal Program Review Fees		\$	
☒	Not Applicable		Not Applicable	

IV. ADMINISTRATIVE AND TECHNICAL REVISION APPLICATION REVIEW FEES:

If the application is for an administrative or technical revision of an existing registration or permit issued pursuant to 20.11.40 or 20.11.41 NMAC, please check one that applies. For revisions to registrations, check Administrative Revisions.

Check One	Revision Type	Review Fee	Program Element
☐	Administrative Revisions	\$250	2340
☐	Technical Revisions	\$500	2341
☒	Not Applicable	See Sections II, III or V	

V. PORTABLE STATIONARY SOURCE RELOCATION FEES:

If the application is for a portable stationary source relocation of an existing permit, please check one that applies.

Check One	Portable Stationary Source Relocation Type	Review Fee	Program Element
☐	No New Air Dispersion Modeling Required	\$500	2501
☐	New Air Dispersion Modeling Required	\$750	2502
☒	Not Applicable	See Sections II, III or IV	

VI. Please submit payment in the amount shown for the total application review fee.

Section Totals	Review Fee Amount
Section II Total	\$0
Section III Total	\$6,603
Section IV Total	\$0
Section V Total	\$0
Total Application Review Fee	\$6,603

☐ Check here if an invoice is requested so Application Review Fee can be paid online.

I, the undersigned, a responsible officer of the applicant company, certify that to the best of my knowledge, the information stated on this checklist gives a true and complete representation of the permit application review fees which are being submitted. I also understand that an incorrect submittal of permit application reviews may cause an incompleteness determination of the submitted permit application and that the balance of the appropriate permit application review fees shall be paid in full prior to further processing of the application.

Signed this 9 day of September, 20 26

Angela Brown

Vice President

Print Name

Print Title

X Angela Brown
Signature

Definition of Qualified Small Business as defined in 20.11.2 NMAC:

"Qualified small business" means a business that meets all of the following requirements:

- (1) a business that has 100 or fewer employees;
- (2) a small business concern as defined by the federal Small Business Act;
- (3) a source that emits less than 50 tons per year of any individual regulated air pollutant, or less than 75 tons per year of all regulated air pollutants combined; and
- (4) a source that is not a major source or major stationary source.

Note: Beginning January 1, 2011, and every January 1 thereafter, an increase based on the consumer price index shall be added to the application review fees. The application review fees established in Subsection A through D of 20.11.2.18 NMAC shall be adjusted by an amount equal to the increase in the consumer price index for the immediately-preceding year. Application review fee adjustments equal to or greater than fifty cents (\$0.50) shall be rounded up to the next highest whole dollar. Application review fee adjustments totaling less than fifty cents (\$0.50) shall be rounded down to the next lowest whole dollar. The department shall post the application review fees on the city of Albuquerque environmental health department air quality program website.



City of Albuquerque Environmental Health Department Air Quality Program



Construction Permit (20.11.41 NMAC) Application Checklist

This checklist must be returned with the application

Any person seeking a new air quality permit, a permit modification, or an emergency permit under 20.11.41 NMAC (Construction Permits) shall do so by filing a written application with the Albuquerque-Bernalillo County Joint Air Quality Program, which administers and enforces local air quality laws for the City of Albuquerque (“City”) and Bernalillo County (“County”), on behalf of the City Environmental Health Department (“Department”).

The Department will rule an application administratively incomplete if it is missing or has incorrect information. The Department may require additional information that is necessary to make a thorough review of an application, including but not limited to technical clarifications, emission calculations, emission factor usage, additional application review fees if any are required by 20.11.2 NMAC, and new or additional air dispersion modeling.

If the Department has ruled an application administratively incomplete three (3) times, the Department will deny the permit application. Any fees submitted for processing an application that has been denied will not be refunded. If the Department denies an application, a person may submit a new application and the fee required for a new application. The applicant has the burden of demonstrating that a permit should be issued.

The following are the minimum elements that shall be included in the permit application before the Department can determine whether an application is administratively complete and ready for technical review. It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.

At all times before the Department has made a final decision regarding the application, an applicant has a duty to promptly supplement and correct information the applicant has submitted in an application to the Department. The applicant’s duty to supplement and correct the application includes but is not limited to relevant information acquired after the applicant has submitted the application and additional information the applicant otherwise determines is relevant to the application and the Department’s review and decision. While the Department is processing an application, regardless of whether the Department has determined the application is administratively complete, if the Department determines that additional information is necessary to evaluate or make a final decision regarding the application, the Department may request additional information and the applicant shall provide the requested additional information.

NOTICE REGARDING PERMIT APPEALS: A person who has applied for or has been issued an air quality permit by the Department shall be an obligatory party to a permit appeal filed pursuant to 20.11.81 NMAC.

NOTICE REGARDING SCOPE OF A PERMIT: The Department’s issuance of an air quality permit only authorizes the use of the specified equipment pursuant to the air quality control laws, regulations and conditions. Permits relate to air quality control only and are issued for the sole purpose of regulating the emission of air contaminants from said equipment. Air quality permits are not a general authorization for the location, construction and/or operation of a facility, nor does a permit authorize any particular land use or other form of land entitlement. It is the applicant’s/permittee’s responsibility to obtain all other necessary permits from the appropriate agencies, such as the City Planning Department or County Department of Planning and Development Services, including but not limited to site plan approvals, building permits, fire department approvals and the like, as may be required by law for the location, construction and/or operation of a facility. For more information, please visit the City Planning Department website at <https://www.cabq.gov/planning> and the County Department of Planning and Development Services website at <https://www.bernco.gov/planning>.

The Applicant shall:

20.11.41.13(A) NMAC – Pre-Application Requirements:

Item	Completed	N/A ¹	Waived ²
(1) Request a pre-application meeting with the Department using the pre-application meeting request form. Include a copy of the request form submitted to the Department.	☒	☐	☐
(2) Attend the pre-application meeting. Date of pre-application meeting: 2/26/2024	☒	☐	☐
Pre-application meeting agenda and public notice sign checklists included with application?	☒	☐	☐

1. Not Applicable
2. It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.

20.11.41.13(B) NMAC – Applicant’s Public Notice Requirements:

Item	Included in Application	N/A ¹	Waived ²
(1) Provide public notice in accordance with the regulation, including by certified mail or electronic mail to the designated representative(s) of the recognized neighborhood associations and recognized coalitions that are within one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located. The public notice shall include all information required by Subsection C of 20.11.41.13 NMAC. One mile radius required by 20.11.72.9 NMAC.	☒	☐	☐
• Contact list of representative(s) of recognized neighborhood associations and recognized coalitions cannot be more than three months old from the application submittal date. • Include memo with contact list provided by Department in application submittal.	☒	☐	☐
• Provide notice using the Notice of Intent to Construct form and Applicant Notice Cover Letter.	☒	☐	☐
(2) In accordance with the regulation, post and maintain a weather-proof sign provided by the Department in a visible location. The applicant shall keep the sign posted until the Department takes final action on the permit application. Include pictures in application showing location of sign and close-up showing information on sign.	☒	☐	☐
Documentary proof of all public notice requirements listed above and required by 20.11.41.13(E)(15) included with application?	☒	☐	☐

1. Not Applicable; For emergency permits, the public notice requirements in 20.11.41.24 NMAC shall apply instead.
2. It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.

20.11.41.13(D) NMAC

Item	Included in Application
A person who is seeking a construction permit pursuant to 20.11.41 NMAC shall complete a permit application and file one complete original and one duplicate copy with the Department. If the original is printed double sided, then it must be printed head-to-toe (flip on the short edge).	☒
• A high-quality electronic duplicate copy is required by the Department to speed up review and allow for the Department public notice to be posted online. The electronic copy must be an exact duplicate of the hardcopy original, including pages with signatures such as the application certification page. Note: Do not include financial information, such as a copy of a check, in the electronic PDF.	☒
The electronic submittal on thumb drive, unless alternate method is allowed by the Department, must also include modeling files, if applicable, and emission calculations file(s) in Microsoft Excel-compatible format.	☒

The Permit Application shall include:

20.11.41.13(E) NMAC – Application Contents

Item	Included in Application	N/A ¹	Waived ²
(1) A complete permit application on the most recent form provided by the Department.	☒	☐	☐
(2) The application form includes:			
a. The applicant's name, street and post office address, and contact information;	☒	☐	☐
b. The facility owner/ operator's name, street address and mailing address, if different from the applicant;	☒	☐	☐
c. The consultant's name and contact information, if applicable;	☒	☐	☐
d. All information requested on the application form is included (i.e., the form is complete).	☒	☐	☐
(3) The date the application was submitted to the Department.	☒	☐	☐
(4) Sufficient attachments for the following:			
a. Ambient impact analysis using an atmospheric dispersion model approved by the U.S. Environmental Protection Agency, and the Department to demonstrate compliance with the applicable National Ambient Air Quality Standards (NAAQS). See 20.11.1 NMAC. If you are modifying an existing source, the modeling must include the emissions of the entire source to demonstrate the impact the new or modified source(s) will have on existing plant emissions.	☒	☐	☐
b. The air dispersion model has been executed pursuant to a protocol that was approved in advance by the Department.	☒	☐	☐
c. Air dispersion modeling approved (or 2 nd denied) protocol date: 9/4/2024	☒	☐	☐
d. Basis or source for each emission rate (including manufacturer's specification sheets, EPA Tier Certification for engines, AP-42 section sheets, test data, or corresponding supporting documentation for any other source used).	☒	☐	☐
e. All calculations used to estimate potential emission rates and controlled/proposed emissions.	☒	☐	☐
f. Basis for the estimated control efficiencies and sufficient engineering data for verification of the control equipment operation, including if necessary, design, drawing, test report and factors which affect the normal operation.	☒	☐	☐
g. Fuel data for each existing and/or proposed piece of fuel burning equipment.	☒	☐	☐
h. Anticipated maximum production capacity of the entire facility and the requested production capacity after construction and/or modification.	☒	☐	☐
i. Stack and exhaust gas parameters for all existing and proposed emission stacks.	☒	☐	☐
(5) An operational and maintenance strategy detailing:	☒	☐	☐
a. the steps the applicant will take if a malfunction occurs that may cause emission of a regulated air contaminant to exceed a limit that is included in the permit;	☒	☐	☐
b. the nature of emissions during routine startup or shutdown of the source and the source's air pollution control equipment; and	☒	☐	☐
c. the steps the applicant will take to minimize emissions during routine startup or shutdown.	☒	☐	☐
(6) A map, such as a 7.5' topographic quadrangle map published by the U.S. Geological Survey or a map of equivalent or greater scale, detail and precision, including a City or County zone atlas map that shows the proposed location of the source. Show proposed/ existing process equipment locations on aerial photograph requested in item 7.	☒	☐	☐

Item	Included in Application	N/A ¹	Waived ²
(7) An aerial photograph showing the proposed location of each process equipment unit involved in the proposed construction, modification, relocation or technical revision of the source except for federal agencies or departments involved in national defense or national security as confirmed and agreed to by the Department in writing.	☒	☐	☐
(8) A complete description of all sources of regulated air contaminants and	☒	☐	☐
a. a process flow diagram depicting the process equipment unit or units at the facility, both existing and proposed, that are proposed to be involved in routine operations and from which regulated air contaminant emissions are expected to be emitted. Include fugitive emission points as well.	☒	☐	☐
(9) A full description of air pollution control equipment, including all calculations and the basis for all control efficiencies presented, manufacturer's specifications sheets, and site layout and assembly drawings; UTM (universal transverse mercator) coordinates shall be used to identify the location of each emission unit.	☒	☐	☐
(10) A description of the equipment or methods proposed by the applicant to be used for emission measurement.	☒	☐	☐
(11) The maximum and normal operating time schedules of the source after completion of construction or modification, as applicable.	☒	☐	☐
(12) Any other relevant information as the Department may reasonably require, including without limitation:	☒	☐	☐
a. Provide an applicability determination for all potentially applicable federal regulations.	☒	☐	☐
b. Applicants shall provide the Zoning Requirement Cover Letter Form, along with documentary proof that the proposed air quality permitted use of the facility's subject property is allowed by the zoning designation of the City or County zoning laws, as applicable. Sufficient documentation includes: (i) a zoning certification from the City Planning Department or County Department of Planning and Development Services, as applicable, if the property is subject to City or County zoning jurisdiction; or (ii) a zoning verification from both planning departments if the property is not subject to City or County zoning jurisdiction. ³ A zone atlas map shall not be sufficient.	☒	☐	☐
c. Compliance History Disclosure Form ⁴	☒	☐	☐
d. BACT Analysis, if applicable, for new permit or permit modification applications.	☒	☐	☐
(13) The signature of the applicant, operator, owner or an authorized representative, certifying to the accuracy of all information as represented in the application and attachments, if any.	☒	☐	☐
(14) A check or money order for the appropriate application fee or fees required by 20.11.2 NMAC, Fees. (Online fee payments are now accepted as well. Application must be submitted first, then Department will provide invoice for online payment. Check box on Application Review Fee Checklist form to request invoice.)	☒	☐	☐

1. Not Applicable

2. It is not necessary to include an element if the Department has issued a written waiver regarding the element and the waiver accompanies the application. However, the Department shall not waive any federal requirements.

3. Applicants are not required to submit documentation for the subject property's zoning designation when applying for a relocation of a portable stationary source, or a technical or administrative revision to an existing permit.

4. Required for applications filed pursuant to the following regulations: Construction Permits (20.11.41 NMAC); Operating Permits (20.11.42 NMAC); Nonattainment Areas (20.11.60 NMAC); Prevention of Significant Deterioration (20.11.61 NMAC); and Acid Rain (20.11.62 NMAC); except this Form shall not be required for asbestos notifications under 20.11.20.22 NMAC, and this Form shall only be required for administrative permit revision (20.11.41.28(A) NMAC) and administrative permit amendments (20.11.42.12(E)(1) NMAC) when the action requested is a transfer of ownership. Air Quality Program staff can answer basic questions about the Compliance History Disclosure Form but will not provide specific advice about which boxes to check or whether information must be disclosed. The decision about how to answer a question and whether there is information to disclose is the responsibility of applicants/permittees.



City of Albuquerque

Environmental Health Department

Air Quality Program



Air Quality Compliance History Disclosure Form

The Albuquerque-Bernalillo County Joint Air Quality Program (“Program”) administers and enforces local air quality laws for the City of Albuquerque (“City”) and Bernalillo County (“County”) on behalf of the City Environmental Health Department, including the New Mexico Air Quality Control Act (“AQCA”), NMSA 1978, Sections 74-2-1 to -17. In accordance with Sections 74-2-7(P) and (S) of the AQCA, the Program may deny any permit application or revoke any permit issued pursuant to the AQCA if, within ten years immediately preceding the date of submission of the permit application, the applicant or permittee meets any one of the criteria outlined in the AQCA. The Program requires applicants to file this Compliance History Disclosure Form in order for the Program to deem an air permit application administratively complete, or issue an air permit for those permits without an initial administrative completeness determination process. Additionally, an existing permit holder (permits issued prior to the Effective Date of this Form) shall provide this Compliance History Disclosure Form to the Program upon the Program’s request. Note: Program Staff can answer basic questions about this Compliance History Disclosure Form but cannot provide specific guidance or legal advice.

Instructions

1. Applications filed pursuant to the following regulations shall include this Compliance History Disclosure Form, in accordance with Section 74-2-7(S) of the AQCA: *Construction Permits* (20.11.41 NMAC); *Operating Permits* (20.11.42 NMAC); *Nonattainment Areas* (20.11.60 NMAC); *Prevention of Significant Deterioration* (20.11.61 NMAC); *Acid Rain* (20.11.62 NMAC); and *Fugitive Dust* (20.11.20 NMAC) except this Form shall not be required for asbestos notifications under 20.11.20.22 NMAC.
2. This Compliance History Disclosure Form is not site specific: responses shall be based on the applicant/permittee as an entity and not be limited to the application, site, facility or source.
3. The permittee identified on this Compliance History Disclosure Form shall match the permittee in the existing permit or new application. If the information in an existing permit needs to be changed, please contact the Program about revisions and ownership transfers.
4. Answer every question completely and truthfully, and do not leave any blank spaces. If there is nothing to disclose in answer to a particular question, check the box labeled “No” except for Question 5b. Failure to provide any of the information requested in this Compliance History Disclosure Form may constitute grounds for an incompleteness determination, application denial, or permit revocation.
5. Be especially careful not to leave out information in a way that might create an impression that you are trying to hide it. Omitting information, even unintentionally, may result in application denial or permit revocation.
6. For any required explanations, be sure to identify the question to which the explanation is responsive. If you submit any document in connection with your answer to any question, refer to it as, “Exhibit No. ___”, and attach it after the explanation(s) at the end of the Compliance History Disclosure Form, consecutively numbering each additional page at the top right corner.
7. The Program may require additional information to make a thorough review of an application. At all times before the Program has made a final decision regarding the application, an applicant has a duty to promptly supplement and correct information the applicant has submitted in an application to the Program. The applicant’s duty to supplement and correct the application includes, but is not limited to, relevant information acquired after the applicant has submitted the application and additional information the applicant otherwise determines is relevant to the application and the Program’s review and decision. While the Program is processing an application, regardless of whether the Program has determined the application is administratively complete, if the Program determines that additional information is necessary to evaluate or make a final decision regarding the application, the Program may request additional information and the applicant shall provide the requested additional information.
8. Supplementary information required by the Program may include responses to public comment received by the Program during the application review process.
9. Any fees submitted for processing an application that has been denied will not be refunded. If the Program denies an application, a person may submit a new application and the fee required for a new application. The applicant has the burden of demonstrating that a permit should be issued.

COMPLIANCE HISTORY		
A. Applicant/Permittee Name: Western Refining Terminal, LLC - APT		Check Applicable Box: ☒ Applicant ☐ Permittee
B. Time Period of Compliance Reporting (10 Years):		<u>September 3, 2016</u> to <u>September 3, 2026</u>
<i>Instructions: For applicants, answer the following questions with information from within the 10 years preceding the current application. For existing permit holders requested to submit this form by the Program outside of an application, answer the following questions with information from within the 10 years preceding the Program's issuance of each permit.</i>		
C. Questions		
1	Knowingly misrepresented a material fact in an application for a permit?	☐ Yes ☒ No
2	Refused to disclose information required by the provisions of the New Mexico Air Quality Control Act?	☐ Yes ☒ No
3	Been convicted in any court of any state or the United States of a felony related to environmental crime?	☐ Yes ☒ No
4	Been convicted in any court of any state or the United States of a crime defined by state or federal statute as involving or being in restraint of trade, price fixing, bribery, or fraud?	☐ Yes ☒ No
5a	Constructed or operated any facility for which a permit was sought, including the current application, without the required air quality permit(s) under 20.11.41 NMAC, 20.11.42 NMAC, 20.11.60 NMAC, 20.11.61 NMAC, or 20.11.62 NMAC?	☐ Yes ☒ No
5b	If "No" to question 5a, mark N/A and go to question 6. If "Yes" to question 5a, state whether each facility that was constructed or operated without the required air quality permit met at least one of the following exceptions: i. The unpermitted facility was discovered after acquisition during a timely environmental audit that was authorized by the Program or the New Mexico Environment Department; or ii. The operator of the facility, using good engineering practices and established approved calculation methodologies, estimated that the facility's emissions would not require an air permit, and the operator applied for an air permit within 30 calendar days of discovering that an air permit was required for the facility.	☐ Yes ☐ No ☒ N/A
6	Had any permit revoked or permanently suspended for cause under the environmental laws of any state or the United States?	☐ Yes ☒ No
7	For each "yes" answer, or "no" to 5b, please attach an explanation and supporting documentation.	

I, the undersigned, hereby certify under penalty of law that this Compliance History Disclosure Form (Form) and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. I have knowledge of the information in this Form and it is, to the best of my knowledge and belief, true, accurate, and complete. I understand that there are significant penalties for submitting false information, including denial of the application or revocation of a permit, as well as fines and imprisonment for knowing violations. If I filed an application, I covenant and agree to promptly supplement and correct information in this Form until the Program makes a final decision regarding the application. Further, I certify that I am qualified and authorized to file this Form, to certify to the truth and accuracy of the information herein, and bind the permittee and source.

Signed this 9 day of September, 20 26

Angela Brown

Vice President

Print Name

Print Title

X Angela Brown
Signature

Western Refining Terminals, LLC
Company Name

APPENDIX B. PRE-APPLICATION MEETING

The following pages contain:

- ▶ Pre-Permit Meeting Request Form (Updated November 2023)
- ▶ Pre-Permit Meeting Agenda & Public Notice Sign Checklists (Updated November 2023)

The above-mentioned forms are not the latest version of the forms on the CABQ EHD's website. Please note that the pre-application meeting for this project was held on February 26, 2024 and the latest version of these forms were filled out at that time.



**City of Albuquerque
Environmental Health Department
Air Quality Program**



Pre-Permit Application Meeting Request Form

Please complete appropriate boxes and email to aqd@cabq.gov or mail to:

Environmental Health Department
Air Quality Program
Permitting Division
P.O. Box 1293
Albuquerque, NM 87103

A copy of this form must be included as part of the application package.

Company/Organization:	Western Refining Terminals, LLC
Current Permit #:	0456-M5-6TR
Point of Contact: (phone number and email): Preferred form of contact (check one): ☐ Phone ☒ E-mail	Name: Margaret A. Garza Phone: (602) 286-1517 Email: MGarza4@marathonpetroleum.com Name: Adam Erenstein Phone: (505)266-6611 Email: AErenstein@trinityconsultants.com
Preferred meeting date/times:	Week of February 26, 2024
Preferred meeting type (Zoom/In Person):	In Person
Description of Project:	Western Refining is proposing a Significant Revision to the Albuquerque Products Terminal which is authorized under ATC 0456-M5-6TR. 1. A temporary vapor combustion unit (VCU) was installed at the facility to operate during the vapor recovery unit (VRU) downtimes. This was approved by EHD AQP on January 11, 2023. As per this approval, the VCU will now be included with this air permit modification. Since the VCU has combustion emissions, an air dispersion modeling analysis will need to be conducted. 2. Load rack optimization 3. Increase permitted volume of red dye injection 4. Add secondary shutoff valves (SSV) to every arm 5. Add an additional gasoline (83) to the ethanol arm to either lane with reverse loading capability 6. Tank optimization 7. Add one new tank in retention pond area



City of Albuquerque Environmental Health Department Air Quality Program



Construction Permit (20.11.41 NMAC) Pre-Permit Application Meeting Agenda Checklist & Public Notice Sign Guidelines Checklist

This entire document, including both completed checklists, must be included as part of the application package.

Any person seeking a new permit, a permit modification, or an emergency permit under 20.11.41 NMAC (Construction Permits) shall do so by filing a written application with the Albuquerque-Bernalillo County Joint Air Quality Program, which administers and enforces local air quality laws for the City of Albuquerque ("City") and Bernalillo County ("County"), on behalf of the City Environmental Health Department ("Department").

Prior to submitting an application, per 20.11.41.13(A) NMAC, the applicant (or their consultant) shall contact the Department in writing and submit a Pre-Permit Application Meeting Request Form to request a pre-application meeting. The Pre-Permit Application Meeting Request Form is available at <https://www.cabq.gov/airquality/air-quality-permits/air-quality-application-forms>. The purpose of the pre-application meeting is for the Department to provide the applicant with information regarding the contents of the application and the application process.

This pre-application meeting agenda checklist is provided to aid the Department and applicant in ensuring that in the pre-permit application meeting all information regarding the contents of the application and the application process are communicated to the applicant. This is because applications that are ruled incomplete because of missing information will delay any determination or the issuance of the permit. The Department reserves the right to request additional relevant information prior to ruling the application complete in accordance with 20.11.41 NMAC.

Also included in this document is the Public Notice Sign Guidelines Checklist, which contains requirements for how the applicant must display the required weather-proof sign.

The applicant should fill out and have this agenda checklist available at the pre-application meeting to be sure all items are covered. Check the boxes to acknowledge that each item from the agenda was discussed and that requirements for the weather-proof sign were followed.

Pre-Permit Application Meeting Agenda Checklist

Applicant Company Name: **Western Refining Terminals, LLC**

Facility Name: **Albuquerque Products Terminal**

☒ Fill out and submit a Pre-Permit Application Meeting Request form
Available online at <https://www.cabq.gov/airquality/air-quality-permits/air-quality-application-forms/air-quality-application-forms>

- I. ☒ Discuss Project:
 - a. Facility Location
 - b. Facility Description
 - c. Main Processes
 - d. Equipment
 - e. Proposed Schedule
- II. ☒ Discuss the requirement for a zoning certification or verifications for new permits and permit modifications. The Zoning Requirement Cover Page form is a required component of this part of the submittal:
 - a. For projects on property subject to City or County zoning laws (*i.e.*, **not** located on federal land, **not** located on State of New Mexico land, **not** located on Tribal land), a zoning certification from the appropriate planning department is required.
 - i. City Planning Form: <https://www.cabq.gov/planning/code-enforcement-zoning>
 - ii. County Planning Form: <https://www.bernco.gov/planning/planning-and-land-use/applications-forms/>
 - b. If the project's property is not subject to City or County zoning jurisdiction, a zoning verification from both planning departments is required.
 - i. City Planning Form: <https://www.cabq.gov/planning/code-enforcement-zoning>
 - ii. County Planning Form: <https://www.bernco.gov/planning/planning-and-land-use/applications-forms/>
 - c. The zoning certification or verifications **must** be obtained from the appropriate Planning Department, either City of Albuquerque or Bernalillo County. For more information, please visit the City's Planning Department website at <https://www.cabq.gov/planning> or Bernalillo County's Planning Department website at the <https://www.bernco.gov/planning/>.
- III. ☒ Discuss the requirement for a Compliance History Disclosure Form as of Nov. 6, 2023 for permit application submittals except for Administrative Revisions that are not transfers of ownership.
- IV. ☒ If permit modification or revision, review current permit:
 - a. Review Process Equipment Table and Emissions Table and discuss changes
 - b. Request information about the replacement or new equipment (for example, if it is an engine, we need to know if it is new, what year, fuel type, etc...) to give them an idea of the changes that will be needed
 - c. Discuss possible changes in permit conditions
- V. ☒ Air Dispersion modeling process, procedures and options:
 - a. When modeling is required and possibility of waivers
 - b. Protocol process, purpose, and time frame
 - c. Preliminary review, purpose, and time frame
 - d. Full review and time frame
 - e. Peer reviews
 - f. Assumptions in the modeling become permit conditions
 - g. NED data should be used instead of DEM data for assigning elevations to receptors, sources, buildings, etc.

- VI. ☒ Applicant's public notice requirements
- During the same month application package will be submitted, ask Department for memo of neighborhood associations/coalitions within ½ mile of facility
 - Fill out and send Notice of Intent to Construct form as attachment, with Applicant Notice Cover Letter as email body, to neighborhood associations/coalitions listed in memo:
<https://www.cabq.gov/airquality/air-quality-permits/air-quality-application-forms>
 - Post and maintain a weather-proof sign. Signs are available in the downtown Program office. The Public Notice Sign Guidelines Checklist can be found on the next page of this document.
- VII. ☒ Regulatory timelines
- 30 days to rule application complete
 - 90 days after ruled complete for permitting decision
 - 30-day public comment period after application deemed complete
 - If public interest in application:
 - 30-day review of technical analysis
 - 90-day extension for permitting decision
 - Request for Public Information Hearing - 90-day extension for permitting decision
 - Complex technical issues in application - 90-day extension for permitting decision
 - If application ruled incomplete it stops timeline and restarts at beginning with updated submittal
- VIII. ☒ Department Policies
- One original hard copy must be submitted along with a duplicate copy. The duplicate copy should be a high-quality electronic duplicate submitted on thumb drive as one complete PDF with all application contents found in the hardcopy, including pages with signatures. However, do not include financial information, such as a copy of a check, in the electronic PDF. The electronic submittal should also include emission calculations Excel-compatible file(s) and modeling files, if applicable.
 - Applications will be ruled incomplete if any parts from Permit Application Checklist are missing
 - Review fees paid in full are part of the application package (Except as noted above)
 - Discuss payment format (by check, credit card or online)
 - Use the most recent Permit Application Checklist, found under Part 41 Implementation on this page:
<https://www.cabq.gov/airquality/air-quality-permits/air-quality-application-forms>
 - After three tries, permit application denied and application must start over including repayment of fees
- IX. ☒ Additional Questions?
- Due to short staffing, what is the average time for permit applications?**
If it's in good standing, then it will be issued quickly.



**City of Albuquerque
Environmental Health Department
Air Quality Program**



Public Notice Sign Guidelines

Any person seeking a permit under 20.11.41 NMAC, Construction Permits, shall do so by filing a written application with the Department. *Prior to submitting an application, the applicant shall post and maintain a weather-proof sign provided by the department. The applicant shall keep the sign posted until the department takes final action on the permit application; if an applicant can establish to the department's satisfaction that the applicant is prohibited by law from posting, at either location required, the department may waive the posting requirement and may impose different notification requirements. A copy of this form must be submitted with your application.*

Applications that are ruled incomplete because of missing information will delay any determination or the issuance of the permit. The Department reserves the right to request additional relevant information prior to ruling the application complete in accordance with 20.11.41 NMAC.

Applicant Company Name: **Western Refining Terminals, LLC**

Facility Name: **Albuquerque Products Terminal**

- ☒ The sign must be posted at the more visible of either the proposed or existing facility entrance (or, if approved in advance and in writing by the department, at another location on the property that is accessible to the public)
- ☒ The sign shall be installed and maintained in a condition such that members of the public can easily view, access, and read the sign at all times.
- ☒ The lower edge of the sign board should be mounted a minimum of 2 feet above the existing ground surface to facilitate ease of viewing
- ☒ Include at least two pictures of the completed, properly posted sign in the application package immediately following this document. One picture should show the location of the posted sign and the other should be close enough to the sign for the posted information to be legible in the picture.
- ☐ **Check here if the department has waived the sign posting requirement.**
Alternative public notice details:

APPENDIX C. NOTICE OF INTENT TO CONSTRUCT

The following pages contain:

- ▶ Notice of Intent (NOI) to Construct Form (Updated May 2026)
- ▶ Applicant Notice Cover Letter (Updated may 2026)
- ▶ Email and Certified Mail Documentation of NOI Sent to Neighborhood Associations and Coalitions
- ▶ Pictures of Posted Public Notice Sign

NOTICE FROM THE APPLICANT

Notice of Intent to Apply for Air Quality Construction Permit

You are receiving this notice because the New Mexico Air Quality Control Act (20.11.41.13 (B) and 20.11.72.9 NMAC) requires any owner/operator proposing to construct or modify a facility subject to air quality regulations to provide public notice by certified mail or electronic mail to designated representatives of recognized neighborhood associations and coalitions within 1 mile of the property on which the source is or is proposed to be located.

This notice indicates that the owner/operator intends to apply for an Air Quality Construction Permit from the Albuquerque – Bernalillo County Air Quality Program. Currently, no application for this proposed project has been submitted to the Air Quality Program. Applicants are required to include a copy of this form and documentation of mailed notices with their Air Quality Construction Permit Application.

Proposed Project Information

Applicant's name and address:

Nombre y domicilio del solicitante:

Albuquerque Products Terminal

Owner / operator's name and address:

Nombre y domicilio del propietario u operador:

Western Refining Terminals, LLC; 539 South Main Street; ATTN: Terminals HESS; Findlay, OH 45840

Contact for comments and inquires:

Datos actuales para comentarios y preguntas:

Name (*Nombre*): Margaret Garza

Address (*Domicilio*): 1250 W. Washington St., Suite 401, Tempe, AZ 85288

Phone Number (*Número Telefónico*): (480) 532-1434

E-mail Address (*Correo Electrónico*): MGarza4@marathonpetroleum.com

Actual or estimated date the application will be submitted to the department:

Fecha actual o estimada en que se entregará la solicitud al departamento:

July 10, 2026

Description of the source:

Descripción de la fuente:

Bulk Petroleum Products Terminal

Exact location of the source or proposed source:

Ubicación exacta de la fuente o fuente propuesta:

3209 Broadway Blvd SE, Albuquerque, NM 87105

Nature of business:

Tipo de negocio:

Products terminal for storage and transfer of unleaded gasoline, butane, ethanol, diesel fuel and fuel additives.

Process or change for which the permit is requested:

Proceso o cambio para el cuál de solicita el permiso:

The addition of a vapor combustion unit, loading rack and tank optimizations, and SSM modifications.

Maximum operating schedule:

Horario máximo de operaciones:

24 hours a day, 7 days a week, 52 weeks per year, 8760 hours per year.

Normal operating schedule:

Horario normal de operaciones:

24 hours a day, 7 days a week, 52 weeks per year, 8760 hours per year.

Preliminary estimate of the maximum quantities of each regulated air contaminant the source will emit:

Estimación preliminar de las cantidades máximas de cada contaminante de aire regulado que la fuente va a emitir:

Air Contaminant <i>Contaminante de aire</i>	Proposed Construction Permit <i>Permiso de Construcción Propuesto</i>		Net Changes (for permit modification or technical revision) <i>Cambio Neto de Emisiones (para modificación de permiso o revisión técnica)</i>	
	pounds per hour <i>libras por hora</i>	tons per year <i>toneladas por año</i>	pounds per hour <i>libras por hora</i>	tons per year <i>toneladas por año</i>
NO_x	1.33	0.72	+1.33	+0.72
CO	1.11	0.60	+1.11	+0.60
VOC	59.44	71.02	-26.89	+13.77
SO₂	0.00057	0.00031	+0.00057	+0.00031
PM₁₀	0.10	0.054	+0.10	+0.054
PM_{2.5}	0.10	0.054	+0.10	+0.054
HAP	17.51	8.13	-14.80	+0.41

NOTE: To add extra rows for H₂S or Pb in Word, click in a box in the last row. Click the plus (+) sign that appears on the right of the row to add a row.

Questions or comments regarding this Notice of Intent should be directed to the Applicant. Contact information is provided with the Proposed Project Information on the first page of this notice. To check the status of an Air Quality Construction Permit application, call 311 and provide the Applicant's information, or visit <https://www.cabq.gov/airquality/air-quality-permits>.

The Air Quality Program will issue a Public Notice announcing a 30-day public comment period on the permit application for the proposed project when the application is deemed complete. The Air Quality Program does not process or issue notices on applications that are deemed incomplete. More information about the air quality permitting process is attached to this notice.

Air Quality Construction Permitting Overview

This is the typical process to obtain an Air Quality Construction Permit for Synthetic Minor and Minor sources of air pollution from the Albuquerque – Bernalillo County Air Quality Program.

Step 1: Pre-Application Meeting: The Applicant and their consultant must request a meeting with the Air Quality Program to discuss the proposed action. If air dispersion modeling is required, Air Quality Program staff discuss the modeling protocol with the Applicant to ensure that all proposed emissions are considered.

Notice of Intent from the Applicant: Before submitting their application, the Applicant is required to notify all nearby neighborhood associations that they intend to apply for an air quality permit or modify an existing permit. The Applicant is also required to post a notice sign at the facility location.

Step 2: Administrative Completeness Review and Preliminary Technical Review: The Air Quality Program has 30 days from the day the permit application is received to review the permit application to be sure that it is administratively complete. This means that all application forms must be signed and filled out properly, and that all relevant technical information needed to evaluate any proposed impacts is included. If the application is not complete, the permit reviewer will deem the application incomplete and request more information from the Applicant. Applicants have three opportunities to submit an administratively complete application with all relevant technical information.

Public Notice from the Department: When the application is deemed complete, the Department will issue a Public Notice announcing a 30-day public comment period on the permit application. This notice is distributed to the same nearby neighborhood associations to which the Applicant sent notices, as well as interested parties who have requested notification of application submittals, and is published on the Air Quality Program's website.

During this 30-day comment period, individuals have the opportunity to submit written comments expressing their concerns or support for the proposed project, request to review the draft technical analysis, and/or to request a Public Information Hearing. If approved by the Environmental Health Department Director, Public Information Hearings are held after the technical analysis is complete and the permit has been drafted.

Step 3: Technical Analysis and Draft Permit: Air Quality Program staff review all elements of the proposed operation related to air quality, and review outputs from advanced air dispersion modeling software that considers existing emission levels in the area surrounding the proposed project, emission levels from the proposed project, and meteorological data. The total calculated level of emissions and modeled impact is compared to state and federal air quality standards and informs the decision on whether to approve or deny the Applicant's permit application.

Draft Permit: The permit will establish emission limits, standards, monitoring, recordkeeping, and reporting requirements. The draft permit undergoes an internal peer review process to determine if the emissions were properly evaluated, permit limits are appropriate and enforceable, and the permit is clear, concise, and consistent.

Possible Public Notice from the Department: If individuals request to review the draft technical analysis for a permitting action during the first 30-day public comment period in Step 2, there will be an additional public notice step. When the technical analysis is complete and the permit has been drafted, the Department will issue a second Public Notice announcing a 30-day public comment period on the technical analysis and draft permit. This possible second Public Notice, along with the technical analysis documentation and draft permit, will be published on the Air Quality Program's website, and the public notice for availability of the technical analysis and draft permit will only be directly sent to those who requested further information during the first comment period.

During this possible second 30-day comment period, residents have another opportunity to submit written comments expressing their concerns or support for the proposed project, and/or to request a Public Information Hearing.

Possible Public Information Hearing: The Environmental Health Department Director may decide to hold a Public Information Hearing for a permit application if there is significant public interest and a significant air quality issue. If a Public Information Hearing is held, it will occur after the technical analysis is complete and the permit has been drafted.

Air Quality Construction Permitting Overview

Step 4: Public Comment Evaluation and Response: The Air Quality Program evaluates all public comments received during the 30-day public comment period(s) and Public Information Hearing, if held, and updates the technical analysis and draft permit as appropriate. The Air Quality Program prepares a response document to address the public comments received, and when a final decision is made on the permit application, the comment response document is published on the Air Quality Program's website and distributed to the individuals who participated in the permitting process. If no comments are received, a response document is not prepared.

Step 5: Final Decision on the Application: After public comments are addressed and the final technical review is completed, the Environmental Health Department makes a final decision on the application. If the permit application meets all applicable requirements set forth by the New Mexico Air Quality Control Act and the federal Clean Air Act, the permit is approved. If the permit application does not meet all applicable requirements, it is denied.

If there is public participation for a permit application and a response document is prepared, notification of the final decision on the permit application and the availability of the comment response document is published on the Air Quality Program's website and distributed to the individuals who participated in the permitting process. If there is no public participation, no notification of the final decision is provided.

The Department is legally required to approve a permit application if the proposed action will meet all applicable requirements and if it demonstrates that it will not result in an exceedance of ambient air quality standards. Permit writers are very careful to ensure that estimated emissions have been appropriately identified or quantified and that the emission data used are acceptable.

The Department must deny a permit application if it is deemed incomplete three times, if the proposed action will not meet applicable requirements, if estimated emissions have not been appropriately identified or quantified, or if the emission data are not acceptable for technical reasons.

For more information about air quality permitting, visit www.cabq.gov/airquality/air-quality-permits

Fill out the required highlighted information below. Then use the Subject as the Subject line of the required public notice email(s) sent to nearby neighborhood associations/neighborhood coalitions. Copy and paste the rest of the completed information on this page into the body of the email(s) and attach the completed NOI form. If providing notice by certified mail, use this page as the cover letter and attach the NOI form.

SUBJECT: Public Notice of Proposed Air Quality Construction Permit Application – Western Refining Terminals, LLC – Albuquerque Products Terminal

Dear Neighborhood Association/Coalition Representative(s),

Why did I receive this public notice?

You are receiving this notice in accordance with New Mexico Administrative Code (NMAC) 20.11.41.13(B)(1), which requires any applicant seeking an Air Quality Construction Permit or permit modification pursuant to 20.11.41 NMAC to provide public notice by certified mail or electronic mail to the designated representative(s) of the recognized neighborhood associations and recognized coalitions that are within one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located. Public notice is required within a one mile radius by 20.11.72.9 NMAC.

What is the Air Quality Permit application review process?

The City of Albuquerque, Environmental Health Department, Air Quality Program (Program) is responsible for the review and issuance of Air Quality Permits for any stationary source of air contaminants within Bernalillo County. Once the application is received, the Program reviews each application and rules it either complete or incomplete. Complete applications will then go through a 30-day public comment period. Within 90 days after the Program has ruled the application complete, the Program shall issue the permit, issue the permit subject to conditions, or deny the requested permit or permit modification. The Program shall hold a Public Information Hearing pursuant to 20.11.41.15 NMAC if the Director determines there is significant public interest and a significant air quality issue is involved.

What do I need to know about this proposed application?

Applicant Name	Western Refining Terminals, LLC
Site or Facility Name	Albuquerque Products Terminal
Site or Facility Address	3209 Broadway Blvd SE, Albuquerque, NM 87105
New or Existing Source	EXISTING
Anticipated Date of Application Submittal	July 10, 2026
Summary of Proposed Source to Be Permitted	The application is to modify existing Construction Permit #0456-M5-7TR for the addition of a vapor combustion unit to operate during the permitted vapor recovery unit downtime, loading rack and tank optimizations, and Startup, Shutdown, and Maintenance (SSM) modifications.

What emission limits and operating schedule are being requested?

See attached Notice of Intent to Construct form for this information.

How do I get additional information regarding this proposed application?

For inquiries regarding the proposed source, contact:

- Margaret Garza
- MGarza4@marathonpetroleum.com
- (480) 532-1434

For inquiries regarding the air quality permitting process, contact:

- City of Albuquerque Environmental Health Department Air Quality Program
- aqd@cabq.gov
- (505) 768-1972



Timothy M. Keller,
Mayor

Public Participation

List of Neighborhood Associations and Neighborhood Coalitions MEMORANDUM

To: Fernando Colunga
From: Michael McKinstry, Environmental Health-Air Quality Permitting Manager
Subject: Determination of Neighborhood Associations and Coalitions
within 1 mile of 3209 Broadway Blvd. SE Bernalillo County, NM.
Date: May 27, 2026

DETERMINATION:

On May 27, 2026, I used the City of Albuquerque Zoning Advanced Map Viewer (<http://coagisweb.cabq.gov/>) to verify which City of Albuquerque Neighborhood Associations (NA), Homeowner Associations (HOA) and Neighborhood Coalitions (NC) are located within 1 mile of 3209 Broadway Blvd. SE in Bernalillo County, NM.

I then used the City of Albuquerque Office (COA) of Neighborhood Coordination's Monthly Master NA List dated May 2026 and the Bernalillo County (BC) Monthly Neighborhood Association May 2026 Excel file to determine the contact information for each NA and NC located within 1 mile of 3029 Broadway Blvd. SE in Bernalillo County, NM.

The table below contains the contact information, which will be used in the City of Albuquerque Environmental Health Department's public notice. Duplicates have been deleted.

COA/BC Association or Coalition	Name	Email or Mailing Address*
Barelas NA	Amy DeCesare Sean Potter	amydecesare1224+bna@gmail.com bna@seanpotter.org
District 6 Coalition of NA	Patricia Willson M. Ryan Kious	info@willsonstudio.com m.ryankious@gmail.com
Kirtland Community Ass.	Kimberly Brown Elizabeth Aikin	kande0@yahoo.com bakieaikin@comcast.net
Mountain View	Nora Garcia Elizabeth Chavez-Maldonado	ngarcia49@yahoo.com mtviewna@gmail.com



Timothy M. Keller,
Mayor

Public Participation

List of Neighborhood Associations and Neighborhood Coalitions MEMORANDUM

MountainView Commercial	Richard Luna Ralph H. Hoffman	richard@championtruss.com ralphh@kinneybrick.com
MountainView Community	Marla Painter Alan Marks	marladesk@gmail.com jamar@unm.edu
South San Jose	Esther Kottke Theresa Duncan	rekhilo505@gmail.com theresadniles@gmail.com southsanjoseassociation@gmail.com
Southwest Alliance of Neighborhoods Ass.	Lorenzo "House" Otero Jerry Gallegos	housealbchrome@gmail.com jgallegoswccdg@gmail.com
South Broadway NA	Frances Armijo Onastine Jaramillo	fparmijo@gmail.com onastine@gmail.com abqsbna@gmail.com
South Valley Coalition of Neighborhood Ass.	Marcia Fernandez Pete Eschman	mbfernandez1@gmail.com eschman@unm.edu
Southwest Alliance	Jerry Gallegos Lorenzo Otero	jgallegoswccdg@gmail.com housealbchrome@gmail.com
Westside Coalition of Neighborhood Ass.	Elizabeth Kay Haley Rene' Horvath Jane Baechle	elizabethkayhaley@gmail.com aboard111@gmail.com jane.baechle@gmail.com wescona0@gmail.com

****If email address is not listed, provide public notice via certified mail and include a copy of each mail receipt with the application submittal.***

Daniel Dolce

From: Daniel Dolce
Sent: Friday, July 10, 2026 4:26 PM
To: amydecesare1224+bn@gmail.com; bna@seanpotter.org; info@willsonstudio.com; m.ryankious@gmail.com; kande0@yahoo.com; bakieaikin@comcast.net; ngarcia49@yahoo.com; mtviewna@gmail.com; richard@championtruss.com; ralphh@kinneybrick.com; marladesk@gmail.com; jamar@unm.edu; rekhilo505@gmail.com; theresadniles@gmail.com; southsanjoseassociation@gmail.com; housealbchrome@gmail.com; jgallegoswccdg@gmail.com; fparmijo@gmail.com; onastine@gmail.com; abqsbna@gmail.com; mbfernandez1@gmail.com; eschman@unm.edu; jgallegoswccdg@gmail.com; housealbchrome@gmail.com; elizabethkayhaley@gmail.com; aboard111@gmail.com; jane.baechle@gmail.com; wescona0@gmail.com
Subject: Public Notice of Proposed Air Quality Construction Permit Application – Western Refining Terminals, LLC – Albuquerque Products Terminal
Attachments: NOI to Construct Request_2026 0710.pdf

Dear Neighborhood Association/Coalition Representative(s),

Why did I receive this public notice?

You are receiving this notice in accordance with New Mexico Administrative Code (NMAC) 20.11.41.13(B)(1), which requires any applicant seeking an Air Quality Construction Permit or permit modification pursuant to 20.11.41 NMAC to provide public notice by certified mail or electronic mail to the designated representative(s) of the recognized neighborhood associations and recognized coalitions that are within one-half mile of the exterior boundaries of the property on which the source is or is proposed to be located. Public notice is required within a one mile radius by 20.11.72.9 NMAC.

What is the Air Quality Permit application review process?

The City of Albuquerque, Environmental Health Department, Air Quality Program (Program) is responsible for the review and issuance of Air Quality Permits for any stationary source of air contaminants within Bernalillo County. Once the application is received, the Program reviews each application and rules it either complete or incomplete. Complete applications will then go through a 30-day public comment period. Within 90 days after the Program has ruled the application complete, the Program shall issue the permit, issue the permit subject to conditions, or deny the requested permit or permit modification. The Program shall hold a Public Information Hearing pursuant to 20.11.41.15 NMAC if the Director determines there is significant public interest and a significant air quality issue is involved.

What do I need to know about this proposed application?

Applicant Name	Western Refining Terminals, LLC
Site or Facility Name	Albuquerque Products Terminal
Site or Facility Address	3209 Broadway Blvd SE, Albuquerque, NM 87105
New or Existing Source	EXISTING
Anticipated Date of Application Submittal	July 10, 2026
Summary of Proposed Source to Be Permitted	The application is to modify existing Construction Permit #0456-M5-7TR for the addition of a vapor combustion unit to operate during the permitted vapor recovery unit downtime, loading rack and tank optimizations, and Startup, Shutdown, and Maintenance (SSM) modifications.

What emission limits and operating schedule are being requested?

See attached Notice of Intent to Construct form for this information.

How do I get additional information regarding this proposed application?

For inquiries regarding the proposed source, contact:

- Margaret Garza
- MGarza4@marathonpetroleum.com
- (480) 532-1434

For inquiries regarding the air quality permitting process, contact:

- City of Albuquerque Environmental Health Department Air Quality Program
- agd@cabq.gov
- (505) 768-1972

Thank you and regards,
Daniel Dolce

Daniel Dolce
Consultant

P 505.266.6611 x3208 M 505.818.8761

Email: Daniel.Dolce@trinityconsultants.com

9400 Holly Avenue NE, Building 3, Suite B, Albuquerque, NM 87122

Want to meet? Book a meeting with [Daniel Dolce at Trinity Consultants.](#)



Connect with us: [LinkedIn](#) / [YouTube](#) / trinityconsultants.com

View our capabilities in the [Environmental Consulting](#), [Built Environment](#), [Life Sciences](#), and [Water & Ecology](#) markets.



Proposed Air Quality Construction Permit

1. Applicant's Name: Albuquerque Products Terminal
 Nombre del solicitante:
 Owner or Operator's Name: Western Refining Terminals, LLC; 539 South Main Street; Findlay, OH 45840
 Nombre del Proprietario u Operador:
 2. Actual or Estimated Date the Application will be Submitted to the Department: July 10, 2026
 Fecha Actual o Estimada en que se Envió/ará la Solicitud al Departamento:
 3. Exact Location of the Source or Proposed Source: 3209 Broadway Blvd SE, Albuquerque, NM 87105
 Ubicación Exacta de la Fuente o Fuente Propuesta:
 4. Description of the Source: BULK Petroleum Products Terminal
 Descripción de la Fuente:
 Nature of Business: Products terminal for storage and transfer of unleaded gasoline, butane, ethanol, diesel fuel and fuel additives.
 Tipo de Negocio:
 Process or change for which a permit is requested: The addition of a vapor combustion unit, loading rack and tank optimizations.
 Proceso o cambio para el cual se solicita el permiso:
AM modifications

Preliminary estimate of the maximum quantities of each regulated air contaminant the source will emit:
Estimación preliminar de las cantidades máximas de cada contaminante de aire regulado que la fuente va a emitir:

Air Contaminant Contaminante de Aire	Net Emission Estimates (for permit modification or technical revision) (Cambio (Afecto de Emisiones) (para modificación de permisos o revisión técnica)			
	Proposed Construction Permit Permiso de Construcción Propuesto		Permit Revision Revisión de Permiso	
	Pounds per hour libras por hora	Tons per year toneladas por año	Pounds per hour libras por hora	Tons per year toneladas por año
NO _x	1.33	0.72	+1.33	+0.72
CO	1.11	0.60	+1.11	+0.60
VOC	59.44	71.02	-26.89	+13.77
SO ₂	0.00057	0.00031	+0.00057	+0.00031
PM ₁₀	0.10	0.054	+0.10	+0.054
PM _{2.5}	0.10	0.054	+0.10	+0.054
HAP	17.51	8.13	-14.80	+0.41

5. Maximum Operating Schedule: 24 hours a day, 7 days a week, 52 weeks per year, 8760 hours per year.
Horario Máximo de Operaciones: 24 hours a day, 7 days a week, 52 weeks per year, 8760 hours per year.
- Normal Operation Schedule: 24 hours a day, 7 days a week, 52 weeks per year, 8760 hours per year.
Horario Normal de Operaciones: 24 hours a day, 7 days a week, 52 weeks per year, 8760 hours per year.

6. **Current Contact Information for Comments and Inquiries**
Datos actuales para Comentarios y Preguntas

Name (Nombre): Margaret Garza
Address (Dirección): 1258 W. Washington St, Suite 401, Tempe, AZ 85288
Phone Number (Número Telefónico): (480) 532-1434
Email Address (Correo Electrónico): MGGarza4@marathonpetroleum.com

Call 311 for additional information concerning this project, the Air Quality Program, or to file a complaint.
(Llamé 311 para obtener información adicional sobre este proyecto, del Programa de Calidad del Aire, o para presentar una queja.)
Call 311 để biết thêm thông tin hoặc để khiếu nại về dự án này, Chương Trình Chất Lượng Không Khí.

City of Albuquerque, Environmental Health Department, Air Quality Program – Stationary Source Permitting
Ciudad de Albuquerque, Departamento de Salud Ambiental, Programa de Calidad del Aire – Permisos para Fuentes Inmóviles
(505) 768-1972, aqd@raba.gov

THIS SIGN SHALL REMAIN POSTED UNTIL THE DEPARTMENT TAKES FINAL ACTION ON THE PERMIT APPLICATION
ESTE AVISO DEBERÁ DE MANTENERSE PUESTO HASTA QUE EL DEPARTAMENTO TOMÉ UNA DECISIÓN SOBRE LA SOLICITUD DE PERMISO

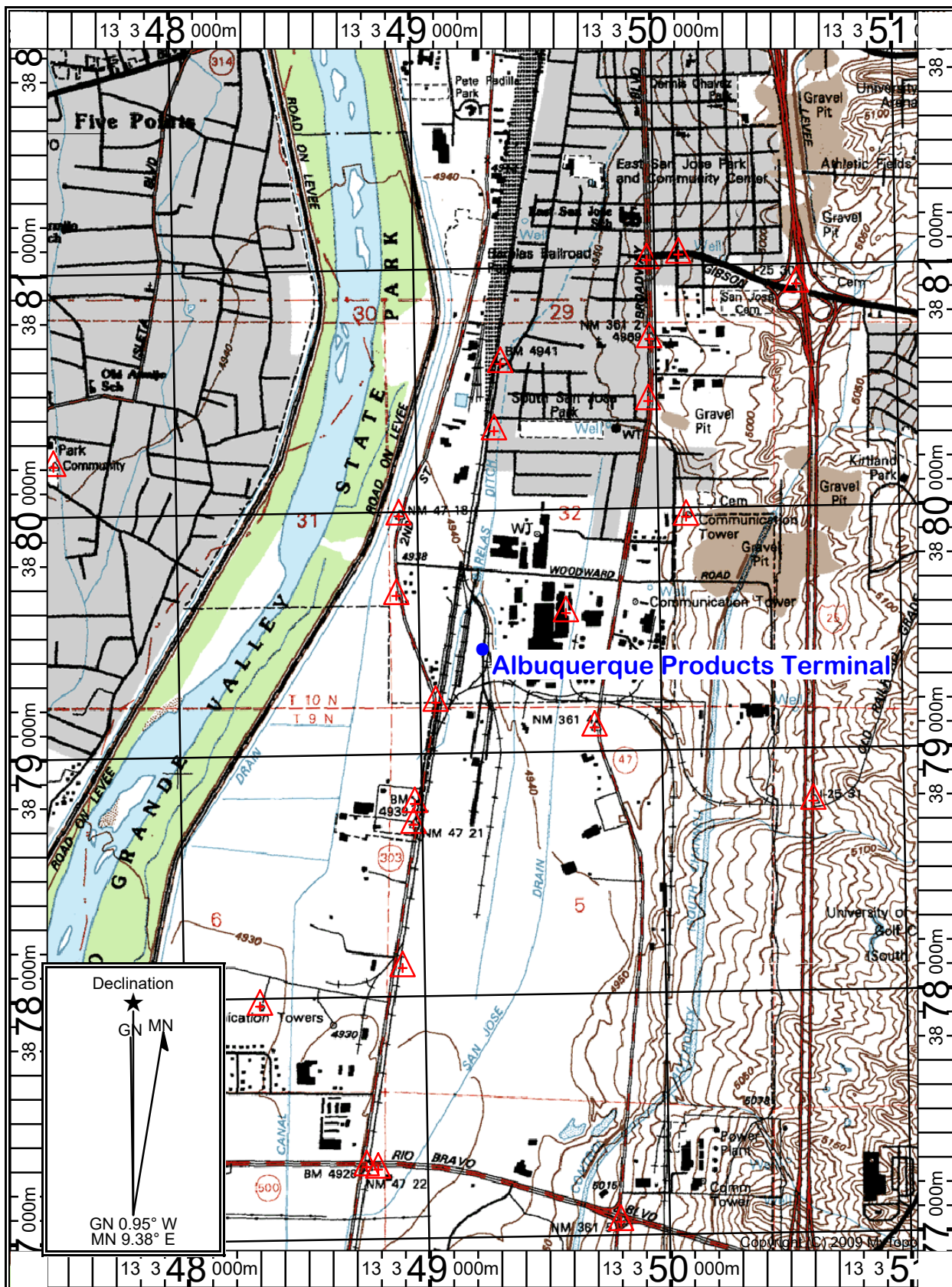
NO FIREARMS
ALLOWED ON
THIS PROPERTY

[illegible]

APPENDIX D. FACILITY LOCATION AND AERIAL PHOTOGRAPH

The following pages contain:

- ▶ A 7.5 minute topographic quadrangle map including a city of Albuquerque zone atlas map that shows the proposed location of each process equipment unit involved in the proposed modification
- ▶ An aerial photograph showing the proposed location of each process equipment unit involved in the proposed modification of the source





TK-31527

TK-31526

VCU

TK-30796

TK-25931

TK-25933

TK-31525

TK-29553

TK-25930

TK-25932



APPENDIX E. ZONING REQUIREMENTS

The following page contains the following for zoning requirements of the APT facility:

- ▶ Zoning Requirement Cover Letter (Revised November 2023)
- ▶ Zone Designation Letter from the City of Albuquerque (Dated November 14, 2024)



**City of Albuquerque
Environmental Health Department
Air Quality Program**



**Construction Permit (20.11.41 NMAC)
Zoning Requirement Cover Letter**

This Cover Letter Must Be Returned With The Application Along With All Required Attachments

The Albuquerque-Bernalillo County Joint Air Quality Program, which administers and enforces local air quality laws for the City of Albuquerque (“City”) and Bernalillo County (“County”), on behalf of the City Environmental Health Department (“Department”).

Any person seeking a new air quality permit or a permit modification under 20.11.41 NMAC (Construction Permits) shall provide documentary proof that the proposed air quality permitted use of the facility’s subject property is allowed by the zoning designation of the City or County zoning laws, as applicable. Sufficient documentation may include (i) a zoning certification from the City Planning Department or County Department of Planning and Development Services, as applicable, if the applicant is subject to City or County zoning jurisdiction; or (ii) a zoning verification from both planning departments if the applicant is not subject to City or County zoning jurisdiction. A zone atlas map shall not be sufficient. At this time, applicants are not required to submit documentation for the subject property’s zoning designation when applying for a relocation of a portable stationary source, or a technical or administrative revision to an existing permit.

The Department will rule an application administratively incomplete if it is missing or has incorrect information. If the Department has ruled an application administratively incomplete three (3) times, the Department will deny the permit application. Any fees submitted for processing an application that has been denied will not be refunded. If the Department denies an application, a person may submit a new application and the fee required for a new application. The applicant has the burden of demonstrating that a permit should be issued.

The Department may require additional information that is necessary to make a thorough review of an application. At all times before the Department has made a final decision regarding the application, an applicant has a duty to promptly supplement and correct information the applicant has submitted in an application to the Department. The applicant’s duty to supplement and correct the application includes, but is not limited to, relevant information acquired after the applicant has submitted the application and additional information the applicant otherwise determines is relevant to the application and the Department’s review and decision. While the Department is processing an application, regardless of whether the Department has determined the application is administratively complete, if the Department determines that additional information is necessary to evaluate or make a final decision regarding the application, the Department may request additional information and the applicant shall provide the requested additional information.

NOTICE REGARDING SCOPE OF A PERMIT: The Department’s issuance of an air quality permit only authorizes the use of the specified equipment pursuant to the air quality control laws, regulations and conditions. Permits relate to air quality control only and are issued for the sole purpose of regulating the emission of air contaminants from said equipment. Air quality permits are not a general authorization for the location, construction and/or operation of a facility, nor does a permit authorize any particular land use or other form of land entitlement. It is the applicant’s/permittee’s responsibility to obtain all other necessary permits from the appropriate agencies, such as the City Planning Department or County Department of Planning and Development Services, including but not limited to site plan approvals, building permits, fire department approvals and the like, as may be required by law for the location, construction and/or operation of a facility. For more information, please visit the City Planning Department website at <https://www.cabq.gov/planning> and the County Department of Planning and Development Services website at <https://www.bernco.gov/planning>.

Corporate and Facility Information: This information shall match the information in the permit application.

Air Quality Permit Applicant Company Name: Western Refining Terminals, LLC			
Facility Name: Albuquerque Products Terminal			
Facility Physical Address: 3209 Broadway Blvd SE	City: Albuquerque	State: NM	Zip: 87105
Facility Legal Description: Bulk Petroleum Products Terminal			

General Operation Information: This information shall match the information in the permit application.

Permitting action being requested (please refer to the definitions in 20.11.41 NMAC):

☐ New Permit ☒ Permit Modification, Current Permit #: **0456-M5-7TR**

Attachment Information: The location information provided to the City Planning Department or County Department of Planning and Development Services, as applicable, and reflected in the zoning certification or verifications, as applicable, shall be the same as the Facility location information provided to the Department in the air quality construction permit application.

☒ Zoning Certification Provided by: City Planning <i>This is a use-specific certification.</i> <u>City Planning Form:</u> https://www.cabq.gov/planning/code-enforcement-zoning <u>County Planning Form:</u> https://www.bernco.gov/planning/planning-and-land-use/applications-forms/	☐ City Zoning Verification ☐ County Zoning Verification <u>City Planning Form:</u> https://www.cabq.gov/planning/code-enforcement-zoning <u>County Planning Form:</u> https://www.bernco.gov/planning/planning-and-land-use/applications-forms/
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CITY OF ALBUQUERQUE

CODE ENFORCEMENT

Plaza Del Sol Building, Suite 500

600 2nd Street NW

Albuquerque, NM 87102

Tel: (505) 924-3850 Fax: (505) 924-3847



Date: November 14, 2024

VIA Email, mgarza@marathonpetroleum.com

Albuquerque Products Terminal

3209 Broadway Blvd. SE

Albuquerque, NM 87105

RE: 3209 Broadway Blvd. SE, , Albuquerque, NM 87105 the "property".

UPC: 101405526705440306

To Whom It May Concern:

This letter will certify that according to the map on file in this office on November 14, 2024, the referenced property, legally described as: TR A SOUTH BROADWAY INDUSTRIAL ACRES SAME AS MAP 44 TR 64 B2 CONT 7.037 located in Albuquerque, Bernalillo County New Mexico is Zoned: Non-Residential Light Manufacturing (NR-LM) .

The current use of the property is a Wholesaling and Storage of Fuels which is a conditional use ZA-89-267 in this zone district.

This property has been inspected and it was found to be in compliance with the applicable provisions of the Integrated Development Ordinance. This property is not controlled by an approved site development plan. This property is associated with Kirtland AFB Military Influence Area, Airport Protection Overlay Zone (Albuquerque Int'l Sunport) and Railroad and Spur Small Area this property. This property is within a Site design Sensitive Lands Valley Drainage Area.

If you have any questions regarding this matter please contact me at (505) 924-3301 or by email at ametzgar@cabq.gov.

Sincerely:

Angelo Metzgar,

Code Compliance Manager, Code Enforcement, Planning Department

Zone Certification Checklist

DUE DATE: _____

Address: 3209 Broadway SE

CF: _____

☒ Application

☒ Proof of Payment

☒ BernCO Ownership Data

☒ AGIS Aerial Photo (current satellite image)

☐ Zone Atlas Page

☒ Allowable Uses Table

☐ Use Specific Standards

☐ Research

☒ Special Exceptions

☒ Landscape Plans

☒ Variances

☒ Permits

☒ Site Plan

☒ Evi of Legal non-conformance

☒ INSPECTION

Notes: _____

☒ Letter

☐ Packet scanned and uploaded into Posse

☐ Close the Case File

Zone Certification Note Page

File #

ZA-89-267

NOD

Type

Nothing

CITY OF ALBUQUERQUE PLANNING DEPARTMENT
CODE ENFORCEMENT DIVISION

Albuquerque
ice Number: 2024271001-15
me: 09/27/2024 3:28:11 PM

REQUEST FOR ZONAL CERTIFICATION

A zoning certification letter is written confirmation provided by the City of Albuquerque referencing the piece of property, listing certain compliance information, and whether or not the existing development is permitted use.

A completed certification letter includes the assigned address, legal description and zoning design reference to the overlay district, sector plan, development plan, project number and/or pertinent special use approvals, etc.), and either a statement confirming zoning compliance or a brief description of violations affecting the site.

A certification letter does not include reference to the zoning designations of abutting or nearby lots, exceptions, certificates of occupancy, or other approvals; or reference to building codes, fire codes, or plain standards or similar development prerequisites.

There is a \$200 fee plus a 2% Technology Fee for each separate parcel, even if the property is held in single ownership. A minimum processing period of thirty (30) business days from the date of application and full payment can be expected; but depending upon the related research, necessary for the project, demands, some certification letters may take up to 45 business days to complete.

Please return this completed application form and related fee by mail or in person to:
City of Albuquerque - Code Enforcement Division, 600 2nd St. NW, Suite 500

APPLICATION FOR ZONAL CERTIFICATION

PROPERTY TO BE CERTIFIED

ADDRESS: 3209 Broadway Blvd SE, Albuquerque, NM 87105

LOT(S): MAP 44 TR 64C2 EXC 0.30 AC X ALL TR 64C3A2 CONT 21.43 AC BLOCK: N/A

SUBDIVISION: Legal Description: MAP 44 TR 64C2 EXC 0.30 AC X ALL TR 64C3A2 CONT 21.43 AC

UNIFORM PROPERTY CODE: 101405526705440306

*There is a \$165 research/administration fee, \$35 application fee and a 2% Technology Fee included in the property, even if there are multiple parcels held in single ownership and/or assigned to the same owner.

APPLICANT

NAME: Albuquerque Products Terminal

COMPANY / ORG.: Western Refining Terminals, LLC

ADDRESS: 3209 Broadway Blvd SE, Albuquerque, NM 87105

PHONE: (602) 286-1517 EMAIL: MGarza@ma

LETTER SHOULD BE ADDRESSED TO: ☐

NAME: _____

COMPANY/ORG.: _____

ADDRESS: _____

PHONE: _____

EMAIL: _____

mental Deposit
001-15-1
mental Deposit 10 \$200.00
: ||110|441008|4919000|||| \$200.00

mental Deposit
271001-15-2
mental Deposit 10 \$4.00
#: ||110|445408|4910000|||| \$4.00
al:

Mastercard Service Fee
24271001-15-3
total: \$5.61

ITEMS TOTAL: \$209.61

TOTAL: \$209.61

DUPLICATE RECEIPT 9/27/2024 3:29:48 PM

Mastercard \$204.00

Method: N
Card Number: *****2566
First Name:
Payment Type: credit
Mastercard Service Fee \$5.61

Method: N
Card Number: *****2566
First Name:
Last Name: false
Payment Type: credit
Total Received: \$209.61



Thank you for your payment.

(continued on next page)

CITY OF ALBUQUERQUE PLANNING DEPARTMENT
CODE ENFORCEMENT DIVISION



APPLICATION FOR ZONAL CERTIFICATION

GENERAL PROPERTY INFORMATION

PROPERTY TYPE (retail, multi-family residential, office, etc.): Bulk Products Terminal
SITE AREA (acres or sq. ft.): 7.04 acres APPROX. AGE(S) OF EXISTING DEVELOPMENT: 1955
TOTAL NUMBER OF BUILDINGS: 4 buildings
USE FOR EACH BUILDING (e.g., 5 multi-family, 1 office, 2 laundry, 1 garage, etc.): 1 utility, 1 loading rack, 1 warehouse, 1 sample room

FOR MULTI-FAMILY RESIDENTIAL DEVELOPMENT: N/A total number of units N/A total number of baths
N/A efficiency units
N/A 1 bedroom units
N/A 2 bedroom units
N/A 3 or more bedroom units

NUMBER OF STORIES (note if basements are present): 1 story for all buildings
GROSS FLOOR AREA (if multiple buildings, list for each): Warehouse (0.26 acres), loading rack (0.08 acres), all other bldgs (<500 ft^2)
TOTAL NUMBER OF SIGNS (both free-standing and building-mounted): 1 free-standing sign
TOTAL NUMBER OF PARKING SPACES: 20
20 standard spaces
0 handicap accessible spaces
0 motorcycle spaces

I HEREBY AUTHORIZE CITY CODE ENFORCEMENT STAFF TO INSPECT THE SUBJECT PROPERTY FOR THE PURPOSE OF DETERMINING THE STATUS OF THE EXISTING USE AND RELATED ZONING REQUIREMENTS. FURTHER, I UNDERSTAND THAT ANY AND ALL VIOLATIONS NOTED AS A RESULT OF THIS INSPECTION ARE SUBJECT TO IMMEDIATE CORRECTION.

BY: X Angela Brown DATE: 9/05/2024
OWNER / AGENT SIGNATURE

OFFICIAL USE ONLY

ACCEPTED BY: E. Moxiano DATE: 9.27.2024 Fee: 441008 - 4919000 \$200
ZONE: _____ ZAP: _____ ASSIGNED TO: C. Armenta Tech Fee: 445048 - 4910000 \$ 4
Total: \$204
Technology Fee 2%

* Office
COPY *

*Applications are not processed until all fees have been paid.
CF.2024-057603

PROPERTY RECORDS SMARTFILE ASSESSOR'S FORMS ASSESSOR WEBSITE



Profile

Notice of Value

Map

Satellite View

Tax Calculator

PARID: 101405526705440306

GIANT MID-CONTINENT INC, ATTN: PROPERTY
TAX DEPT

3209 BROADWAY BLVD

Record Navigator

1 of 1

Return to Search Results

Tax Year 2024 ▼

Class

Class	Non Residential
Tax District	A1AM

Current Owner

Owner	GIANT MID-CONTINENT INC ATTN: PROPERTY TAX DEPT
Owner Mailing Address	
Unit	
City	SAN ANTONIO
State	TX
Zip Code	78259 0190
Other Mailing Address	PO BOX 592809; TX1-047

Actions

Printable Summary

Printable Version

Reports

Property Attributes

Go

Ownership for Tax Year Selected

Tax Year	2024
Owner Name	GIANT MID-CONTINENT INC ATTN: PROPERTY TAX DEPT
Owner Mailing Address	
Unit	
City	SAN ANTONIO
State	TX
Zip Code	78259 0190
Other Mailing Address	PO BOX 592809; TX1-047

Description

Location Address	3209 BROADWAY BLVD SE
City	ALBUQUERQUE
State	NM
Zip Code	87105
Property Description	TR A SOUTH BROADWAY INDUSTRIAL ACRES SAME AS MAP 44 TR 64 B2 CONT 7.037

Public Improvement District
Tax Increment Development Districts

Document

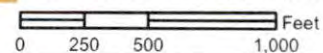
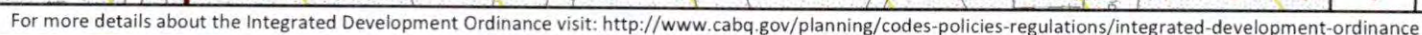
Document #: 95073599 072595 PD 052296

Real Property Attributes

Primary Building SQ FT	9940
Year Built	1950
Lot Size (Acres)	7.04
Land Use Code	PETROLEUM PROCESSING/HOLDING
Style	

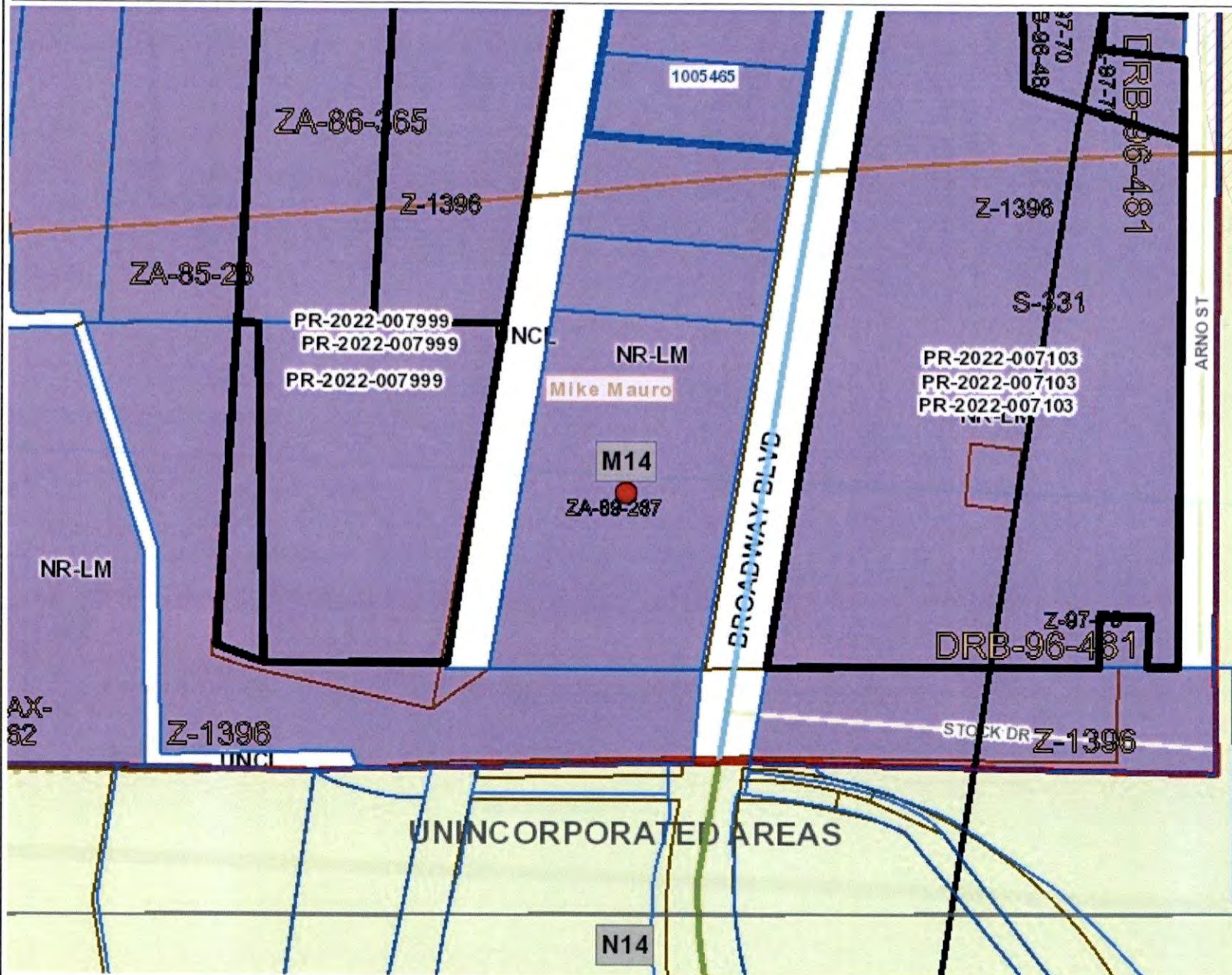
Manufactured Home Attributes

Make :
License :
VIN :
Year :
Size :





City of Albuquerque



Legend

- IDO Zoning Cases
- POSSE Case Tracking
- Case Tracking
- Case History
- Landfills (5-2)
- City Parcels
- Zone Grid
- Referrals to Commenting Agency (6-4)
- Historic Certificate - Minor (6-5)
- Historic Certificate - Major (6-6)
- Demolition Review (6-6)
- Variance - EPC (6-6)
- Variance - ZHE, in APO Zone (6-6)
- Nonconformities, in APO Zone (6-8)
- Cumulative Impacts Analysis Requirements (6-4)
- Site Plan - EPC (6-6)
- Acequia Standards (5-2)
- General Access and Circulation (5-3)
- Pedestrian Circulation (5-3)
- Off-Street Parking (5-5)
- Carports (5-5)
- Parking Location and Design (5-5)
- Walls (5-7)
- Building Design, Residential (5-1)
- Building Design, Historic (5-11)
- Signs, Design and Construction (5-12)
- On-Premises Signs (5-12)
- On-Premises Signs, Neon along Central Avenue (5-12)
- On-Premises Signs, Portable (5-12)
- Alternative Signage Plan (5-12)
- Off-Premises Sign Prohibition (5-12)

Notes

601 0 300 601 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
10/28/2024 © City of Albuquerque

1: 3,606

The City of Albuquerque ("City") provides the data on this website as a service to the public. The City makes no warranty, representation, or guaranty as to the content, accuracy, timeliness, or completeness of any of the data provided at this website. Please visit <http://www.cabq.gov/abq-data/abq-data-disclaimer-1> for more information.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

DECISION ON A REQUESTED SPECIAL EXCEPTION
AS PROVIDED BY THE COMPREHENSIVE CITY ZONING CODE
CHAPTER 7, ARTICLE XIV, REVISED ORDINANCES OF ALBUQUERQUE, NM 1974

CITY OF ALBUQUERQUE
PLANNING DEPARTMENT
PLANNING DIVISION
PO BOX 1293, ALBUQUERQUE, NM 87103

Texaco Refining and Marketing, Inc., requests a conditional use to allow product storage and truck loading on Tract 64b2, MRGCD Map No. 44, zoned SU-2/HM, and located at 3209 Broadway, SE. (M-14)

Decision No: ZA-89-267
Hearing Date: 09-13-89
Decision Date: 09-14-89

FINDINGS: Texaco Refining and Marketing, Inc., requests a conditional use to allow product storage and truck loading on Tract 64b2, MRGCD Map No. 44, zoned SU-2/HM, and located at 3209 Broadway, SE. Based on the testimony at the hearings on September 13, 1989 and August 23, 1989, the conditional use will not be injurious to the adjacent property, the neighborhood, or the community.

DECISION: Approved.

If you wish to appeal this decision you may do so by September 29, 1989 in the manner described below.

Appeal is to the Environmental Planning Commission within 15 days of the decision.

A filing fee of \$50.00 shall accompany each appeal application. When an application is withdrawn, the fee shall not be refunded.

An appeal shall be heard by the Environmental Planning Commission within 60 days of its filing. The Planning Division shall give written notice of an appeal, together with a notice of the date, time and place of the hearing to the applicant, a representative of the opponents, if any are known, and the appellant.

You will receive notice if any other person files an appeal. If there is no appeal, you can receive building permits any time after the appeal deadline quoted above provided all conditions imposed at the time of approval have been met. However, the Zoning Hearing Examiner may allow issuance of building permits if the public hearing produces no objection of any kind to approval of an application. To receive this approval the applicant agrees in writing to return building permit or occupation tax number.

Successful applicants are reminded that other regulations of the City must be complied with, even after approval of a special exception is secured. This decision does not constitute approval of plans for a building permit. If your application is approved, bring this decision with you when you apply for any related building permit or occupation tax number.

Official Notification
September 14, 1989
Page 2

Approval of a conditional use or variance application is void after one year from date of approval if the rights and privileges granted thereby have not been executed or utilized.

tc:WPPPLN410648

cc: Robert E. Romero, Zoning Enforcement Officer
J. R. Ehret, P. O. Box 1887; 87103

Roberto Albertorio
Roberto Albertorio, Esq.
Zoning Hearing Examiner

NON-RESIDENTIAL – LIGHT MANUFACTURING ZONE DISTRICT (NR-LM)

Purpose: The purpose of the NR-LM zone district is to accommodate moderate-intensity commercial, light assembly, fabrication, and manufacturing uses, while buffering adjacent lower-intensity, Residential and Mixed-use zone districts from the traffic, noise, and other impacts of those uses.



This document provides a summary about development in the NR-LM zone district. It includes links to Frequently Asked Questions (FAQs) about allowable uses, use-standards, development standards, and the approval process.

The document also includes a summary of the development standards and a summary of the allowable uses in this zone. To see the full Integrated Development Ordinance (IDO), click the link below.

abq-zone.com

Notes:

[1. FAQ: How do I look up my zoning?](#)

[2. FAQ: How do I look up my Allowable Uses?](#)

[3. FAQ: What is an Airport Protection Overlay \(APO\) Zone?](#)

[4. FAQ: What is a use-specific standard?](#)

[5. FAQ: How do I find out what development standards apply to my property?](#)

[6. FAQ: How does the IDO handle the review/approval process for development decisions?](#)

If you have other questions, email devhelp@cabq.gov or request a Pre-application Review Team Meeting (PRT) here:

<https://www.cabq.gov/planning/urban-design-development/pre-application-review-team-meetings>

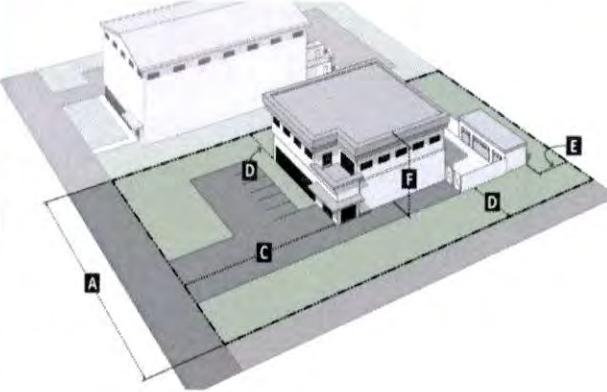
Development Standards Summary

Table 2-5-5: NR-LM Zone District Dimensional Standards

UC-MS-PT = Urban Centers, Main Street areas, and Premium Transit areas BR = bedroom DU = dwelling units

Note: Any different dimensional standards in Part 14-16-3 (Overlay Zones) and Section 14-16-5-9 (Neighborhood Edges) applicable to the property shall prevail over the standards in this table.

Site Standards*		
Lot width, minimum	A	N/A
Building coverage, maximum	B	N/A
Setback Standards		
Front, minimum	C	5 ft.
Side, minimum	D	0 ft.
Rear, minimum	E	0 ft.
Building Height		
Building height, maximum	F	65 ft.
		>100 ft. from front lot line: N/A



[1] Residential development that qualifies for funding through Article 14-17 of ROA 1994 (Family Housing Developments) may be eligible for development incentives specified in that Article.

*See IDO Subsection 14-16-5-1(C)(2) Contextual Residential Development in Areas of Consistency, if applicable, for additional standards that modify these general dimensional standards.

Table 2-5-6: Other Applicable IDO Sections

Overlay Zones	Part 14-16-3	Landscaping, Buffering, and Screening	14-16-5-6
Allowable Uses	14-16-4-2	Walls and Fences	14-16-5-7
Use-specific Standards	14-16-4-3	Outdoor and Sight Lighting	14-16-5-8
Dimensional Standards	14-16-5-1	Neighborhood Edges	14-16-5-9
Site Design and Sensitive Lands	14-16-5-2	Solar Access	14-16-5-10
Access and Connectivity	14-16-5-3	Building Design	14-16-5-11
Subdivision of Land	14-16-5-4	Signs	14-16-5-12
Parking and Loading	14-16-5-5	Operations and Maintenance	14-16-5-13

Use Table Summary

The following excerpt from Table 4-2-1 shows the allowable uses for the **NR-LM zone district only** (highlighted). See the Integrated Development Ordinance (IDO) for the complete list of uses allowed in all zone districts and use definitions (Table 4-2-1 and Section 14-16-7-1, respectively).

- ⇒ Permissive uses (P) are allowed in this zone by right, without any other approvals
- ⇒ Conditional uses (C) require approval at a public hearing (see Subsection 14-16-6-6(A) for more info)
- ⇒ Accessory uses (A) must be in addition to an allowed primary use (either P or C)

The column on the far right (also highlighted), provides IDO section references for Use-specific Standards that may apply to a use. These Use-specific Standards may change the allowable uses depending on the context of the site or may impose requirements on the development.

Table 4-2-1: Allowable Uses

P = Permissive Primary C = Conditional Primary A = Permissive Accessory CA = Conditional Accessory

CV = Conditional if Structure Vacant for 5+ years or more T = Temporary CT = Conditional Temporary

Blank Cell = Not Allowed

Zone District >>	Residential						Mixed-use				Non-residential						Use-specific Standards		
	R-A	R-1	R-MC	R-T	R-ML	R-MH	MX-T	MX-L	MX-M	MX-H	NR-C	NR-BP	NR-LM	NR-GM	NR-SU	NR-PO			
																A		B	C
Land Uses																			
PRIMARY USES THAT MAY BE ACCESSORY IN SOME ZONE DISTRICTS																			
RESIDENTIAL USES																			
Household Living																			
Group Living																			
CIVIC AND INSTITUTIONAL USES																			
Adult or child day care facility			C	C	C	P	P	P	P	P	P	P	A	A					
Community center or library	C	P		P	P	P	P	P	P	P	C	C	C	C		P		C	4-3(C)(1)
Elementary or middle school	C	C		C	P	P	P	P	P	P	P	P	CV			P		C	4-3(C)(2)
Fire or police station									P	P	P	P	P	P					
High school	C	C		C	C	P	P	P	P	P	P	P	C			P			4-3(C)(3)
Museum				CV	CV	C	P	P	P	P	P	P	P	P		P	A		4-3(C)(5)
Overnight shelter									C	C	C	C	C	C					4-3(C)(6)
Parks and open space	P	P		P	P	P	P	P	P	P	P	P	C	C	A	P	P	P	4-3(C)(7)
Religious institution	P	P		P	P	P	P	P	P	P	P	P	CV	CV					4-3(C)(8)
Sports field							CV	C	P	P	P	P	P	C		P		C	
University or college						CV	CV	C	P	P	P	P	CV	CV					
Vocational school						CV	P	P	P	P	P	P	P	P					
COMMERCIAL USES																			
Agriculture and Animal-related																			
Community garden	P	P	P	P	P	P	P	P	P	P	P	P	C	C		A	A	A	4-3(D)(1)
General agriculture	P											C	P	P			P	A	4-3(D)(3)
Kennel	C							C	C		P	P	P	P					4-3(D)(4)

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Zone District >>	Residential						Mixed-use				Non-residential							Use-specific Standards	
	R-A	R-1	R-MC	R-T	R-ML	R-MH	MX-T	MX-L	MX-M	MX-H	NR-C	NR-BP	NR-LM	NR-GM	NR-SU	NR-PO			
																A	B		C
Land Uses																			
Nursery	P								A		P	P	P	P		A	A		
Veterinary hospital	C						C	P	P	P	P	P	P	P				4-3(D)(5)	
Other pet services	C						C	P	P	P	P	P	P	P					
Food, Beverage, and Indoor Entertainment																			
Adult entertainment												P	P	P				4-3(D)(6)	
Auditorium or theater						A	A	A	P	P	P	P	P	P				4-3(D)(7)	
Bar							C	C	P	P	P	P	P	P				4-3(D)(8)	
Catering service									P	P	P	P	P	P					
Health club or gym			A		A	A	P	P	P	P	P	P	P	A				4-3(D)(9)	
Mobile food truck court							C	P	P	P	P	P	P	C				4-3(D)(10)	
Nightclub									P	P	P	P	P					4-3(D)(8)	
Restaurant							C	P	P	P	P	P	P	P				4-3(D)(8)	
Tap room or tasting room							C	C	P	P	P	P	P	P				4-3(D)(8)	
Other indoor entertainment							C	P	P	P	P	P	P	P		P		C 4-3(D)(12)	
Lodging																			
Hotel or motel							P	P	P	P	P	P	P	P				4-3(D)(15)	
Motor Vehicle-related																			
Car wash								P	P	P	P	P	P	P				4-3(D)(16)	
Heavy vehicle and equipment sales, rental, fueling, and repair											P	C	P	P				4-3(D)(17)	
Light vehicle fueling station								C	P	P	P	P	P	P				4-3(D)(18)	
Light vehicle repair								P	P	P	P	P	P	P				4-3(D)(19)	
Light vehicle sales and rental								C	P	P	P	P	P	P				4-3(D)(20)	
Outdoor vehicle storage											C	C	P	P			A	4-3(D)(21)	
Paid parking lot			A		A	A	C	P	P	A	P	P	P	P	A	A	A	4-3(D)(22)	
Parking structure			A		A	A	CA	P	P	P	P	P	P	P	A			4-3(D)(22)	
Offices and Services																			
Bank							P	P	P	P	P	P	P	CV				4-3(D)(23)	
Blood services facility									C	C	C	P	P	P					
Club or event facility							C	P	P	P	P	P	P	CV		P	P	C 4-3(D)(24)	
Commercial services								P	P	P	P	P	P	P					
Construction contractor facility and yard										C	P	P	P	P				4-3(D)(25)	
Medical or dental clinic							P	P	P	P	P	P	P	P				4-3(D)(26)	

Table 4-2-1: Allowable Uses

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Zone District >>	Residential						Mixed-use				Non-residential							Use-specific Standards	
	R-A	R-1	R-MC	R-T	R-ML	R-MH	MX-T	MX-L	MX-M	MX-H	NR-C	NR-BP	NR-LM	NR-GM	NR-SU	NR-PO			
																A	B		C
Land Uses																			
Mortuary								C	P	P	P	P	C		A				
Office							P	P	P	P	P	P	P	P					
Personal and business services, small							P	P	P	P	P	P	P	P					4-3(D)(27)
Personal and business services, large									P	P	P	P	P	P					4-3(D)(27)
Research or testing facility							P	P	P	P	P	P	P	P					4-3(D)(28)
Self-storage								C	C	P	P	P	P	P			A		4-3(D)(29)
Outdoor Recreation and Entertainment																			
Amphitheater											C	C	C	C	C	A	P	A	C
Drive-in theater									C		C	C	C	C					4-3(D)(31)
Other outdoor entertainment	CA	CA	CA	CA	CA	CA	A	A	A	A	P	P	P	A		P		P	4-3(D)(32)
Retail Sales																			
Adult retail											P		P	P	P				4-3(D)(6)
Art gallery	CV	CV	C	P	P	P	P	P	P	P	P		P	A					4-3(D)(33)
Bakery goods or confectionery shop							C	P	P	P	P	P	P	P					
Building and home improvement materials store									C	C	P	P	P	C					4-3(D)(34)
Cannabis retail								P	P	P	P	P	A	A					4-3(D)(35)
Farmers’ market	T		T	T	T	T	T	P	P	P	P	P	CV	CV		P	A	CA	4-3(D)(36)
General retail, small			A			A	P	P	P	P	P	P	P	P					4-3(D)(37)
General retail, medium									P	P	P	C	C						4-3(D)(37)
Grocery store								P	P	P	P		P	P					4-3(D)(38)
Liquor retail							C	A	C	C	C	C	C	C					4-3(D)(39)
Nicotine retail							CA	A	C	C	C	C	C	C					4-3(D)(40)
Pawn shop								C	P	P	P	P	P	P					4-3(D)(41)
Transportation																			
Freight terminal or dispatch center													C	P	P				4-3(D)(43)
Helipad									CA	CA	A	P	P	P	A				4-3(D)(44)
Park-and-ride lot					C	C	C	P	C	C	C	P	C	C	A	A			4-3(D)(45)
Railroad yard												C	P	P					4-3(D)(46)
Transit facility					C	C	C	P	P	P	P	P	P	P					4-3(D)(47)

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Zone District >>	Residential						Mixed-use				Non-residential							Use-specific Standards		
	R-A	R-1	R-MC	R-T	R-ML	R-MH	MX-T	MX-L	MX-M	MX-H	NR-C	NR-BP	NR-LM	NR-GM	NR-SU	NR-PO				
																A	B		C	
Land Uses																				
INDUSTRIAL USES																				
Manufacturing, Fabrication, and Assembly																				
Artisan manufacturing							C	P	P	P	P	P	P	P					4-3(E)(1)	
Cannabis cultivation							C	P	P	P	P	P	P	P					4-3(E)(2)	
Cannabis-derived products manufacturing							C	P	P	P	P	P	P	P					4-3(E)(3)	
Light manufacturing											A	P	P	P	P				4-3(E)(4)	
Telecommunications, Towers, and Utilities																				
Drainage facility	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	A	A	C		
Electric utility	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	A	A	A	4-3(E)(8)	
Energy Storage System (EES)	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	A	A	A	4-3(E)(9)	
Geothermal energy generation	A	A	A	A	A	A	A	A	A	A	A	P	P	P		A	A		4-3(E)(10)	
Major utility, other	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	A	A	A		
Solar energy generation	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	4-3(E)(11)	
Wind energy generation							A	A	A	A	A	A	A	C	A	A	A		4-3(E)(12)	
Wireless Telecommunications Facility (WTF)																				4-3(E)(13)
Architecturally integrated	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
Collocation	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
Freestanding							P	P	P	P	P	P	P	P	A					
Non-commercial or broadcasting antenna	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
Public utility collocation	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				
Roof-mounted			A		A	A	A	A	A	A	A	A	A	A	A					
Small cell	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
Waste and Recycling																				
Recycling drop-off bin facility						A	A	A	A	A	P	P	P	P					4-3(E)(14)	
Salvage yard												C	C	P					4-3(E)(15)	
Wholesaling and Storage																				
Above-ground storage of fuels or feed													C	P						
Outdoor storage							CA	C	C	C	C	A	P	P					4-3(E)(18)	
Warehousing								C	C	C	P	P	P	P					4-3(E)(19)	
Wholesaling and distribution center								C	C	C	P	P	P	P					4-3(E)(20)	

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Zone District >>	Residential						Mixed-use				Non-residential							Use-specific Standards	
	R-A	R-1	R-MC	R-T	R-ML	R-MH	MX-T	MX-L	MX-M	MX-H	NR-C	NR-BP	NR-LM	NR-GM	NR-SU	NR-PO			
																A	B		C
Land Uses																			
ACCESSORY AND TEMPORARY USES																			
ACCESSORY USES																		4-3(F)(1)	
Agriculture sales stand	A	A	A	A	A	A	A	A	A	A	A	A	CA	CA			A		4-3(F)(2)
Animal keeping	A	A	A	A	A	A	A	A	A	A	A	A	A	A				CA	4-3(F)(3)
Automated Teller Machine (ATM)			A		A	A	A	A	A	A	A	A	A	A		T	T		
Clean room												CA	A	A					4-3(F)(4)
Drive-through or drive-up facility								A	A	CA	A	A	A						4-3(F)(5)
Dwelling unit, accessory	A	A		A	A		A	A	A		A	A	A	A	A		A		4-3(F)(6)
Garden	A	A	A	A	A	A	A	A	A	A	A	A	A				A		
Mobile food truck	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A			4-3(F)(12)
Mobile vending cart							A	A	A	A	A	A	A	A		A		A	4-3(F)(13)
Outdoor animal run	A							CA	CA		CA		A	A					4-3(F)(14)
Outdoor dining area							CA	A	A	A	A	A	A	A	A				4-3(F)(15)
Other use accessory to non-residential primary use							A	A	A	A	A	A	A	A	A			A	4-3(F)(17)
TEMPORARY USES																			
Temporary Uses That Require A Permit																			
Circus									T		T	T	T						4-3(G)(1)
Construction staging area, trailer, or office	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T		4-3(G)(2)
Dwelling, temporary	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T		4-3(G)(3)
Film Production	T	T	T	T	T	T	T	T	T	T	T	T	T	T		T			4-3(G)(5)
Open air market							T	T	T	T	T						T		4-3(G)(6)
Park-and-ride facility, temporary						T	T	T	T	T	T	T	T	T	T		T		4-3(G)(7)
Real estate office or model home	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T				4-3(G)(8)
Safe outdoor space							CT	CT	CT	CT	T	T	T	T					4-3(G)(9)
Seasonal outdoor sales							T	T	T	T	T	T	T	T					4-3(G)(10)
Temporary use not listed			T			T	T	T	T	T	T	T	T	T	T		T		4-3(G)(11)
Temporary Uses That Do Not Require A Permit																			
Hot air balloon takeoff/landing	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	4-3(G)(13)

APPENDIX F. SUPPORTING INFORMATION

R.A. Nichols Engineering

Truck Mounted, Portable Vapor Burner / Equalizer Information Package

- I. Portable System Burner Design Criteria**
- II. Proposed Burner and Equalizer Overall Designs**
- III. Burner Operation, Direct and Indirect**
 - A. Direct Burner System Operation**
 - B. Burner Indirect Operation**
- IV. Equalizer / Burner Capacity Enhancements**
- V. Guarantee Considerations**
- VI. Terms and Guarantee**

RANE Truck Mounted, Portable Vapor Burner / Equalizer Information Package

I. Portable System Burner Design Criteria

1. Build a 1100cfm @ 20% vapor concentration on-line burner system, on a 53' drop-deck extendable trailer, similar to our previous design.
2. This design utilizes an Equalizer to stabilize the returned fuel vapor concentration in the burnable mixture range. This conditioned vapor is directly burned using a variable volume Burner.
3. This equipment is similar to the steady state/on-line burner equipment installed for Marathon Ashland Oil, Robinson IL.
4. The burner design shall meet all applicable NFPA Codes.
5. The burner must be stable with one arm loading as well as with multiple arms.

II. Proposed Burner and Equalizer Overall Designs

The Burner has sufficient Combustion Air capacity to burn nearly 40 M Btuh or thirteen arms at an average vapor concentration of 20% by volume. A horizontal burner stack with a three gore elbow is used to direct the combusted gas upward. The burner combustion air is used to cool the horizontal stack prior to providing combustion air to the burner. A doublewide inlet combustion air fan is used to maximize airflow and efficiency. The Vapor Blower uses a double lip grease seal to minimize shaft seal vapor loss. Maxon Guillotine Block and Vent Valves are used to direct vapor flow. Selas automatic Firechecks are used to prevent flammable fuel burner flashback. A Maxon LV line Burner is used to maximize turndown. A Maxon built-in pilot and UV sensor are used to minimize wall openings.

A 4,000 gallon, aluminum Equalizer tank will be installed on the back of the trailer, by MAP. This tank has typically a 2,000 gallon mixture of diesel and gasoline fuel within it. The fuel acts as an absorbent for the volatile ends of rich truck rack vapors and as a source of volatile ends for lean truck rack vapors. The burner will be used to gauge the Btu vapor content exiting the Equalizer. By running the burner additional time with an air stream only to the Equalizer; we reduce Equalizer fuel volatility and consequently vapor concentration in the Equalizer exhaust. This particular operation, which we feel is unique, allows the Portable Vapor Burner to process high incoming vapor concentrations, with high Btu content, for a limited period of time without overloading the burner capacity.

The tank is designed and purchased by MAP, and attached to the trailer by the tank's manufacturer, Polar Tank. A service station type high volume submerged pump will be used to circulate fuel through the spray absorber/saturator. Tank access will be provided through the large exit nozzle housing the tank demister. Also included are a partial coverage aluminum scaffold and a vapor inlet manifold consisting of the Vapor Header Pressure Relief Valve, and the Equalizer Inlet Pressure Vacuum Valve.

Hook-up to the system would be by way of portable hose from the Truck Rack Vapor Header through the Vapor Header Check Valve. An Equalizer P/V Valve between the Vapor Header Check Valve and the Equalizer is also part of this manifold. The Vapor Header check Valve and the Equalizer P/V Valve are mounted on the trailer at the Equalizer. The Pressure P/V Valve and vent line, vents the Equalizer if the burner either did not work or is overpowered with rack flow. The Vacuum P/V Valve opens and allows air to be sucked into the Equalizer. The Inlet Vapor Header Check Valve is set higher than the P/V vacuum setting, to avoid air from being sucked into the vapor lines at the rack.

III. Burner Operation, Direct and Indirect

We run the burner either Directly from the Rack using a Truck Scully hook-up as a signal that a truck is in the rack, or Indirectly by measuring return vapor flow from the rack. We have working in the field certified pressure activated variable flow burners of similar design.

A. Direct Burner System Operation

Our Direct mode of operation turns on the Vapor Burner when a truck comes into the island and hooks up its Scully electrical connection. The Vapor Burner if not already operating will start-up in the Pilot mode. Once the Pilot is operating, the rack permissive switch allows refueling to begin. R.A. Nichols uses a self-piloting burner so that a minimum pilot can be used and the pilot flame can be started and or maintained during various phases of operation. Since the vapor to be processed through our burner provides the fuel for the burner, we have an afterburner rather than an incinerator and get extremely clean burning without required time at temperature. This allows our burner to use its full capacity to process vapor, rather than having to maintain a sizable fuel stream to insure a time at temperature operation.

- o Since the Pilot is proven, the Main burner flow is activated by a Pressure Switch on initial Equalizer pressure. An Equalizer Pressure Transducer adjusts Vapor Blower speed and flow to stabilize Equalizer pressure. If refueling rates increase returning more fuel vapor, the Equalizer pressure rises and the transmitter will ask the Vapor Blower Speed Indicating Controller to increase the Burner Vapor Blower speed. This will increase the amount of flow to the Burner. An Equalizer pressure of 10 IW corresponds to maximum Vapor Blower speed and flow volume, approximately 1100 cfm.

- o If fueling arm flow ceases at one or more arms, the pressure in the Equalizer will decrease and the Pressure Transmitter and Speed Indicating Controller will signal the Vapor Blower to decrease speed and flow volume. When fueling decreases to one arm, the Vapor Blower will be maintained at a minimum speed and flow level corresponding to approximately 825 gpm. The excess air is pulled in the Equalizer Vacuum Valve, at minimum flow, allowing stable burner operation. When refueling stops and the Truck drivers disconnect their Scullys and the burner will be shut down.

B. Burner Indirect Operation

Our Indirect mode of operation proposes to use the fact that, if there is vapor flow from the rack, there is pressure in the Vapor Header. By measuring Header pressure, we have designed the burner controls for stable operation without positive venting. If the Vapor Header exceeds the Equalizer Tank pressure, the Vapor Header Check Valve will allow vapor flow from the Vapor Header into the Equalizer, indicating flow from the rack.

- o When a truck begins fueling, vapor will be displaced into the Vapor Header and its pressure will rise, and flow will proceed to the Equalizer. A Vapor Header Pressure switch will be activated, starting the Burner in the Pilot Mode. Equalizer pressure is also monitored and Equalizer Pressure Switches will activate the main burner. Main Burner flow control is activated to control Equalizer pressure as in the direct mode.

- o As the Equalizer pressure decreases to Equalizer P/V Vacuum Valve pressure, the Burner flow will be minimized. Note, however, as long as there is flow from the rack, there will be Vapor Header pressure. If the pressure in the Vapor Header decreases indicating very little flow into the Vapor Header, the pilot and burner will shut-off.

RANE Truck Mounted, Portable Vapor Burner / Equalizer Information Package

IV. Equalizer / Burner Capacity Enhancements

The unique characteristics of the Equalizer are used to extend the Btu range of the burner under normal surge circumstances, and managed further can extend the burner capacity under high vapor return flow conditions. The Equalizer is used to average the near saturated vapor returned from Stage I gasoline delivery at service stations, with the nearly pure air returned on diesel refueling of trucks previously carrying diesel. The average vapor concentration is determined by normal terminal operating conditions. The maximum vapor concentration is determined by the maximum flow surge of high concentration vapor. Burner Btu flow capacity is determined by burner Combustion Air cooling capacity.

Since Btu capacity of the burner is directly proportional to the cooling air needed and vapor flow is proportional to vapor blower speed, we can tell the average heat value, btu/cf, being burned by measuring the Temperature, and the Vapor Blower, and Combustion Air Blower, motor speeds. When high vapor concentrations are detected, the unit will automatically operate to reduce the Equalizer fuel volatility; thereby, higher vapor volume returns can be allowed without exceeding burner capacity.

VI. Guarantee Considerations

Burner Performance of the R.A. Nichols Engineering Burner, based on the Robinson experience, is primarily tied to starting. With an on-line burner, there are potentially more starts and stops than a burner operating from a vapor bladder. Consequently, the Robinson Online Burner destruction efficiency was slightly over 1 mg/l; whereas, with fewer starts, the Robinson Vapor Holder Burner efficiency was approximately 1/2 mg/l. Burner efficiency during constant operation in either case was so low as to be unmeasurable during testing. In the Direct Mode, we insure the burner pilot is running prior to sending any gas to the burner. Consequently, the burner starts immediately when the blower start pressure is reached. In the Indirect mode, the burner starts in the Pilot Mode when the truck hooks up the Scully and the main burner starts on Equalizer pressure. In this case, we are not starting the system in Pilot until the Rack Header has achieved start pressure. We then must go through a start-up blower pressure verification, prepurge of the burner, pilot start and continued flame recognition, before main burn start-up. All this is to occur prior to the truck loading valve fully opening. If the Equalizer pressure is too high when this sequence occurs there will be a large surge of vapors on start-up and some of this surge may not be fully burned. All measurable vapor losses in the Robinson tests were due to this inability to burn the initial start burner surge. With the Portable burner having to start the pilot as well as the burner before venting occurs, initial losses are expected to be higher. Such losses may exceed 10 mg/l.

VII. Terms and Guarantee

R. A. Nichols Engineering has given you a quote for Engineering and a time and material bid quote for the Burner / Equalizer construction and materials. We also have included a \$20,000 sunk cost, for work and efforts previously expended. We propose to keep Marathon / Ashland Petroleum informed and in the decision making process. We are proposing to provide an accounting of our costs, monthly, as they are incurred and following the contract. Accordingly, our contract is very nearly a time and materials not to exceed contract. Under such circumstances we believe we have responsibility for a best effort in making the burner work as designed; but we should have only limited liability for an efficiency guarantee. Accordingly, the Sunk Design Cost \$20 K, represents our guarantee of system performance as stated above. We propose the unused budget total to be available for funding R. A. Nichols Engineering best efforts basis.

RANE Truck Mounted, Portable Vapor Burner / Equalizer Information Package

VII. Terms and Guarantee, cont...

To simplify accounting, we propose a preliminary Contract payment as follows: 40% on release of order, 30% six weeks after engineering approval, 20 % prior to shipment, and the final 10 % upon successful start-up and accounting agreement. Engineering and sunk costs are non-refundable on contract cancellation. Purchased equipment paid for by Buyer shall be Buyers.

Costs for technical personnel provided by R. A. Nichols Engineering will be billed on a time and expenses basis. R. A. Nichols hourly costs will be billed against our quote at \$65.00. Other personnel will be billed at reasonable cost. R. A. Nichols Engineering personnel are covered by Marathon Ashland Petroleum LP approved insurance. R. A. Nichols Engineering Terms and Conditions apply.

R. A. Nichols Engineering start-up costs are not included; they will be billed on a time and expense basis, as above. R. A. Nichols hourly field costs will be billed at \$65.00. Assume two weeks for burner start-up and field labor. We do not include start-up labor or materials costs for equipment outside our Burner/Equalizer skid, nor do we include APCD permitting, testing, or other approval costs. Our Engineering does not include providing system on-site, electrical and plumbing, or correcting major on-site problems. Waiting for contractors to complete their jobs will be included in our billings. We will provide technical plumbing and electrical check out as appropriate on our skids.

R. A. Nichols Engineering

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raneng@inetworld.net • www.raneng.com

R. A. Nichols Engineering Portable Combustion System Design Specifications

Type of Control Device: R. A. Nichols Engineering Portable Equalizer/Vapor Burner System

Marathon Ashland Petroleum, LLP. Currently operates 3 RANE Portable Combustion System.

Model #:	1P4E11DB	2P4E11DB	3P4E11DB
Serial #:	E19/B9	E21/B10	E23/B12
Physical Dimensions:	52'6"L x 13'H x 8'6"W	50'L x 13'H x 8'6"W	50'L x 13'H x 8'6"W

All units have a 6'6" OD Combustion Chamber with a 7'6" OD Outer Stack and 8'6" OD Heat Shield.

Design Flowrate: Designed to combust vapor displaced to the system at a maximum of 1,100 cfm / 8,000 gpm coming from the Equalizer (1)

Allowable Inlet Vapor Concentration: The Portable Vapor Burner System can handle inlet vapor concentrations displaced from fueling Diesel into a truck returning Diesel vapor or displaced from fueling Gasoline into a truck returning Gasoline vapor.

Emissions from Control Device: Emissions are designed to have:

- visible emissions should be less than 5min/2hr
- VOC emissions are under 10mg/l of gasoline loaded (2)
- A flame monitor insure a flame is present during operation
- An exit velocity less than 55 ft/sec. @ normal temperature

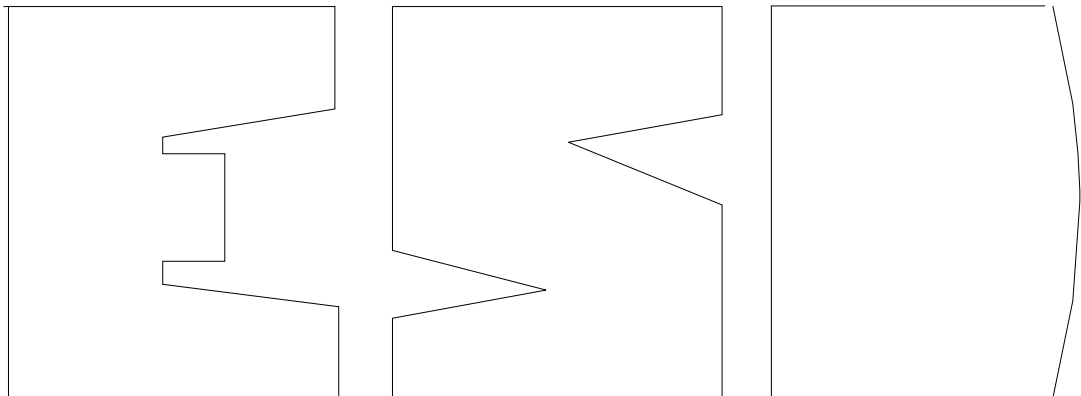
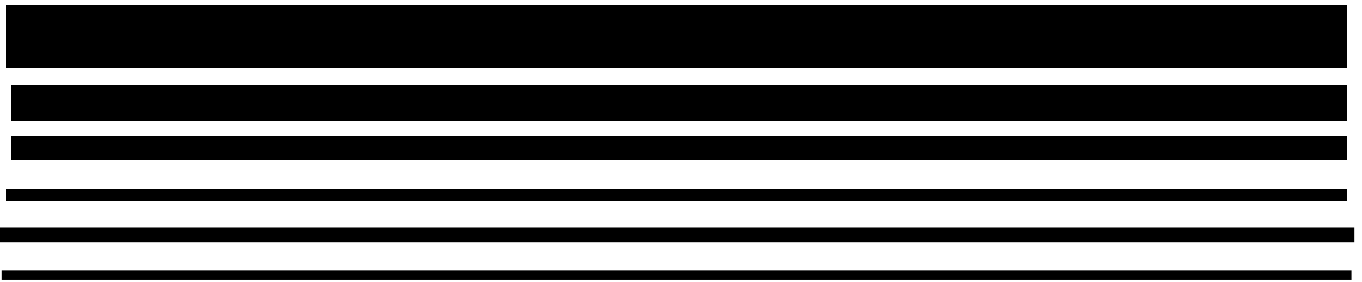
R. A. Nichols Engineering Portable Combustion System Specifications

The Portable Combustion System is comprised of a Portable Equalizer Tank and Vapor Burner. The Equalizer Tank is a 4,000 DOT Approved Tank which has a mixture of Gasoline and Diesel in it. During operation a fuel pump continuously circulated the fuel through a piping system to an internal spray nozzle, which saturates the incoming rack vapor. The saturated vapor passes through a demister to the Vapor Burner inlet Flame Arrestor. A variable speed blower moves the vapor through Selas Flame Checks to the fuel side of a Maxon Air Heating Commercial Burner. The vapor is burned with excess forced air, which is pre-heated, using the heat from the combustion chamber.

- (1) Vapor displaced during tank truck refueling varies from near 0% to 30% gasoline vapor by volume, diesel refueling of a previous diesel load, 0%, to gasoline refueling of a truck previously unloading gasoline using Stage 1, vapor return, 30%. The Equalizer averages these returning vapors with a re-circulating fuel stream to produce a time averaged displaced vapor concentration. The burner can process a maximum of 1,100 cfm of this displaced vapor stream. If the displaced vapor is less than burner minimum flow, additional air is pulled in at and processed through the Equalizer, increasing the amount of exhaust to the minimum burner cfm.
- (2) VOC emissions are averaged over a full EPA terminal test. VOC's are considered to be non-methane, Non-ethane emissions from the vapor stack. R. A. Nichols Engineering is only responsible for emissions coming from our vapor burner stack. MAP has repeatedly measured less than 2.5mg/l on-line emissions during 6 hour emission tests. Test Burner stack temperatures varied throughout the tests from 800 to 1,400 degrees Fahrenheit.



Protocol for Equipment Leak Emission Estimates



1995 Protocol for Equipment Leak Emission Estimates

Emission Standards Division

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Radiation
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

November 1995

TABLE 2-3. MARKETING TERMINAL AVERAGE EMISSION FACTORS

Equipment type	Service	Emission factor (kg/hr/source) ^a
Valves	Gas	1.3E-05
	Light Liquid	4.3E-05
Pump seals	Gas	6.5E-05
	Light Liquid	5.4E-04
Others (compressors and others) ^b	Gas	1.2E-04
	Light Liquid	1.3E-04
Fittings (connectors and flanges) ^c	Gas	4.2E-05
	Light Liquid	8.0E-06

^aThese factors are for total organic compound emission rates (including non-VOC's such as methane and ethane).

^bThe "other" equipment type should be applied for any equipment type other than fittings, pumps, or valves.

^c"Fittings" were not identified as flanges or non-flanged connectors; therefore, the fitting emissions were estimated by averaging the estimates from the connector and the flange correlation equations.

TankESP
Emissions Report - Detail Format
Tank Identification and Physical Characteristics
25930

<-- Select a tank from the dropdown list

Identification		
User Identification:	25930	
City:	Albuquerque	
State:	NM	
Company:	Albuquerque	
Type of Tank:	cone-roof tank with IFR	
Description:	MSS and PTEs	

Tank Dimensions		
Diameter (ft):	50.00	
Volume (gallons):	705,020.52	
Turnovers:		
Self Supp. Roof? (y/n):	N	
No. of Columns:	1.00	
Eff. Col. Diam. (ft):	1.00	

Paint Characteristics		
Internal Shell Condition:	Light Rust	
Shell Color/Shade:	White Paint	
Shell Condition	Average	
Roof Color/Shade:	White Paint	
Roof Condition:	Average	

Rim-Seal System		
Primary Seal:	Mechanical Shoe	
Secondary Seal	Rim-Mounted	

Deck Characteristics		
Deck Fitting Category:	Detail	
Deck Type:	Welded	
Construction:		
Deck Seam:		
Deck Seam Len. (ft):		

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Ungask.	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Ladder Well (36-in. Diam.)/Slotted w. Sleeve, Gasketed	1
Roof Leg or Hanger Well/Adjustable	16
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meteorological Data used in Emissions Calculations: Albuquerque, NM (Avg Atmospheric Pressure = 12.13 psia)

TankESP
Emissions Report - Detail Format
Liquid Contents of Storage Tank

25930 - Internal Floating Roof Tank
Albuquerque, NM

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg. F)			Liquid Bulk	Vapor Pressure (psia)			Vapor Mol.	Liquid Mass	Vapor Mass	Mol. Weight.	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.	Temp (deg F)	Avg.	Min.	Max.	Weight.	Fract.	Fract.		
Gasoline RVP_X	All	60.45	60.45	60.45	59.28	7.5447	7.5447	7.5447	62.0000			92.00	Option 4: RVP=13.5, ASTM Slope=3
Benzene									78.1100	0.0180000000	0.0043	78.11	Option 2: A=6.906, B=1211, C=220.79
Benzo(g,h,i)perylene									276.3300	0.0000030000	0.0000	276.33	Option 2: A=11.82, B=6580, C=273.15
Cumene (isopropylbenzene)									120.1900	0.0050000000	0.0001	120.19	Option 2: A=6.929, B=1455.8, C=207.2
Cyclohexane									84.1600	0.0024000000	0.0006	84.16	Option 2: A=6.845, B=1203.5, C=222.86
Ethylbenzene									106.1700	0.0140000000	0.0003	106.17	Option 2: A=6.95, B=1419.3, C=212.61
Hexane (n-)									86.1800	0.0100000000	0.0039	86.18	Option 2: A=6.878, B=1171.5, C=224.37
Iso-octane {2,2,4 trimethylpentane}									114.2300	0.0400000000	0.0049	114.23	Option 2: A=6.812, B=1257.8, C=220.74
Naphthalene									128.1700	0.0041500000	0.0000	128.17	Option 2: A=7.146, B=1831.6, C=211.82
PACs (Chrysene)									228.2900	0.0000260000	0.0000	228.29	Option 2: A=12.32, B=6160, C=273.15
Toluene									92.1400	0.0700000000	0.0048	92.14	Option 2: A=7.017, B=1377.6, C=222.64
Trimethylbenzene (1,2,4)									120.1900	0.0250000000	0.0001	120.19	Option 2: A=7.044, B=1573.3, C=208.56
Xylene									106.1700	0.0700000000	0.0013	106.17	Option 2: A=7.009, B=1462.3, C=215.11

TankESP
Emissions Report - Detail Format
Detail Calculations (AP-42)

25930 - Internal Floating Roof Tank
Albuquerque, NM

Month:	All
Rim Seal Losses (lb):	494.7248
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Value of Vapor Pressure Function:	0.2387
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.5447
Tank Diameter (ft):	50.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000
Product Factor:	1.0000
Withdrawal Losses (lb):	132.0660
Number of Columns:	1.0000
Effective Column Diameter (ft):	1.0000
Net Throughput(gal/yr):	34,325,688.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	5.6000
Tank Diameter (ft):	50.0000
Deck Fitting Losses (lb):	4,089.7250
Value of Vapor Pressure Function:	0.2387
Vapor Molecular Weight (lb/lb-mole):	62.0000
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	248.0000
Deck Seam Losses (lb):	0.0000
Deck Seam Length (ft):	
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000
Deck Seam Length Factor(ft/sqft):	0.2000
Tank Diameter (ft):	50.0000
Vapor Control Efficiency (%)	0%
Total Losses (lb):	4,716.5158

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors		m	Losses(lb)
		KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))		
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	1.00	26.3853
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Ungask.	1	51.00	0.00	1.00	841.0321
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	1.00	46.1743
Ladder Well (36-in. Diam.)/Slotted w. Sleeve, Gasketed	1	60.00	0.00	1.00	989.4496
Roof Leg or Hanger Well/Adjustable	16	7.90	0.00	1.00	2,084.4405
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	102.2431

TankESP
Emissions Report - Detail Format
Individual Tank Emission Totals

**Emissions Report for: Annual
25930 - Internal Floating Roof Tank
Albuquerque, NM**

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TankESP
Emissions Report - Detail Format
Tank Identification and Physical Characteristics
25931

<-- Select a tank from the dropdown list

Identification		
User Identification:	25931	
City:	Albuquerque	
State:	NM	
Company:	Albuquerque	
Type of Tank:	domed EFRT	
Description:	MSS and PTEs	

Tank Dimensions		
Diameter (ft):	80.00	
Volume (gallons):	1,804,852.52	
Turnovers:		

Paint Characteristics		
Internal Shell Condition:	Light Rust	
Shell Color/Shade:	White Paint	
Shell Condition	Average	

Roof Characteristics		
Type:	Self-Supporting (Dome)	
Fitting Category	Detail	

Tank Construction and Rim-Seal System		
Construction:	Welded	
Primary Seal:	Vapor-Mounted	
Secondary Seal	Rim-Mounted	

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Roof Drain (3-in. Diameter)/Open	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	11
Slotted Guide-Pole/Sample Well/Gask. or Ungask. Sliding Cover, w/o Float	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meteorological Data used in Emissions Calculations: Albuquerque, NM (Avg Atmospheric Pressure = 12.13 psia)

TankESP
Emissions Report - Detail Format
Liquid Contents of Storage Tank

25931 - External Floating Roof Tank
Albuquerque, NM

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg. F)			Liquid Bulk	Vapor Pressure (psia)			Vapor Mol.	Liquid Mass	Vapor Mass	Mol. Weight.	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.	Temp (deg F)	Avg.	Min.	Max.	Weight.	Fract.	Fract.		
Gasoline RVP_X	All	59.93	59.93	59.93	59.28	7.4694	7.4694	7.4694	62.0000			92.00	Option 4: RVP=13.5, ASTM Slope=3
Benzene									78.1100	0.0180	0.0043	78.11	Option 2: A=6.906, B=1211, C=220.79
Benzo(g,h,i)perylene									276.3300	0.0000	0.0000	276.33	Option 2: A=11.82, B=6580, C=273.15
Cumene (isopropylbenzene)									120.1900	0.0050	0.0001	120.19	Option 2: A=6.929, B=1455.8, C=207.2
Cyclohexane									84.1600	0.0024	0.0006	84.16	Option 2: A=6.845, B=1203.5, C=222.86
Ethylbenzene									106.1700	0.0140	0.0003	106.17	Option 2: A=6.95, B=1419.3, C=212.61
Hexane (n-)									86.1800	0.0100	0.0039	86.18	Option 2: A=6.878, B=1171.5, C=224.37
Iso-octane (2,2,4 trimethylpentane)									114.2300	0.0400	0.0049	114.23	Option 2: A=6.812, B=1257.8, C=220.74
Naphthalene									128.1700	0.0042	0.0000	128.17	Option 2: A=7.146, B=1831.6, C=211.82
PACs (Chrysene)									228.2900	0.0000	0.0000	228.29	Option 2: A=12.32, B=6160, C=273.15
Toluene									92.1400	0.0700	0.0048	92.14	Option 2: A=7.017, B=1377.6, C=222.64
Trimethylbenzene (1,2,4)									120.1900	0.0250	0.0001	120.19	Option 2: A=7.044, B=1573.3, C=208.56
Xylene									106.1700	0.0700	0.0013	106.17	Option 2: A=7.009, B=1462.3, C=215.11

TankESP
Emissions Report - Detail Format
Detail Calculations (AP-42)

25931 - External Floating Roof Tank
Albuquerque, NM

Month:	All
Rim Seal Losses (lb):	2,838.7486
Seal Factor A (lb-mole/ft-yr):	2.2000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.0030
Average Wind Speed (mph):	0.0000
Seal-related Wind Speed Exponent:	4.3000
Value of Vapor Pressure Function:	0.2348
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.4694
Tank Diameter (ft):	80.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000
Product Factor:	1.0000
Withdrawal Losses (lb):	242.8156
Net Throughput(gal/yr):	102,997,056.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	5.6000
Tank Diameter (ft):	80.0000
Roof Fitting Losses (lb):	1,198.4035
Value of Vapor Pressure Function:	0.2348
Vapor Molecular Weight (lb/lb-mole):	62.0000
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	74.3000
Average Wind Speed (mph):	0.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Vapor Control Efficiency (%)	0%
Total Losses (lb):	4,279.9677

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors		m	Losses(lb)
		KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))		
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	1.00	25.8068
Roof Drain (3-in. Diameter)/Open	1	1.50	0.21	1.70	24.1939
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	11	2.00	0.37	0.91	354.8436
Slotted Guide-Pole/Sample Well/Gask. or Ungask. Sliding Cover, w/o Float	1	43.00	270.00	1.40	693.5579
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	100.0014

**Emissions Report for: Annual
25931 - External Floating Roof Tank
Albuquerque, NM**

[illegible]

TankESP
Emissions Report - Detail Format
Tank Identification and Physical Characteristics
25932

<-- Select a tank from the dropdown list

Identification		
User Identification:	25932	
City:	Albuquerque	
State:	NM	
Company:	Albuquerque	
Type of Tank:	domed EFRT	
Description:	MSS and PTEs	

Tank Dimensions		
Diameter (ft):	50.00	
Volume (gallons):	705,020.52	
Turnovers:		

Paint Characteristics		
Internal Shell Condition:	Light Rust	
Shell Color/Shade:	White Paint	
Shell Condition	Average	

Roof Characteristics		
Type:	Self-Supporting (Dome)	
Fitting Category	Detail	

Tank Construction and Rim-Seal System		
Construction:	Welded	
Primary Seal:	Vapor-Mounted	
Secondary Seal	Rim-Mounted	

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Roof Drain (3-in. Diameter)/Open	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Ungask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	4
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meteorological Data used in Emissions Calculations: Albuquerque, NM (Avg Atmospheric Pressure = 12.13 psia)

TankESP
Emissions Report - Detail Format
Liquid Contents of Storage Tank

25932 - External Floating Roof Tank
Albuquerque, NM

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg. F)			Liquid Bulk	Vapor Pressure (psia)			Vapor Mol.	Liquid Mass	Vapor Mass	Mol. Weight.	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.	Temp (deg F)	Avg.	Min.	Max.	Weight.	Fract.	Fract.		
Gasoline RVP_X	All	59.92	59.92	59.92	59.28	7.4669	7.4669	7.4669	62.0000			92.00	Option 4: RVP=13.5, ASTM Slope=3
Benzene									78.1100	0.0180	0.0043	78.11	Option 2: A=6.906, B=1211, C=220.79
Benzo(g,h,i)perylene									276.3300	0.0000	0.0000	276.33	Option 2: A=11.82, B=6580, C=273.15
Cumene (isopropylbenzene)									120.1900	0.0050	0.0001	120.19	Option 2: A=6.929, B=1455.8, C=207.2
Cyclohexane									84.1600	0.0024	0.0006	84.16	Option 2: A=6.845, B=1203.5, C=222.86
Ethylbenzene									106.1700	0.0140	0.0003	106.17	Option 2: A=6.95, B=1419.3, C=212.61
Hexane (n-)									86.1800	0.0100	0.0039	86.18	Option 2: A=6.878, B=1171.5, C=224.37
Iso-octane (2,2,4 trimethylpentane)									114.2300	0.0400	0.0049	114.23	Option 2: A=6.812, B=1257.8, C=220.74
Naphthalene									128.1700	0.0042	0.0000	128.17	Option 2: A=7.146, B=1831.6, C=211.82
PACs (Chrysene)									228.2900	0.0000	0.0000	228.29	Option 2: A=12.32, B=6160, C=273.15
Toluene									92.1400	0.0700	0.0048	92.14	Option 2: A=7.017, B=1377.6, C=222.64
Trimethylbenzene (1,2,4)									120.1900	0.0250	0.0001	120.19	Option 2: A=7.044, B=1573.3, C=208.56
Xylene									106.1700	0.0700	0.0013	106.17	Option 2: A=7.009, B=1462.3, C=215.11

TankESP
Emissions Report - Detail Format
Detail Calculations (AP-42)

25932 - External Floating Roof Tank
Albuquerque, NM

Month:	All
Rim Seal Losses (lb):	1,772.9277
Seal Factor A (lb-mole/ft-yr):	2.2000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.0030
Average Wind Speed (mph):	0.0000
Seal-related Wind Speed Exponent:	4.3000
Value of Vapor Pressure Function:	0.2347
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.4669
Tank Diameter (ft):	50.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000
Product Factor:	1.0000
Withdrawal Losses (lb):	129.4765
Net Throughput(gal/yr):	34,325,688.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	5.6000
Tank Diameter (ft):	50.0000
Roof Fitting Losses (lb):	361.0326
Value of Vapor Pressure Function:	0.2347
Vapor Molecular Weight (lb/lb-mole):	62.0000
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	22.4000
Average Wind Speed (mph):	0.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Vapor Control Efficiency (%)	0%
Total Losses (lb):	2,263.4368

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors		m	Losses(lb)
		KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))		
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	1.00	25.7880
Roof Drain (3-in. Diameter)/Open	1	1.50	0.21	1.70	24.1763
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	1.00	45.1291
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Ungask.	1	2.30	0.00	1.00	37.0703
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	4	2.00	0.37	0.91	128.9402
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	99.9287

TankESP
Emissions Report - Detail Format
Individual Tank Emission Totals

**Emissions Report for: Annual
25932 - External Floating Roof Tank
Albuquerque, NM**

[illegible]

TankESP

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

25933

<-- Select a tank from the dropdown list

Identification		
User Identification:	25933	
City:	Albuquerque	
State:	NM	
Company:	Albuquerque	
Type of Tank:	domed EFRT	
Description:	MSS and PTEs	

Tank Dimensions		
Diameter (ft):	50.00	
Volume (gallons):	705,020.52	
Turnovers:		

Paint Characteristics		
Internal Shell Condition:	Light Rust	
Shell Color/Shade:	White Paint	
Shell Condition	Average	

Roof Characteristics		
Type:	Self-Supporting (Dome)	
Fitting Category	Detail	

Tank Construction and Rim-Seal System		
Construction:	Welded	
Primary Seal:	Mechanical Shoe	
Secondary Seal	Rim-Mounted	

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	2
Roof Drain (3-in. Diameter)/Open	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	6
Slotted Guide-Pole/Sample Well/Gask. or Ungask. Sliding Cover, w/o Float	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Ungask.	1

Meteorological Data used in Emissions Calculations: Albuquerque, NM (Avg Atmospheric Pressure = 12.13 psia)

TankESP
Emissions Report - Detail Format
Liquid Contents of Storage Tank

25933 - External Floating Roof Tank
Albuquerque, NM

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg. F)			Liquid Bulk	Vapor Pressure (psia)			Vapor Mol.	Liquid Mass	Vapor Mass	Mol. Weight.	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.	Temp (deg F)	Avg.	Min.	Max.	Weight.	Fract.	Fract.		
Gasoline RVP_X	All	59.92	59.92	59.92	59.28	7.4669	7.4669	7.4669	62.0000			92.00	Option 4: RVP=13.5, ASTM Slope=3
Benzene									78.1100	0.0180	0.0043	78.11	Option 2: A=6.906, B=1211, C=220.79
Benzo(g,h,i)perylene									276.3300	0.0000	0.0000	276.33	Option 2: A=11.82, B=6580, C=273.15
Cumene (isopropylbenzene)									120.1900	0.0050	0.0001	120.19	Option 2: A=6.929, B=1455.8, C=207.2
Cyclohexane									84.1600	0.0024	0.0006	84.16	Option 2: A=6.845, B=1203.5, C=222.86
Ethylbenzene									106.1700	0.0140	0.0003	106.17	Option 2: A=6.95, B=1419.3, C=212.61
Hexane (n-)									86.1800	0.0100	0.0039	86.18	Option 2: A=6.878, B=1171.5, C=224.37
Iso-octane (2,2,4 trimethylpentane)									114.2300	0.0400	0.0049	114.23	Option 2: A=6.812, B=1257.8, C=220.74
Naphthalene									128.1700	0.0042	0.0000	128.17	Option 2: A=7.146, B=1831.6, C=211.82
PACs (Chrysene)									228.2900	0.0000	0.0000	228.29	Option 2: A=12.32, B=6160, C=273.15
Toluene									92.1400	0.0700	0.0048	92.14	Option 2: A=7.017, B=1377.6, C=222.64
Trimethylbenzene (1,2,4)									120.1900	0.0250	0.0001	120.19	Option 2: A=7.044, B=1573.3, C=208.56
Xylene									106.1700	0.0700	0.0013	106.17	Option 2: A=7.009, B=1462.3, C=215.11

TankESP
Emissions Report - Detail Format
Detail Calculations (AP-42)

25933 - External Floating Roof Tank
Albuquerque, NM

Month:	All
Rim Seal Losses (lb):	483.5257
Seal Factor A (lb-mole/ft-yr):	0.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.4000
Average Wind Speed (mph):	0.0000
Seal-related Wind Speed Exponent:	1.0000
Value of Vapor Pressure Function:	0.2347
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.4669
Tank Diameter (ft):	50.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000
Product Factor:	1.0000
Withdrawal Losses (lb):	129.4765
Net Throughput(gal/yr):	34,325,688.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	5.6000
Tank Diameter (ft):	50.0000
Roof Fitting Losses (lb):	1,087.9329
Value of Vapor Pressure Function:	0.2347
Vapor Molecular Weight (lb/lb-mole):	62.0000
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	67.5000
Average Wind Speed (mph):	0.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Vapor Control Efficiency (%)	0%
Total Losses (lb):	1,700.9352

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors		m	Losses(lb)
		KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))		
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	2	1.60	0.00	1.00	51.5761
Roof Drain (3-in. Diameter)/Open	1	1.50	0.21	1.70	24.1763
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Ungasketed	6	2.00	0.37	0.91	193.4103
Slotted Guide-Pole/Sample Well/Gask. or Ungask. Sliding Cover, w/o Float	1	43.00	270.00	1.40	693.0536
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Ungask.	1	7.80	0.01	4.00	125.7167

TankESP
Emissions Report - Detail Format
Individual Tank Emission Totals

**Emissions Report for: Annual
25933 - External Floating Roof Tank
Albuquerque, NM**

[illegible]

TankESP
Emissions Report - Detail Format
Tank Identification and Physical Characteristics
31525

<-- Select a tank from the dropdown list

Identification

User Identification:	31525
City:	Albuquerque
State:	NM
Company:	Albuquerque
Type of Tank:	cone-roof tank with IFR
Description:	MSS and PTEs

Tank Dimensions

Diameter (ft):		60.00
Volume (gallons):		1,015,229.54
Turnovers:		
Self Supp. Roof? (y/n):	N	
No. of Columns:		1.00
Eff. Col. Diam. (ft):		1.10

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White Paint
Shell Condition	Average
Roof Color/Shade:	White Paint
Roof Condition:	Average

Rim-Seal System

Primary Seal:	Vapor-Mounted
Secondary Seal	Rim-Mounted

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded
Construction:	
Deck Seam:	
Deck Seam Len. (ft):	

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Ungask.	1
Roof Drain (3-in. Diameter)/Open	1
Automatic Gauge Float Well/Bolted Cover, Gasketed	1
Ladder Well (36-in. Diam.)/Slotted w. Sleeve, Gasketed	1
Roof Leg or Hanger Well/Adjustable	16
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meteorological Data used in Emissions Calculations: Albuquerque, NM (Avg Atmospheric Pressure = 12.13 psia)

TankESP
Emissions Report - Detail Format
Liquid Contents of Storage Tank

31525 - Internal Floating Roof Tank
Albuquerque, NM

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg. F)			Liquid Bulk	Vapor Pressure (psia)			Vapor Mol.	Liquid Mass	Vapor Mass	Mol. Weight.	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.	Temp (deg F)	Avg.	Min.	Max.	Weight.	Fract.	Fract.		
Gasoline RVP_X	All	60.51	60.51	60.51	59.28	7.5534	7.5534	7.5534	62.0000			92.00	Option 4: RVP=13.5, ASTM Slope=3
Benzene									78.1100	0.0180000000	0.0043	78.11	Option 2: A=6.906, B=1211, C=220.79
Benzo(g,h,i)perylene									276.3300	0.0000030000	0.0000	276.33	Option 2: A=11.82, B=6580, C=273.15
Cumene (isopropylbenzene)									120.1900	0.0050000000	0.0001	120.19	Option 2: A=6.929, B=1455.8, C=207.2
Cyclohexane									84.1600	0.0024000000	0.0006	84.16	Option 2: A=6.845, B=1203.5, C=222.86
Ethylbenzene									106.1700	0.0140000000	0.0003	106.17	Option 2: A=6.95, B=1419.3, C=212.61
Hexane (n-)									86.1800	0.0100000000	0.0039	86.18	Option 2: A=6.878, B=1171.5, C=224.37
Iso-octane (2,2,4 trimethylpentane)									114.2300	0.0400000000	0.0049	114.23	Option 2: A=6.812, B=1257.8, C=220.74
Naphthalene									128.1700	0.0041500000	0.0000	128.17	Option 2: A=7.146, B=1831.6, C=211.82
PACs (Chrysene)									228.2900	0.0000260000	0.0000	228.29	Option 2: A=12.32, B=6160, C=273.15
Toluene									92.1400	0.0700000000	0.0048	92.14	Option 2: A=7.017, B=1377.6, C=222.64
Trimethylbenzene (1,2,4)									120.1900	0.0250000000	0.0001	120.19	Option 2: A=7.044, B=1573.3, C=208.56
Xylene									106.1700	0.0700000000	0.0013	106.17	Option 2: A=7.009, B=1462.3, C=215.11

TankESP
Emissions Report - Detail Format
Detail Calculations (AP-42)

31525 - Internal Floating Roof Tank
Albuquerque, NM

Month:	All				
Rim Seal Losses (lb):	2,182.4387				
Seal Factor A (lb-mole/ft-yr):	2.2000				
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.0030				
Value of Vapor Pressure Function:	0.2391				
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.5534				
Tank Diameter (ft):	60.0000				
Vapor Molecular Weight (lb/lb-mole):	62.0000				
Product Factor:	1.0000				
Withdrawal Losses (lb):	183.1467				
Number of Columns:	1.0000				
Effective Column Diameter (ft):	1.1000				
Net Throughput(gal/yr):	57,216,144.0000				
Shell Clingage Factor (bbl/1000 sqft):	0.0015				
Average Organic Liquid Density (lb/gal):	5.6000				
Tank Diameter (ft):	60.0000				
Deck Fitting Losses (lb):	4,125.1398				
Value of Vapor Pressure Function:	0.2391				
Vapor Molecular Weight (lb/lb-mole):	62.0000				
Product Factor:	1.0000				
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	249.5000				
Deck Seam Losses (lb):	0.0000				
Deck Seam Length (ft):					
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000				
Deck Seam Length Factor(ft/sqft):	0.2000				
Tank Diameter (ft):	60.0000				
Vapor Control Efficiency (%)	0%				
Total Losses (lb):	6,490.7251				
Roof Fitting Loss Factors					
Roof Fitting/Status	Quantity	KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	1.00	26.4538
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Ungask.	1	51.00	0.00	1.00	843.2149
Roof Drain (3-in. Diameter)/Open	1	1.50	0.21	1.70	24.8004
Automatic Gauge Float Well/Bolted Cover, Gasketed	1	2.80	0.00	1.00	46.2942
Ladder Well (36-in. Diam.)/Slotted w. Sleeve, Gasketed	1	60.00	0.00	1.00	992.0176
Roof Leg or Hanger Well/Adjustable	16	7.90	0.00	1.00	2,089.8504
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	102.5085

TankESP
Emissions Report - Detail Format
Individual Tank Emission Totals

**Emissions Report for: Annual
31525 - Internal Floating Roof Tank
Albuquerque, NM**

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TankESP
Emissions Report - Detail Format
Tank Identification and Physical Characteristics
31526

<-- Select a tank from the dropdown list

Identification

User Identification:	31526
City:	Albuquerque
State:	NM
Company:	Albuquerque
Type of Tank:	cone-roof tank with IFR
Description:	MSS and PTEs

Tank Dimensions

Diameter (ft):		50.00
Volume (gallons):		705,020.52
Turnovers:		
Self Supp. Roof? (y/n):	N	
No. of Columns:		1.00
Eff. Col. Diam. (ft):		1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White Paint
Shell Condition	Average
Roof Color/Shade:	White Paint
Roof Condition:	Average

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded
Construction:	
Deck Seam:	
Deck Seam Len. (ft):	

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1
Roof Drain (3-in. Diameter)/Open	2
Ladder Well (36-in. Diam.)/Slotted w. Sleeve, Gasketed	1
Roof Leg or Hanger Well/Adjustable	16
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meteorological Data used in Emissions Calculations: Albuquerque, NM (Avg Atmospheric Pressure = 12.13 psia)

TankESP
Emissions Report - Detail Format
Liquid Contents of Storage Tank

31526 - Internal Floating Roof Tank
Albuquerque, NM

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg. F)			Liquid Bulk	Vapor Pressure (psia)			Vapor Mol.	Liquid Mass	Vapor Mass	Mol. Weight.	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.	Temp (deg F)	Avg.	Min.	Max.	Weight.	Fract.	Fract.		
Gasoline RVP_X	All	60.45	60.45	60.45	59.28	7.5447	7.5447	7.5447	62.0000			92.00	Option 4: RVP=13.5, ASTM Slope=3
Benzene									78.1100	0.0180000000	0.0043	78.11	Option 2: A=6.906, B=1211, C=220.79
Benzo(g,h,i)perylene									276.3300	0.0000030000	0.0000	276.33	Option 2: A=11.82, B=6580, C=273.15
Cumene (isopropylbenzene)									120.1900	0.0050000000	0.0001	120.19	Option 2: A=6.929, B=1455.8, C=207.2
Cyclohexane									84.1600	0.0024000000	0.0006	84.16	Option 2: A=6.845, B=1203.5, C=222.86
Ethylbenzene									106.1700	0.0140000000	0.0003	106.17	Option 2: A=6.95, B=1419.3, C=212.61
Hexane (n-)									86.1800	0.0100000000	0.0039	86.18	Option 2: A=6.878, B=1171.5, C=224.37
Iso-octane {2,2,4 trimethylpentane}									114.2300	0.0400000000	0.0049	114.23	Option 2: A=6.812, B=1257.8, C=220.74
Naphthalene									128.1700	0.0041500000	0.0000	128.17	Option 2: A=7.146, B=1831.6, C=211.82
PACs (Chrysene)									228.2900	0.0000260000	0.0000	228.29	Option 2: A=12.32, B=6160, C=273.15
Toluene									92.1400	0.0700000000	0.0048	92.14	Option 2: A=7.017, B=1377.6, C=222.64
Trimethylbenzene (1,2,4)									120.1900	0.0250000000	0.0001	120.19	Option 2: A=7.044, B=1573.3, C=208.56
Xylene									106.1700	0.0700000000	0.0013	106.17	Option 2: A=7.009, B=1462.3, C=215.11

TankESP
Emissions Report - Detail Format
Detail Calculations (AP-42)

31526 - Internal Floating Roof Tank
Albuquerque, NM

Month:	All
Rim Seal Losses (lb):	4,782.3397
Seal Factor A (lb-mole/ft-yr):	5.8000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.3000
Value of Vapor Pressure Function:	0.2387
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.5447
Tank Diameter (ft):	50.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000
Product Factor:	1.0000
Withdrawal Losses (lb):	132.1045
Number of Columns:	1.0000
Effective Column Diameter (ft):	1.0000
Net Throughput(gal/yr):	34,335,684.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	5.6000
Tank Diameter (ft):	50.0000
Deck Fitting Losses (lb):	3,796.1883
Value of Vapor Pressure Function:	0.2387
Vapor Molecular Weight (lb/lb-mole):	62.0000
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	230.2000
Deck Seam Losses (lb):	0.0000
Deck Seam Length (ft):	
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000
Deck Seam Length Factor(ft/sqft):	0.2000
Tank Diameter (ft):	50.0000
Vapor Control Efficiency (%)	0%
Total Losses (lb):	8,710.6324

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors		m	Losses(lb)
		KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))		
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	1.00	26.3853
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1	33.00	0.00	1.00	544.1973
Roof Drain (3-in. Diameter)/Open	2	1.50	0.21	1.70	49.4725
Ladder Well (36-in. Diam.)/Slotted w. Sleeve, Gasketed	1	60.00	0.00	1.00	989.4496
Roof Leg or Hanger Well/Adjustable	16	7.90	0.00	1.00	2,084.4405
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	102.2431

TankESP
Emissions Report - Detail Format
Individual Tank Emission Totals

**Emissions Report for: Annual
31526 - Internal Floating Roof Tank
Albuquerque, NM**

[illegible]

TankESP
Emissions Report - Detail Format
Tank Identification and Physical Characteristics
31527

<-- Select a tank from the dropdown list

Identification		
User Identification:	31527	
City:	Albuquerque	
State:	NM	
Company:	Albuquerque	
Type of Tank:	cone-roof tank with IFR	
Description:	MSS and PTEs	

Tank Dimensions		
Diameter (ft):		50.00
Volume (gallons):		705,020.52
Turnovers:		
Self Supp. Roof? (y/n):	N	
No. of Columns:		1.00
Eff. Col. Diam. (ft):		1.00

Paint Characteristics		
Internal Shell Condition:	Light Rust	
Shell Color/Shade:	White Paint	
Shell Condition	Average	
Roof Color/Shade:	White Paint	
Roof Condition:	Average	

Rim-Seal System		
Primary Seal:	Mechanical Shoe	
Secondary Seal	None	

Deck Characteristics		
Deck Fitting Category:	Detail	
Deck Type:	Welded	
Construction:		
Deck Seam:		
Deck Seam Len. (ft):		

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1
Roof Drain (3-in. Diameter)/Open	2
Ladder Well (36-in. Diam.)/Slotted w. Sleeve, Gasketed	1
Roof Leg or Hanger Well/Adjustable	16
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meteorological Data used in Emissions Calculations: Albuquerque, NM (Avg Atmospheric Pressure = 12.13 psia)

TankESP
Emissions Report - Detail Format
Liquid Contents of Storage Tank

31527 - Internal Floating Roof Tank
Albuquerque, NM

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg. F)			Liquid Bulk	Vapor Pressure (psia)			Vapor Mol.	Liquid Mass	Vapor Mass	Mol. Weight.	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.	Temp (deg F)	Avg.	Min.	Max.	Weight.	Fract.	Fract.		
Gasoline RVP_X	All	60.45	60.45	60.45	59.28	7.5447	7.5447	7.5447	62.0000			92.00	Option 4: RVP=13.5, ASTM Slope=3
Benzene									78.1100	0.0180000000	0.0043	78.11	Option 2: A=6.906, B=1211, C=220.79
Benzo(g,h,i)perylene									276.3300	0.0000030000	0.0000	276.33	Option 2: A=11.82, B=6580, C=273.15
Cumene (isopropylbenzene)									120.1900	0.0050000000	0.0001	120.19	Option 2: A=6.929, B=1455.8, C=207.2
Cyclohexane									84.1600	0.0024000000	0.0006	84.16	Option 2: A=6.845, B=1203.5, C=222.86
Ethylbenzene									106.1700	0.0140000000	0.0003	106.17	Option 2: A=6.95, B=1419.3, C=212.61
Hexane (n-)									86.1800	0.0100000000	0.0039	86.18	Option 2: A=6.878, B=1171.5, C=224.37
Iso-octane {2,2,4 trimethylpentane}									114.2300	0.0400000000	0.0049	114.23	Option 2: A=6.812, B=1257.8, C=220.74
Naphthalene									128.1700	0.0041500000	0.0000	128.17	Option 2: A=7.146, B=1831.6, C=211.82
PACs (Chrysene)									228.2900	0.0000260000	0.0000	228.29	Option 2: A=12.32, B=6160, C=273.15
Toluene									92.1400	0.0700000000	0.0048	92.14	Option 2: A=7.017, B=1377.6, C=222.64
Trimethylbenzene (1,2,4)									120.1900	0.0250000000	0.0001	120.19	Option 2: A=7.044, B=1573.3, C=208.56
Xylene									106.1700	0.0700000000	0.0013	106.17	Option 2: A=7.009, B=1462.3, C=215.11

TankESP
Emissions Report - Detail Format
Detail Calculations (AP-42)

31527 - Internal Floating Roof Tank
Albuquerque, NM

Month:	All
Rim Seal Losses (lb):	4,782.3397
Seal Factor A (lb-mole/ft-yr):	5.8000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.3000
Value of Vapor Pressure Function:	0.2387
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.5447
Tank Diameter (ft):	50.0000
Vapor Molecular Weight (lb/lb-mole):	62.0000
Product Factor:	1.0000
Withdrawal Losses (lb):	132.1045
Number of Columns:	1.0000
Effective Column Diameter (ft):	1.0000
Net Throughput(gal/yr):	34,335,684.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	5.6000
Tank Diameter (ft):	50.0000
Deck Fitting Losses (lb):	3,796.1883
Value of Vapor Pressure Function:	0.2387
Vapor Molecular Weight (lb/lb-mole):	62.0000
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	230.2000
Deck Seam Losses (lb):	0.0000
Deck Seam Length (ft):	
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000
Deck Seam Length Factor(ft/sqft):	0.2000
Tank Diameter (ft):	50.0000
Vapor Control Efficiency (%)	0%
Total Losses (lb):	8,710.6324

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors		m	Losses(lb)
		KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))		
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	1.00	26.3853
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1	33.00	0.00	1.00	544.1973
Roof Drain (3-in. Diameter)/Open	2	1.50	0.21	1.70	49.4725
Ladder Well (36-in. Diam.)/Slotted w. Sleeve, Gasketed	1	60.00	0.00	1.00	989.4496
Roof Leg or Hanger Well/Adjustable	16	7.90	0.00	1.00	2,084.4405
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	102.2431

TankESP
Emissions Report - Detail Format
Individual Tank Emission Totals

**Emissions Report for: Annual
31527 - Internal Floating Roof Tank
Albuquerque, NM**

[illegible]

TankESP
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

29553 <-- Select a tank from the dropdown list

Identification		
User Identification:	29553	
City:	Albuquerque	
State:	NM	
Company:	Albuquerque	
Type of Tank:	FRT (no floating roof)	
Description:	MSS and PTEs	
Tank Dimensions		
Shell Height (ft):		47.92
Diameter (ft):		50.00
Liquid Height (ft) :		46.92
Avg. Liquid Height (ft):		23.96
Volume (gallons):		703,845.48
Turnovers:		
Net Throughput(gal/yr):		44,315,616.00
Insulation Condition:	Not Insulated	
Paint Characteristics		
Shell Color/Shade:	White Paint	
Shell Condition	Average	
Roof Color/Shade:	White Paint	
Roof Condition:	Average	
Roof Characteristics		
Type:	Column-Supported (Cone)	
Height (ft)		1.56
Roof Slope (ft/ft)		0.06
Breather Vent Settings		
Vacuum Settings (psig):		0.00
Pressure Settings (psig):		0.00

Meteorological Data used in Emissions Calculations: Albuquerque, NM (Avg Atmospheric Pressure = 12.13 psia)

TankESP
Emissions Report - Detail Format
Liquid Contents of Storage Tank

29553 - Vertical Fixed Roof Tank
Albuquerque, NM

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg. F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Diesel	All	60.56	54.11	67.01	59.28	0.0074	0.0059	0.0091	130.0000			188.00	Option 3: A=12.101, B=8907
Benzene									78.1100	0.0000	0.0021	78.11	Option 2: A=6.906, B=1211, C=220.79
Benzo(g,h,i)perylene									276.3300	0.0000	0.0000	276.33	Option 2: A=11.82, B=6580, C=273.15
Cumene (isopropylbenzene)									120.1900	0.0000	0.0000	120.19	Option 2: A=6.929, B=1455.8, C=207.2
Cyclohexane									84.1600	0.0000	0.0000	84.16	Option 2: A=6.845, B=1203.5, C=222.86
Ethylbenzene									106.1700	0.0001	0.0030	106.17	Option 2: A=6.95, B=1419.3, C=212.61
Hexane (n-)									86.1800	0.0000	0.0004	86.18	Option 2: A=6.878, B=1171.5, C=224.37
Iso-octane (2,2,4 trimethylpentane)									114.2300	0.0000	0.0000	114.23	Option 2: A=6.812, B=1257.8, C=220.74
Naphthalene									128.1700	0.0008	0.0004	128.17	Option 2: A=7.146, B=1831.6, C=211.82
PACs (Chrysene)									228.2900	0.0000	0.0000	228.29	Option 2: A=12.32, B=6160, C=273.15
Toluene									92.1400	0.0003	0.0236	92.14	Option 2: A=7.017, B=1377.6, C=222.64
Trimethylbenzene (1,2,4)									120.1900	0.0100	0.0457	120.19	Option 2: A=7.044, B=1573.3, C=208.56
Xylene									106.1700	0.0029	0.0583	106.17	Option 2: A=7.009, B=1462.3, C=215.11

TankESP
Emissions Report - Detail Format
Detail Calculations (AP-42)

29553 - Vertical Fixed Roof Tank
Albuquerque, NM

Annual Emission Calculations	
Standing Losses (lb):	151.0808
Vapor Space Volume (cu ft):	48,068.0038
Vapor Density (lb/cu ft):	0.0002
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	0.0000
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	48,068.0038
Tank Diameter (ft):	50.0000
Vapor Space Outage (ft):	24.4808
Tank Shell Height (ft):	47.9200
Average Liquid Height (ft):	23.9600
Roof Outage (ft):	0.5208
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.5208
Roof Height (ft)	1.5625
Roof Slope (ft/ft)	0.0625
Shell Radius (ft):	25.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0002
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psi)	0.0074
Daily Avg. Liquid Surface Temp. (deg. F):	60.5599
Daily Average Ambient Temp. (deg. F):	57.9863
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.7310
Liquid Bulk Temperature (deg. F):	59.2789
Tank Paint Solar Absorptance (Shell):	0.2500
Tank Paint Solar Absorptance (Roof):	0.2500
Daily Total Solar Insulation Factor (Btu/sqft day):	0.0000
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	0.0032
Breather Vent Press. Setting Range (psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psi)	0.0074
Vapor Pressure at Daily Minimum Liquid Surface Temperature (ps	0.0059
Vapor Pressure at Daily Maximum Liquid Surface Temperature (p	0.0091
Daily Avg. Liquid Surface Temp. (deg F):	60.5599
Daily Min. Liquid Surface Temp. (deg F):	54.1105
Daily Max. Liquid Surface Temp. (deg F):	67.0093
Daily Ambient Temp. Range (deg. R):	23.2433
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psi)	0.0074
Vapor Space Outage (ft):	24.4808

Working Losses (lb):	623.3293
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psi)	0.0074
Annual Net Throughput (gal/yr.):	44,315,616.0000
Annual Turnovers:	
Turnover Factor:	0.0000
Maximum Liquid Volume (gal):	703,845.4812
Maximum Liquid Height (ft):	46.9200
Tank Diameter (ft):	50.0000
Working Loss Product Factor:	1.0000
Vapor Control Efficiency (%)	0%
Total Losses (lb):	774.4101

TankESP
Emissions Report - Detail Format
Individual Tank Emission Totals

**Emissions Report for: Annual
29553 - Vertical Fixed Roof Tank
Albuquerque, NM**

[illegible]

TankESP
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

30796 <-- Select a tank from the dropdown list

Identification		
User Identification:		30796
City:		Albuquerque
State:		NM
Company:		Albuquerque
Type of Tank:		FRT (no floating roof)
Description:		MSS and PTEs

Tank Dimensions		
Shell Height (ft):		48.00
Diameter (ft):		50.00
Liquid Height (ft) :		47.00
Avg. Liquid Height (ft):		24.00
Volume (gallons):		705,020.52
Turnovers:		
Net Throughput(gal/yr):		44,315,616.00
Insulation Condition:		Not Insulated

Paint Characteristics		
Shell Color/Shade:		White Paint
Shell Condition		Average
Roof Color/Shade:		White Paint
Roof Condition:		Average

Roof Characteristics		
Type:		Column-Supported (Cone)
Height (ft)		1.56
Roof Slope (ft/ft)		0.06

Breather Vent Settings		
Vacuum Settings (psig):		0.00
Pressure Settings (psig):		0.00

Meteorological Data used in Emissions Calculations: Albuquerque, NM (Avg Atmospheric Pressure = 12.13 psia)

TankESP
Emissions Report - Detail Format
Liquid Contents of Storage Tank

30796 - Vertical Fixed Roof Tank
Albuquerque, NM

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg. F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Diesel	All	60.56	54.11	67.01	59.28	0.0074	0.0059	0.0091	130.0000			188.00	Option 3: A=12.101, B=8907
Benzene									78.1100	0.0000	0.0021	78.11	Option 2: A=6.906, B=1211, C=220.79
Benzo(g,h,i)perylene									276.3300	0.0000	0.0000	276.33	Option 2: A=11.82, B=6580, C=273.15
Cumene (isopropylbenzene)									120.1900	0.0000	0.0000	120.19	Option 2: A=6.929, B=1455.8, C=207.2
Cyclohexane									84.1600	0.0000	0.0000	84.16	Option 2: A=6.845, B=1203.5, C=222.86
Ethylbenzene									106.1700	0.0001	0.0030	106.17	Option 2: A=6.95, B=1419.3, C=212.61
Hexane (n-)									86.1800	0.0000	0.0004	86.18	Option 2: A=6.878, B=1171.5, C=224.37
Iso-octane (2,2,4 trimethylpentane)									114.2300	0.0000	0.0000	114.23	Option 2: A=6.812, B=1257.8, C=220.74
Naphthalene									128.1700	0.0008	0.0004	128.17	Option 2: A=7.146, B=1831.6, C=211.82
PACs (Chrysene)									228.2900	0.0000	0.0000	228.29	Option 2: A=12.32, B=6160, C=273.15
Toluene									92.1400	0.0003	0.0236	92.14	Option 2: A=7.017, B=1377.6, C=222.64
Trimethylbenzene (1,2,4)									120.1900	0.0100	0.0457	120.19	Option 2: A=7.044, B=1573.3, C=208.56
Xylene									106.1700	0.0029	0.0583	106.17	Option 2: A=7.009, B=1462.3, C=215.11

TankESP
Emissions Report - Detail Format
Detail Calculations (AP-42)

30796 - Vertical Fixed Roof Tank
Albuquerque, NM

Annual Emission Calculations	
Standing Losses (lb):	151.3339
Vapor Space Volume (cu ft):	48,146.5437
Vapor Density (lb/cu ft):	0.0002
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	0.0000
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	48,146.5437
Tank Diameter (ft):	50.0000
Vapor Space Outage (ft):	24.5208
Tank Shell Height (ft):	48.0000
Average Liquid Height (ft):	24.0000
Roof Outage (ft):	0.5208
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.5208
Roof Height (ft)	1.5625
Roof Slope (ft/ft)	0.0625
Shell Radius (ft):	25.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0002
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	0.0074
Daily Avg. Liquid Surface Temp. (deg. F):	60.5593
Daily Average Ambient Temp. (deg. F):	57.9863
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.7310
Liquid Bulk Temperature (deg. F):	59.2789
Tank Paint Solar Absorptance (Shell):	0.2500
Tank Paint Solar Absorptance (Roof):	0.2500
Daily Total Solar Insulation Factor (Btu/sqft day):	0.0000
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	0.0032
Breather Vent Press. Setting Range (psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psi)	0.0074
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia)	0.0059
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia)	0.0091
Daily Avg. Liquid Surface Temp. (deg F):	60.5593
Daily Min. Liquid Surface Temp. (deg F):	54.1094
Daily Max. Liquid Surface Temp. (deg F):	67.0093
Daily Ambient Temp. Range (deg. R):	23.2433
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psi)	0.0074
Vapor Space Outage (ft):	24.5208

Working Losses (lb):	624.1142
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psi)	0.0074
Annual Net Throughput (gal/yr.):	44,315,616.0000
Annual Turnovers:	
Turnover Factor:	0.0000
Maximum Liquid Volume (gal):	705,020.5154
Maximum Liquid Height (ft):	47.0000
Tank Diameter (ft):	50.0000
Working Loss Product Factor:	1.0000
Vapor Control Efficiency (%)	0%
Total Losses (lb):	775.4481

TankESP
Emissions Report - Detail Format
Individual Tank Emission Totals

**Emissions Report for: Annual
30796 - Vertical Fixed Roof Tank
Albuquerque, NM**

[illegible]

TankESP
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

AST-2 <-- Select a tank from the dropdown list

Identification
User Identification: AST-2
City: Albuquerque
State: NM
Company: Albuquerque
Type of Tank: Horizontal Tank
Description: MSS and PTEs

Tank Dimensions
Shell Length (ft): 32.17
Diameter (ft): 8.00
Volume (gallons): 12,096.27
Turnovers:
Net Throughput(gal/yr): 654,012.00
Insulation Condition: Not Insulated

Paint Characteristics
Shell Color/Shade: White Paint
Shell Condition: Average

Breather Vent Settings
Vacuum Settings (psig): 0.00
Pressure Settings (psig): 0.00

Meteorological Data used in Emissions Calculations: Albuquerque, NM (Avg Atmospheric Pressure = 12.13 psia)

TankESP
Emissions Report - Detail Format
Liquid Contents of Storage Tank

AST-2 - Horizontal Tank
Albuquerque, NM

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg. F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol.	Liquid Mass	Vapor Mass	Mol. Weight.	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.	Weight.	Fract.	Fract.		
Gasoline Additives	All	60.89	54.76	67.02	60.89	7.2999	6.4937	6.4937	75.7000			112.0000	Option 4: RVP=13, ASTM Slope=3

TankESP

Emissions Report - Detail Format

Detail Calculations (AP-42)

AST-2 - Horizontal Tank

Albuquerque, NM

Annual Emission Calculations	
Standing Losses (lb):	8,513.4480
Vapor Space Volume (cu ft):	982.0303
Vapor Density (lb/cu ft):	0.0989
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	0.0000
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	982.0303
Tank Diameter (ft):	8.0000
Effective Diameter (ft):	18.1020
Vapor Space Outage (ft):	3.8158
Tank Shell Length (ft):	32.1700
Vapor Density	
Vapor Density (lb/cu ft):	0.0989
Vapor Molecular Weight (lb/lb-mole):	75.7000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.2999
Daily Avg. Liquid Surface Temp. (deg. F):	60.8902
Daily Average Ambient Temp. (deg. F):	57.9863
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.7310
Liquid Bulk Temperature (deg. F):	59.2789
Tank Paint Solar Absorptance (Shell):	0.2500
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	1.6905
Breather Vent Press. Setting Range (psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.2999
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	6.4937
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	6.4937
Daily Avg. Liquid Surface Temp. (deg F):	60.8902
Daily Min. Liquid Surface Temp. (deg F):	54.7612
Daily Max. Liquid Surface Temp. (deg F):	67.0193
Daily Ambient Temp. Range (deg. R):	23.2433
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.2999
Vapor Space Outage (ft):	3.8158
Working Losses (lb):	5,151.9248
Vapor Molecular Weight (lb/lb-mole):	75.7000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.2999
Annual Net Throughput (gal/yr.):	654,012.0000
Annual Turnovers:	
Turnover Factor:	0.0000
Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Vapor Control Efficiency (%)	0%
Total Losses (lb):	13,665.3728

TankESP

Emissions Report - Detail Format

Individual Tank Emission Totals

**Emissions Report for: Annual
AST-2 - Horizontal Tank
Albuquerque, NM**

[illegible]

TankESP
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

AST-3 <-- Select a tank from the dropdown list

Identification

User Identification: AST-3
City: Multiple
State: Multiple
Company: Albuquerque
Type of Tank: Multiple
Description: MSS and PTEs

Tank Dimensions

Shell Length (ft): 18.17
Diameter (ft): 6.17
Volume (gallons): 4,063.93
Turnovers:
Net Throughput(gal/yr): 199,837.00
Insulation Condition: Not Insulated

Paint Characteristics

Shell Color/Shade: Tan Paint
Shell Condition: Average

Breather Vent Settings

Vacuum Settings (psig): 0.00
Pressure Settings (psig): 0.00

Meteorological Data used in Emissions Calculations: Multiple, Multiple (Avg Atmospheric Pressure = 0 psia)

TankESP
Emissions Report - Detail Format
Liquid Contents of Storage Tank

AST-3 - Horizontal Tank
Multiple, Multiple

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg. F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol.	Liquid Mass	Vapor Mass	Mol. Weight.	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.	Weight.	Fract.	Fract.		
Gasoline Additives	All	54.88	48.95	60.81	54.88	6.5550	5.7869	5.7869	0.0000			0.0000	Option 4: RVP=11.896, ASTM Slope=2.745

TankESP
Emissions Report - Detail Format
Detail Calculations (AP-42)

AST-3 - Horizontal Tank

Multiple, Multiple

Annual Emission Calculations	
Standing Losses (lb):	3,050.9235
Vapor Space Volume (cu ft):	0.0000
Vapor Density (lb/cu ft):	0.0000
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	0.0000
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	0.0000
Tank Diameter (ft):	6.1700
Effective Diameter (ft):	0.0000
Vapor Space Outage (ft):	16.2670
Tank Shell Length (ft):	18.1700
Vapor Density	
Vapor Density (lb/cu ft):	0.0000
Vapor Molecular Weight (lb/lb-mole):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.5550
Daily Avg. Liquid Surface Temp. (deg. F):	54.8800
Daily Average Ambient Temp. (deg. F):	51.2937
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.7310
Liquid Bulk Temperature (deg. F):	53.5386
Tank Paint Solar Absorptance (Shell):	0.0000
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	1.6161
Breather Vent Press. Setting Range (psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.5550
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	5.7869
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	5.7869
Daily Avg. Liquid Surface Temp. (deg F):	54.8800
Daily Min. Liquid Surface Temp. (deg F):	48.9468
Daily Max. Liquid Surface Temp. (deg F):	60.8131
Daily Ambient Temp. Range (deg. R):	21.2525
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.5550
Vapor Space Outage (ft):	16.2670
Working Losses (lb):	1,555.6707
Vapor Molecular Weight (lb/lb-mole):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.5550
Annual Net Throughput (gal/yr.):	199,837.0000
Annual Turnovers:	
Turnover Factor:	0.0000
Tank Diameter (ft):	6.1700
Working Loss Product Factor:	0.0000
Vapor Control Efficiency (%)	0%
Total Losses (lb):	4,606.5942

TankESP
Emissions Report - Detail Format
Individual Tank Emission Totals

**Emissions Report for: Annual
AST-3 - Horizontal Tank
Multiple, Multiple**

[illegible]

TankESP
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

AST-4 <-- Select a tank from the dropdown list

Identification
User Identification: AST-4
City: Albuquerque
State: NM
Company: Albuquerque
Type of Tank: Horizontal Tank
Description: MSS and PTEs

Tank Dimensions
Shell Length (ft): 18.17
Diameter (ft): 6.17
Volume (gallons): 4,063.93
Turnovers:
Net Throughput(gal/yr): 218,004.00
Insulation Condition: Not Insulated

Paint Characteristics
Shell Color/Shade: White Paint
Shell Condition: Average

Breather Vent Settings
Vacuum Settings (psig): 0.00
Pressure Settings (psig): 0.00

Meteorological Data used in Emissions Calculations: Albuquerque, NM (Avg Atmospheric Pressure = 12.13 psia)

TankESP
Emissions Report - Detail Format
Liquid Contents of Storage Tank

AST-4 - Horizontal Tank
Albuquerque, NM

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg. F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol.	Liquid Mass	Vapor Mass	Mol. Weight.	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.	Weight.	Fract.	Fract.		
Gasoline Additives	All	60.84	54.67	67.02	60.84	7.2934	6.4826	6.4826	75.7000			112.0000	Option 4: RVP=13, ASTM Slope=3

TankESP
Emissions Report - Detail Format
Detail Calculations (AP-42)

AST-4 - Horizontal Tank
Albuquerque, NM

Annual Emission Calculations	
Standing Losses (lb):	3,353.3361
Vapor Space Volume (cu ft):	329.9280
Vapor Density (lb/cu ft):	0.0988
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	0.0000
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	329.9280
Tank Diameter (ft):	6.1700
Effective Diameter (ft):	11.9474
Vapor Space Outage (ft):	2.9429
Tank Shell Length (ft):	18.1700
Vapor Density	
Vapor Density (lb/cu ft):	0.0988
Vapor Molecular Weight (lb/lb-mole):	75.7000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.2934
Daily Avg. Liquid Surface Temp. (deg. F):	60.8448
Daily Average Ambient Temp. (deg. F):	57.9863
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.7310
Liquid Bulk Temperature (deg. F):	59.2789
Tank Paint Solar Absorptance (Shell):	0.2500
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	1.7007
Breather Vent Press. Setting Range (psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.2934
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	6.4826
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	6.4826
Daily Avg. Liquid Surface Temp. (deg F):	60.8448
Daily Min. Liquid Surface Temp. (deg F):	54.6718
Daily Max. Liquid Surface Temp. (deg F):	67.0179
Daily Ambient Temp. Range (deg. R):	23.2433
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.2934
Vapor Space Outage (ft):	2.9429
Working Losses (lb):	1,725.9180
Vapor Molecular Weight (lb/lb-mole):	75.7000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.2934
Annual Net Throughput (gal/yr.):	218,004.0000
Annual Turnovers:	
Turnover Factor:	0.0000
Tank Diameter (ft):	6.1700
Working Loss Product Factor:	1.0000
Vapor Control Efficiency (%)	0%
Total Losses (lb):	5,079.2542

TankESP
Emissions Report - Detail Format
Individual Tank Emission Totals

**Emissions Report for: Annual
AST-4 - Horizontal Tank
Albuquerque, NM**

[illegible]

TankESP
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

AST-8 <-- Select a tank from the dropdown list

Identification	
User Identification:	AST-8
City:	Albuquerque
State:	NM
Company:	Albuquerque
Type of Tank:	Horizontal Tank
Description:	MSS and PTEs
Tank Dimensions	
Shell Length (ft):	16.00
Diameter (ft):	8.00
Volume (gallons):	6,016.18
Turnovers:	
Net Throughput(gal/yr):	8,280.00
Insulation Condition:	Not Insulated
Paint Characteristics	
Shell Color/Shade:	White Paint
Shell Condition	Average
Breather Vent Settings	
Vacuum Settings (psig):	0.00
Pressure Settings (psig):	0.00

Meteorological Data used in Emissions Calculations: Albuquerque, NM (Avg Atmospheric Pressure = 12.13 psia)

TankESP
Emissions Report - Detail Format
Liquid Contents of Storage Tank

AST-8 - Horizontal Tank
Albuquerque, NM

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg. F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol.	Liquid Mass	Vapor Mass	Mol. Weight.	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.	Weight.	Fract.	Fract.		
Gasoline Additives	All	60.78	54.55	67.02	60.78	7.2849	6.4680	6.4680	75.7000			112.0000	Option 4: RVP=13, ASTM Slope=3

TankESP

Emissions Report - Detail Format
Detail Calculations (AP-42)

AST-8 - Horizontal Tank

Albuquerque, NM

Annual Emission Calculations	
Standing Losses (lb):	4,249.0173
Vapor Space Volume (cu ft):	488.4204
Vapor Density (lb/cu ft):	0.0987
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	0.0000
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	488.4204
Tank Diameter (ft):	8.0000
Effective Diameter (ft):	12.7662
Vapor Space Outage (ft):	3.8158
Tank Shell Length (ft):	16.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0987
Vapor Molecular Weight (lb/lb-mole):	75.7000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.2849
Daily Avg. Liquid Surface Temp. (deg. F):	60.7849
Daily Average Ambient Temp. (deg. F):	57.9863
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.7310
Liquid Bulk Temperature (deg. F):	59.2789
Tank Paint Solar Absorptance (Shell):	0.2500
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	1.7142
Breather Vent Press. Setting Range (psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.2849
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	6.4680
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	6.4680
Daily Avg. Liquid Surface Temp. (deg F):	60.7849
Daily Min. Liquid Surface Temp. (deg F):	54.5536
Daily Max. Liquid Surface Temp. (deg F):	67.0161
Daily Ambient Temp. Range (deg. R):	23.2433
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.2849
Vapor Space Outage (ft):	3.8158
Working Losses (lb):	107.9688
Vapor Molecular Weight (lb/lb-mole):	75.7000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.2849
Annual Net Throughput (gal/yr.):	8,280.0000
Annual Turnovers:	
Turnover Factor:	1.0000
Tank Diameter (ft):	8.0000
Working Loss Product Factor:	1.0000
Vapor Control Efficiency (%)	0%
Total Losses (lb):	4,356.9861

TankESP

Emissions Report - Detail Format
Individual Tank Emission Totals

**Emissions Report for: Annual
AST-8 - Horizontal Tank
Albuquerque, NM**

[illegible]

TankESP
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

AST-9 <-- Select a tank from the dropdown list

Identification
User Identification: AST-9
City: Albuquerque
State: NM
Company: Albuquerque
Type of Tank: Horizontal Tank
Description: MSS and PTEs

Tank Dimensions
Shell Length (ft): 5.00
Diameter (ft): 3.00
Volume (gallons): 264.38
Turnovers:
Net Throughput(gal/yr): 2,000.00
Insulation Condition: Not Insulated

Paint Characteristics
Shell Color/Shade: Mill Finish Aluminum (Unpainted)
Shell Condition: Average

Breather Vent Settings
Vacuum Settings (psig): 0.00
Pressure Settings (psig): 0.00

Meteorological Data used in Emissions Calculations: Albuquerque, NM (Avg Atmospheric Pressure = 12.13 psia)

TankESP
Emissions Report - Detail Format
Liquid Contents of Storage Tank

AST-9 - Horizontal Tank
Albuquerque, NM

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg. F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol.	Liquid Mass	Vapor Mass	Mol. Weight.	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.	Weight.	Fract.	Fract.		
Gasoline Additives	All	60.08	54.07	66.08	60.08	7.1849	6.4065	6.4065	75.7000			112.0000	Option 4: RVP=13, ASTM Slope=3

TankESP
Emissions Report - Detail Format
Detail Calculations (AP-42)

AST-9 - Horizontal Tank
Albuquerque, NM

Annual Emission Calculations	
Standing Losses (lb):	254.4050
Vapor Space Volume (cu ft):	18.6880
Vapor Density (lb/cu ft):	0.0975
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	0.0000
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	18.6880
Tank Diameter (ft):	3.0000
Effective Diameter (ft):	4.3702
Vapor Space Outage (ft):	1.2459
Tank Shell Length (ft):	5.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0975
Vapor Molecular Weight (lb/lb-mole):	75.7000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.1849
Daily Avg. Liquid Surface Temp. (deg. F):	60.0778
Daily Average Ambient Temp. (deg. F):	57.9863
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.7310
Liquid Bulk Temperature (deg. F):	58.6068
Tank Paint Solar Absorptance (Shell):	0.1200
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	1.6308
Breather Vent Press. Setting Range (psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.1849
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	6.4065
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	6.4065
Daily Avg. Liquid Surface Temp. (deg F):	60.0778
Daily Min. Liquid Surface Temp. (deg F):	54.0724
Daily Max. Liquid Surface Temp. (deg F):	66.0832
Daily Ambient Temp. Range (deg. R):	23.2433
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.1849
Vapor Space Outage (ft):	1.2459
Working Losses (lb):	25.7627
Vapor Molecular Weight (lb/lb-mole):	75.7000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.1849
Annual Net Throughput (gal/yr.):	2,000.0040
Annual Turnovers:	
Turnover Factor:	1.0000
Tank Diameter (ft):	3.0000
Working Loss Product Factor:	1.0000
Vapor Control Efficiency (%)	0%
Total Losses (lb):	280.1677

TankESP
Emissions Report - Detail Format
Individual Tank Emission Totals

**Emissions Report for: Annual
AST-9 - Horizontal Tank
Albuquerque, NM**

[illegible]

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO)
FROM NATURAL GAS COMBUSTION^a

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO _x ^b		CO	
	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS) ^c	280	A	84	B
Uncontrolled (Post-NSPS) ^c	190	A	84	B
Controlled - Low NO _x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	100	B	84	B
Controlled - Low NO _x burners	50	D	84	B
Controlled - Low NO _x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

^a Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from lb/10⁶ scf to kg/10⁶ m³, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from lb/10⁶ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. SCC = Source Classification Code. ND = no data. NA = not applicable.

^b Expressed as NO₂. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO_x emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO_x emission factor.

^c NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION^a

Pollutant	Emission Factor (lb/10 ⁶ scf)	Emission Factor Rating
CO ₂ ^b	120,000	A
Lead	0.0005	D
N ₂ O (Uncontrolled)	2.2	E
N ₂ O (Controlled-low-NO _x burner)	0.64	E
PM (Total) ^c	7.6	D
PM (Condensable) ^c	5.7	D
PM (Filterable) ^c	1.9	B
SO ₂ ^d	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

^a Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from lb/10⁶ scf to kg/10⁶ m³, multiply by 16. To convert from lb/10⁶ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds.

VOC = Volatile Organic Compounds.

^b Based on approximately 100% conversion of fuel carbon to CO₂. CO₂[lb/10⁶ scf] = (3.67) (CON) (C)(D), where CON = fractional conversion of fuel carbon to CO₂, C = carbon content of fuel by weight (0.76), and D = density of fuel, 4.2x10⁻⁴ lb/10⁶ scf.

^c All PM (total, condensable, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM₁₀, PM_{2.5} or PM₁ emissions. Total PM is the sum of the filterable PM and condensable PM. Condensable PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

^d Based on 100% conversion of fuel sulfur to SO₂.

Assumes sulfur content is natural gas of 2,000 grains/10⁶ scf. The SO₂ emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO₂ emission factor by the ratio of the site-specific sulfur content (grains/10⁶ scf) to 2,000 grains/10⁶ scf.

5.2 Transportation And Marketing Of Petroleum Liquids¹⁻³

5.2.1 General

The transportation and marketing of petroleum liquids involve many distinct operations, each of which represents a potential source of evaporation loss. Crude oil is transported from production operations to a refinery by tankers, barges, rail tank cars, tank trucks, and pipelines. Refined petroleum products are conveyed to fuel marketing terminals and petrochemical industries by these same modes. From the fuel marketing terminals, the fuels are delivered by tank trucks to service stations, commercial accounts, and local bulk storage plants. The final destination for gasoline is usually a motor vehicle gasoline tank. Similar distribution paths exist for fuel oils and other petroleum products. A general depiction of these activities is shown in Figure 5.2-1.

5.2.2 Emissions And Controls

Evaporative emissions from the transportation and marketing of petroleum liquids may be considered, by storage equipment and mode of transportation used, in four categories:

1. Rail tank cars, tank trucks, and marine vessels: loading, transit, and ballasting losses.
2. Service stations: bulk fuel drop losses and underground tank breathing losses.
3. Motor vehicle tanks: refueling losses.
4. Large storage tanks: breathing, working, and standing storage losses. (See Chapter 7, "Liquid Storage Tanks".)

Evaporative and exhaust emissions are also associated with motor vehicle operation, and these topics are discussed in AP-42 *Volume II: Mobile Sources*.

5.2.2.1 Rail Tank Cars, Tank Trucks, And Marine Vessels -

Emissions from these sources are from loading losses, ballasting losses, and transit losses.

5.2.2.1.1 Loading Losses -

Loading losses are the primary source of evaporative emissions from rail tank car, tank truck, and marine vessel operations. Loading losses occur as organic vapors in "empty" cargo tanks are displaced to the atmosphere by the liquid being loaded into the tanks. These vapors are a composite of (1) vapors formed in the empty tank by evaporation of residual product from previous loads, (2) vapors transferred to the tank in vapor balance systems as product is being unloaded, and (3) vapors generated in the tank as the new product is being loaded. The quantity of evaporative losses from loading operations is, therefore, a function of the following parameters:

- Physical and chemical characteristics of the previous cargo;
- Method of unloading the previous cargo;
- Operations to transport the empty carrier to a loading terminal;
- Method of loading the new cargo; and
- Physical and chemical characteristics of the new cargo.

The principal methods of cargo carrier loading are illustrated in Figure 5.2-2, Figure 5.2-3, and Figure 5.2-4. In the splash loading method, the fill pipe dispensing the cargo is lowered only part way into the cargo tank. Significant turbulence and vapor/liquid contact occur during the splash

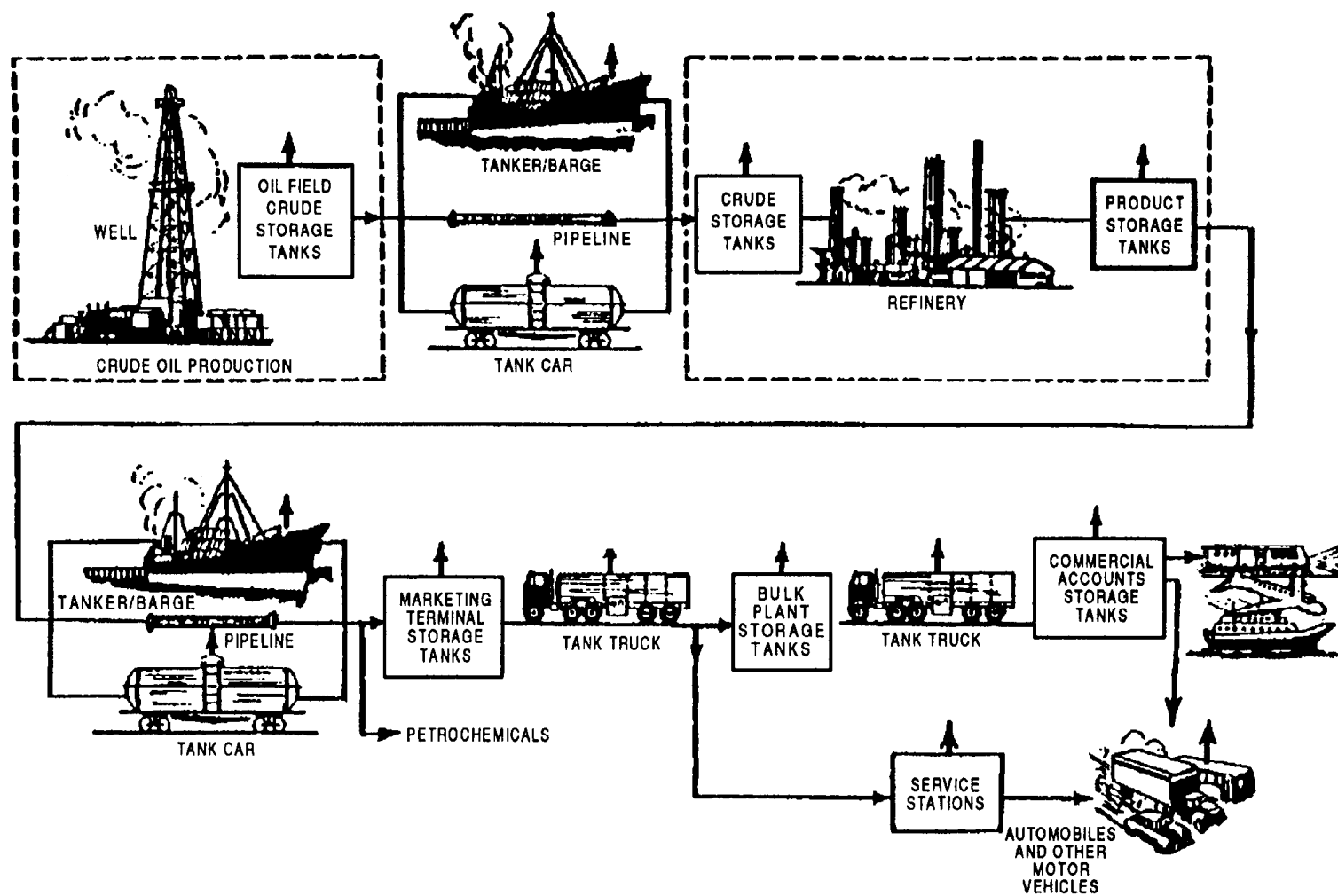


Figure 5.2-1. Flow sheet of petroleum production, refining, and distribution systems.
(Points of organic emissions are indicated by vertical arrows.)

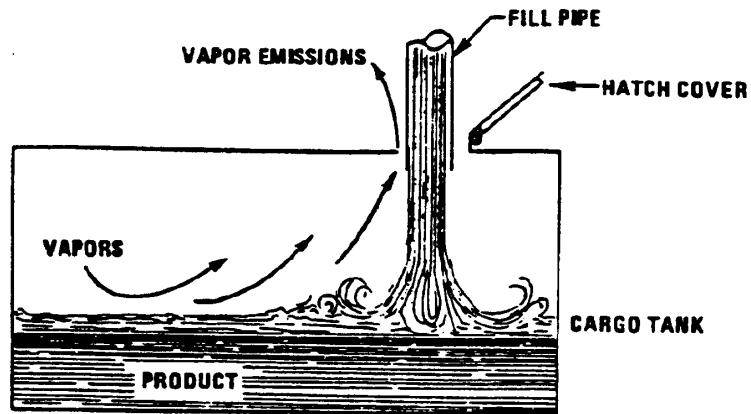


Figure 5.2-2. Splash loading method.

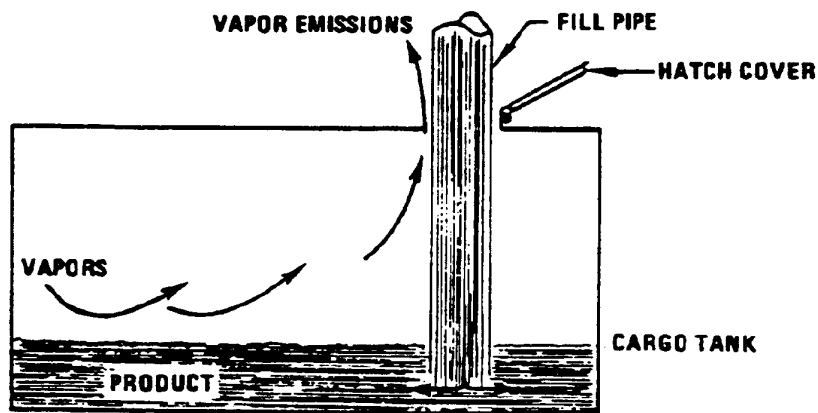


Figure 5.2-3. Submerged fill pipe.

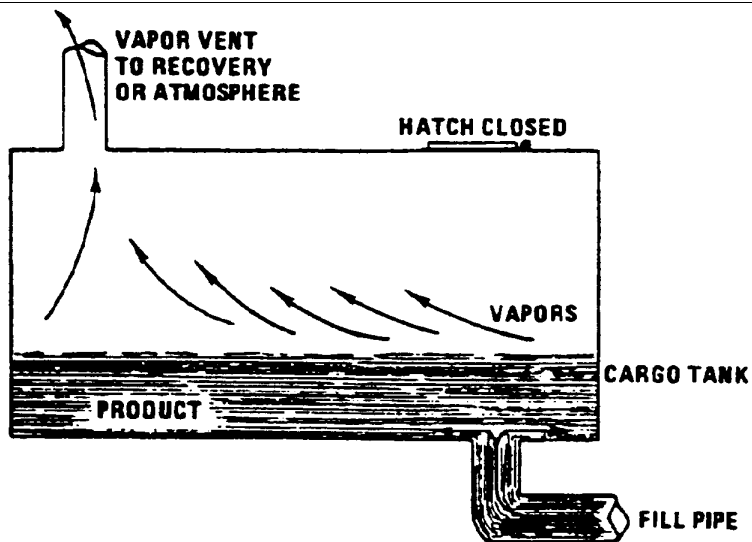


Figure 5.2-4. Bottom loading.

loading operation, resulting in high levels of vapor generation and loss. If the turbulence is great enough, liquid droplets will be entrained in the vented vapors.

A second method of loading is submerged loading. Two types are the submerged fill pipe method and the bottom loading method. In the submerged fill pipe method, the fill pipe extends almost to the bottom of the cargo tank. In the bottom loading method, a permanent fill pipe is attached to the cargo tank bottom. During most of submerged loading by both methods, the fill pipe opening is below the liquid surface level. Liquid turbulence is controlled significantly during submerged loading, resulting in much lower vapor generation than encountered during splash loading.

The recent loading history of a cargo carrier is just as important a factor in loading losses as the method of loading. If the carrier has carried a nonvolatile liquid such as fuel oil, or has just been cleaned, it will contain vapor-free air. If it has just carried gasoline and has not been vented, the air in the carrier tank will contain volatile organic vapors, which will be expelled during the loading operation along with newly generated vapors.

Cargo carriers are sometimes designated to transport only one product, and in such cases are practicing "dedicated service". Dedicated gasoline cargo tanks return to a loading terminal containing air fully or partially saturated with vapor from the previous load. Cargo tanks may also be "switch loaded" with various products, so that a nonvolatile product being loaded may expel the vapors remaining from a previous load of a volatile product such as gasoline. These circumstances vary with the type of cargo tank and with the ownership of the carrier, the petroleum liquids being transported, geographic location, and season of the year.

One control measure for vapors displaced during liquid loading is called "vapor balance service", in which the cargo tank retrieves the vapors displaced during product unloading at bulk plants or service stations and transports the vapors back to the loading terminal. Figure 5.2-5 shows a tank truck in vapor balance service filling a service station underground tank and taking on displaced gasoline vapors for return to the terminal. A cargo tank returning to a bulk terminal in vapor balance service normally is saturated with organic vapors, and the presence of these vapors at the start of submerged loading of the tanker truck results in greater loading losses than encountered during nonvapor balance, or "normal", service. Vapor balance service is usually not practiced with marine vessels, although some vessels practice emission control by means of vapor transfer within their own cargo tanks during ballasting operations, discussed below.

Emissions from loading petroleum liquid can be estimated (with a probable error of ± 30 percent)⁴ using the following expression:

$$L_L = 12.46 \frac{SPM}{T} \quad (1)$$

where:

L_L = loading loss, pounds per 1000 gallons ($\text{lb}/10^3 \text{ gal}$) of liquid loaded

S = a saturation factor (see Table 5.2-1)

P = true vapor pressure of liquid loaded, pounds per square inch absolute (psia)
(see Section 7.1, "Organic Liquid Storage Tanks")

M = molecular weight of vapors, pounds per pound-mole ($\text{lb}/\text{lb-mole}$) (see Section 7.1, "Organic Liquid Storage Tanks")

T = temperature of bulk liquid loaded, $^{\circ}\text{R}$ ($^{\circ}\text{F} + 460$)

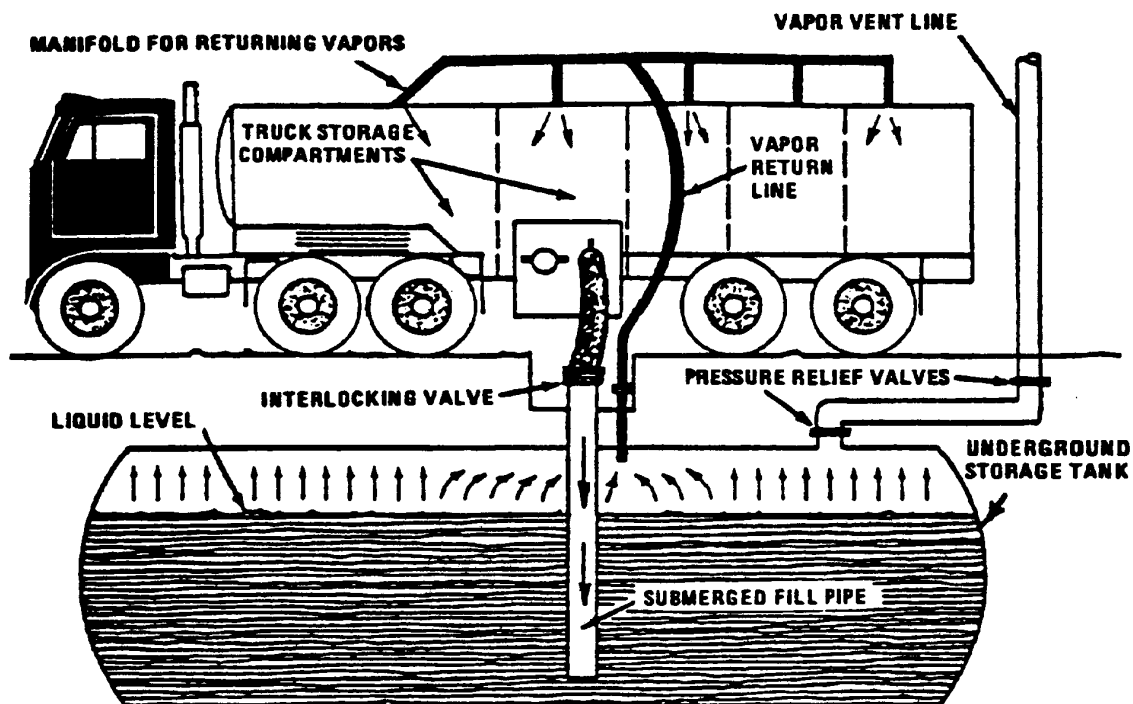


Figure 5.2-5. Tank truck unloading into a service station underground storage tank and practicing "vapor balance" form of emission control.

Table 5.2-1. SATURATION (S) FACTORS FOR CALCULATING PETROLEUM LIQUID LOADING LOSSES

Cargo Carrier	Mode Of Operation	S Factor
Tank trucks and rail tank cars	Submerged loading of a clean cargo tank	0.50
	Submerged loading: dedicated normal service	0.60
	Submerged loading: dedicated vapor balance service	1.00
	Splash loading of a clean cargo tank	1.45
	Splash loading: dedicated normal service	1.45
	Splash loading: dedicated vapor balance service	1.00
Marine vessels ^a	Submerged loading: ships	0.2
	Submerged loading: barges	0.5

^a For products other than gasoline and crude oil. For marine loading of gasoline, use factors from Table 5.2-2. For marine loading of crude oil, use Equations 2 and 3 and Table 5.2-3.

The saturation factor, S , represents the expelled vapor's fractional approach to saturation, and it accounts for the variations observed in emission rates from the different unloading and loading methods. Table 5.2-1 lists suggested saturation factors.

Emissions from controlled loading operations can be calculated by multiplying the uncontrolled emission rate calculated in Equation 1 by an overall reduction efficiency term:

$$\left(1 - \frac{\text{eff}}{100} \right)$$

The overall reduction efficiency should account for the capture efficiency of the collection system as well as both the control efficiency and any downtime of the control device. Measures to reduce loading emissions include selection of alternate loading methods and application of vapor recovery equipment. The latter captures organic vapors displaced during loading operations and recovers the vapors by the use of refrigeration, absorption, adsorption, and/or compression. The recovered product is piped back to storage. Vapors can also be controlled through combustion in a thermal oxidation unit, with no product recovery. Figure 5.2-6 demonstrates the recovery of gasoline vapors from tank trucks during loading operations at bulk terminals. Control efficiencies for the recovery units range from 90 to over 99 percent, depending on both the nature of the vapors and the type of control equipment used.⁵⁻⁶ However, not all of the displaced vapors reach the control device, because of leakage from both the tank truck and collection system. The collection efficiency should be assumed to be 99.2 percent for tanker trucks passing the MACT-level annual leak test (not more than 1 inch water column pressure change in 5 minutes after pressurizing to 18 inches water followed by pulling a vacuum of 6 inches water).⁷ A collection efficiency of 98.7 percent (a 1.3 percent leakage rate) should be assumed for trucks passing the NSPS-level annual test (3 inches pressure change). A collection efficiency of 70 percent should be assumed for trucks not passing one of these annual leak tests.⁶

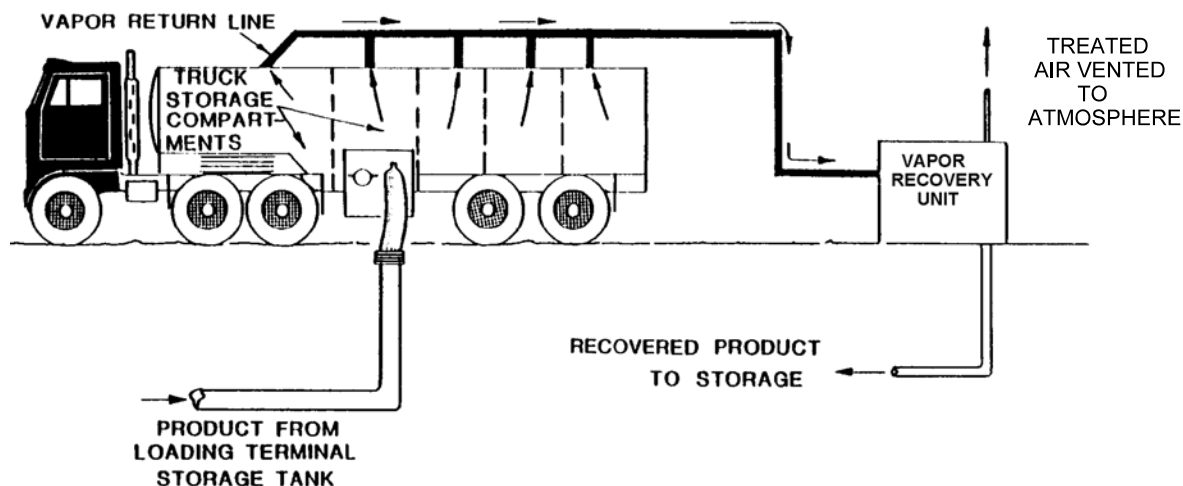


Figure 5.2-6. Tank truck loading with vapor recovery.

Sample Calculation -

Loading losses (L_L) from a gasoline tank truck in dedicated vapor balance service and practicing vapor recovery would be calculated as follows, using Equation 1:

Design basis -

Cargo tank volume is 8000 gal
Gasoline Reid vapor pressure (RVP) is 9 psia
Product temperature is 80°F
Vapor recovery efficiency is 95 percent
Vapor collection efficiency is 98.7 percent (NSPS-level annual leak test)

Loading loss equation -

$$L_L = 12.46 \frac{\text{SPM}}{T} \left(1 - \frac{\text{eff}}{100} \right)$$

where:

S = saturation factor (see Table 5.2-1) - 1.00
P = true vapor pressure of gasoline = 6.6 psia
M = molecular weight of gasoline vapors = 66
T = temperature of gasoline = 540°R
eff = overall reduction efficiency (95 percent control x 98.7 percent collection) = 94 percent

$$\begin{aligned} L_L &= 12.46 \frac{(1.00)(6.6)(66)}{540} \left(1 - \frac{94}{100} \right) \\ &= 0.60 \text{ lb}/10^3 \text{ gal} \end{aligned}$$

Total loading losses are:

$$(0.60 \text{ lb}/10^3 \text{ gal})(8.0 \times 10^3 \text{ gal}) = 4.8 \text{ pounds (lb)}$$

Measurements of gasoline loading losses from ships and barges have led to the development of emission factors for these specific loading operations.⁸ These factors are presented in Table 5.2-2 and should be used instead of Equation 1 for gasoline loading operations at marine terminals. Factors are expressed in units of milligrams per liter (mg/L) and pounds per 1000 gallons (lb/10³ gal).

Table 5.2-2 (Metric And English Units). VOLATILE ORGANIC COMPOUND (VOC) EMISSION FACTORS FOR GASOLINE LOADING OPERATIONS AT MARINE TERMINALS^a

Vessel Tank Condition	Previous Cargo	Ships/Ocean Barges ^b		Barges ^b	
		mg/L Transferred	lb/10 ³ gal Transferred	mg/L Transferred	lb/10 ³ gal Transferred
Uncleaned	Volatile ^c	315	2.6	465	3.9
Ballasted	Volatile	205	1.7	— ^d	— ^d
Cleaned	Volatile	180	1.5	ND	ND
Gas-freed	Volatile	85	0.7	ND	ND
Any condition	Nonvolatile	85	0.7	ND	ND
Gas-freed	Any cargo	ND	ND	245	2.0
Typical overall situation ^e	Any cargo	215	1.8	410	3.4

^a References 2,9. Factors are for both VOC emissions (which excludes methane and ethane) and total organic emissions, because methane and ethane have been found to constitute a negligible weight fraction of the evaporative emissions from gasoline. ND = no data.

^b Ocean barges (tank compartment depth about 12.2 m [40 ft]) exhibit emission levels similar to tank ships. Shallow draft barges (compartment depth 3.0 to 3.7 m [10 to 12 ft]) exhibit higher emission levels.

^c Volatile cargoes are those with a true vapor pressure greater than 10 kilopascals (kPa) (1.5 psia).

^d Barges are usually not ballasted.

^e Based on observation that 41% of tested ship compartments were uncleaned, 11% ballasted, 24% cleaned, and 24% gas-freed. For barges, 76% were uncleaned.

In addition to Equation 1, which estimates emissions from the loading of petroleum liquids, Equation 2 has been developed specifically for estimating emissions from the loading of crude oil into ships and ocean barges:

$$C_L = C_A + C_G \quad (2)$$

where:

C_L = total loading loss, lb/10³ gal of crude oil loaded

C_A = arrival emission factor, contributed by vapors in the empty tank compartment before loading, lb/10³ gal loaded (see Note below)

C_G = generated emission factor, contributed by evaporation during loading, lb/10³ gal loaded

Note: Values of C_A for various cargo tank conditions are listed in Table 5.2-3.

5.2-3 (English Units). AVERAGE ARRIVAL EMISSION FACTORS, C_A , FOR CRUDE OIL LOADING EMISSION EQUATION^a

Ship/Ocean Barge Tank Condition	Previous Cargo	Arrival Emission Factor, lb/10 ³ gal
Uncleaned	Volatile ^b	0.86
Ballasted	Volatile	0.46
Cleaned or gas-freed	Volatile	0.33
Any condition	Nonvolatile	0.33

^a Arrival emission factors (C_A) to be added to generated emission factors (C_G) calculated in Equation 3 to produce total crude oil loading loss (C_L). Factors are for total organic compounds; VOC emission factors average about 15% lower, because VOC does not include methane or ethane.

^b Volatile cargoes are those with a true vapor pressure greater than 10 kPa (1.5 psia).

This equation was developed empirically from test measurements of several vessel compartments.⁸ The quantity C_G can be calculated using Equation 3:

$$C_G = 1.84 (0.44 P - 0.42) \frac{M G}{T} \quad (3)$$

where:

P = true vapor pressure of loaded crude oil, psia
M = molecular weight of vapors, lb/lb-mole
G = vapor growth factor = 1.02 (dimensionless)
T = temperature of vapors, °R (°F + 460)

Emission factors derived from Equation 3 and Table 5.2-3 represent total organic compounds. Volatile organic compound (VOC) emission factors (which exclude methane and ethane because they are exempted from the regulatory definition of "VOC") for crude oil vapors have been found to range from approximately 55 to 100 weight percent of these total organic factors. When specific vapor composition information is not available, the VOC emission factor can be estimated by taking 85 percent of the total organic factor.³

5.2.2.1.2 Ballasting Losses -

Ballasting operations are a major source of evaporative emissions associated with the unloading of petroleum liquids at marine terminals. It is common practice to load several cargo tank compartments with sea water after the cargo has been unloaded. This water, termed "ballast", improves the stability of the empty tanker during the subsequent voyage. Although ballasting practices vary, individual cargo tanks are ballasted typically about 80 percent, and the total vessel 15 to 40 percent, of capacity. Ballasting emissions occur as vapor-laden air in the "empty" cargo tank is displaced to the atmosphere by ballast water being pumped into the tank. Upon arrival at a loading port, the ballast water is pumped from the cargo tanks before the new cargo is loaded. The ballasting of cargo tanks reduces the quantity of vapors returning in the empty tank, thereby reducing the quantity of vapors emitted during subsequent tanker loading. Regulations administered by the U. S. Coast Guard require that, at marine terminals located in ozone nonattainment areas, large tankers with crude oil washing systems contain the organic vapors from ballasting.¹⁰ This is accomplished principally by displacing the vapors during ballasting into a cargo tank being simultaneously unloaded. In other areas, marine vessels emit organic vapors directly to the atmosphere.

Equation 4 has been developed from test data to calculate the ballasting emissions from crude oil ships and ocean barges⁸:

$$L_B = 0.31 + 0.20 P + 0.01 P U_A \quad (4)$$

where:

- L_B = ballasting emission factor, lb/10³ gal of ballast water
 P = true vapor pressure of discharged crude oil, psia
 U_A = arrival cargo true ullage, before dockside discharge, measured from the deck, feet;
 (the term "ullage" here refers to the distance between the cargo surface level and the deck level)

Table 5.2-4 lists average total organic emission factors for ballasting into uncleaned crude oil cargo compartments. The first category applies to "full" compartments wherein the crude oil true ullage just before cargo discharge is less than 1.5 meters (m) (5 ft). The second category applies to lightered, or short-loaded, compartments (part of cargo previously discharged, or original load a partial fill), with an arrival true ullage greater than 1.5 m (5 ft). It should be remembered that these tabulated emission factors are examples only, based on average conditions, to be used when crude oil vapor pressure is unknown. Equation 4 should be used when information about crude oil vapor pressure and cargo compartment condition is available. The following sample calculation illustrates the use of Equation 4.

5.2-4 (Metric And English Units). TOTAL ORGANIC EMISSION FACTORS
FOR CRUDE OIL BALLASTING^a

Compartment Condition Before Cargo Discharge	Average Emission Factors			
	By Category		Typical Overall ^b	
	mg/L Ballast Water	lb/10 ³ gal Ballast Water	mg/L Ballast Water	lb/10 ³ gal Ballast Water
Fully loaded ^c	111	0.9	129	1.1
Lightered or previously short loaded ^d	171	1.4		

^a Assumes crude oil temperature of 16°C (60°F) and RVP of 34 kPa (5 psia). VOC emission factors average about 85% of these total organic factors, because VOCs do not include methane or ethane.

^b Based on observation that 70% of tested compartments had been fully loaded before ballasting. May not represent average vessel practices.

^c Assumed typical arrival ullage of 0.6 m (2 ft).

^d Assumed typical arrival ullage of 6.1 m (20 ft).

Sample Calculation -

Ballasting emissions from a crude oil cargo ship would be calculated as follows, using Equation 4:

Design basis -

Vessel and cargo description: 80,000 dead-weight-ton tanker, crude oil capacity 500,000 barrels (bbl); 20 percent of the cargo capacity is filled with ballast water after cargo discharge. The crude oil has an RVP of 6 psia and is discharged at 75°F.

Compartment conditions: 70 percent of the ballast water is loaded into compartments that had been fully loaded to 2 ft ullage, and 30 percent is loaded into compartments that had been lightered to 15 ft ullage before arrival at dockside.

Ballasting emission equation -

$$L_B = 0.31 + 0.20 P + 0.01 P U_A$$

where:

P = true vapor pressure of crude oil
= 4.6 psia

U_A = true cargo ullage for the full compartments = 2 ft, and true cargo ullage for the lightered compartments = 15 ft

$$\begin{aligned} L_B &= 0.70 [0.31 + (0.20) (4.6) + (0.01) (4.6) (2)] \\ &\quad + 0.30 [0.31 + (0.20) (4.6) + (0.01) (4.6) (15)] \\ &= 1.5 \text{ lb}/10^3 \text{ gal} \end{aligned}$$

Total ballasting emissions are:

$$(1.5 \text{ lb}/10^3 \text{ gal}) (0.20) (500,000 \text{ bbl}) (42 \text{ gal/bbl}) = 6,300 \text{ lb}$$

Since VOC emissions average about 85 percent of these total organic emissions, emissions of VOCs are about: $(0.85)(6,300 \text{ lb}) = 5,360 \text{ lb}$

5.2.2.1.3 Transit Losses -

In addition to loading and ballasting losses, losses occur while the cargo is in transit. Transit losses are similar in many ways to breathing losses associated with petroleum storage (see Section 7.1, "Organic Liquid Storage Tanks"). Experimental tests on ships and barges⁴ have indicated that transit losses can be calculated using Equation 5:

$$L_T = 0.1 P W \quad (5)$$

where:

L_T = transit loss from ships and barges, lb/week-10³ gal transported
 P = true vapor pressure of the transported liquid, psia
 W = density of the condensed vapors, lb/gal

Emissions from gasoline truck cargo tanks during transit have been studied by a combination of theoretical and experimental techniques, and typical emission values are presented in Table 5.2-5.¹¹⁻¹² Emissions depend on the extent of venting from the cargo tank during transit, which in turn depends on the vapor tightness of the tank, the pressure relief valve settings, the pressure in the tank at the start of the trip, the vapor pressure of the fuel being transported, and the degree of fuel vapor saturation of the space in the tank. The emissions are not directly proportional to the time spent in transit. If the vapor leakage rate of the tank increases, emissions increase up to a point, and then the rate changes as other determining factors take over. Truck tanks in dedicated vapor balance service usually contain saturated vapors, and this leads to lower emissions during transit because no additional fuel evaporates to raise the pressure in the tank to cause venting. Table 5.2-5 lists "typical" values for transit emissions and "extreme" values that could occur in the unlikely event that all determining factors combined to cause maximum emissions.

Table 5.2-5 (Metric And English Units). TOTAL UNCONTROLLED ORGANIC EMISSION FACTORS FOR PETROLEUM LIQUID RAIL TANK CARS AND TANK TRUCKS

Emission Source	Gasoline ^a	Crude Oil ^b	Jet Naphtha (JP-4)	Jet Kerosene	Distillate Oil No. 2	Residual Oil No. 6
Loading operations ^c						
Submerged loading - Dedicated normal service ^d						
mg/L transferred	590	240	180	1.9	1.7	0.01
lb/10 ³ gal transferred	5	2	1.5	0.016	0.014	0.0001
Submerged loading - Vapor balance service ^d						
mg/L transferred	980	400	300	— ^e	— ^e	— ^e
lb/10 ³ gal transferred	8	3	2.5	— ^e	— ^e	— ^e
Splash loading - Dedicated normal service						
mg/L transferred	1,430	580	430	5	4	0.03
lb/10 ³ gal transferred	12	5	4	0.04	0.03	0.0003
Splash loading - Vapor balance service						
mg/L transferred	980	400	300	— ^e	— ^e	— ^e
lb/10 ³ gal transferred	8	3	2.5	— ^e	— ^e	— ^e

Table 5.2-5 (cont.).

Emission Source	Gasoline ^a	Crude Oil ^b	Jet Naphtha (JP-4)	Jet Kerosene	Distillate Oil No. 2	Residual Oil No. 6
Transit losses						
Loaded with product						
mg/L transported						
Typical	0 - 1.0	ND	ND	ND	ND	ND
Extreme	0 - 9.0	ND	ND	ND	ND	ND
lb/10 ³ gal transported						
Typical	0 - 0.01	ND	ND	ND	ND	ND
Extreme	0 - 0.08	ND	ND	ND	ND	ND
Return with vapor						
mg/L transported						
Typical	0 - 13.0	ND	ND	ND	ND	ND
Extreme	0 - 44.0	ND	ND	ND	ND	ND
lb/10 ³ gal transported						
Typical	0 - 0.11	ND	ND	ND	ND	ND
Extreme	0 - 0.37	ND	ND	ND	ND	ND

^a Reference 2. Gasoline factors represent emissions of VOC as well as total organics, because methane and ethane constitute a negligible weight fraction of the evaporative emissions from gasoline. VOC factors for crude oil can be assumed to be 15% lower than the total organic factors, to account for the methane and ethane content of crude oil evaporative emissions. All other products should be assumed to have VOC factors equal to total organics. The example gasoline has an RVP of 69 kPa (10 psia). ND = no data.

^b The example crude oil has an RVP of 34 kPa (5 psia).

^c Loading emission factors are calculated using Equation 1 for a dispensed product temperature of 16°C (60°F).

^d Reference 2.

^e Not normally used.

In the absence of specific inputs for Equations 1 through 5, the typical evaporative emission factors presented in Tables 5.2-5 and 5.2-6 should be used. It should be noted that, although the crude oil used to calculate the emission values presented in these tables has an RVP of 5, the RVP of crude oils can range from less than 1 up to 10. Similarly, the RVP of gasolines ranges from 7 to 13. In areas where loading and transportation sources are major factors affecting air quality, it is advisable to obtain the necessary parameters and to calculate emission estimates using Equations 1 through 5.

5.2.2.2 Service Stations -

Another major source of evaporative emissions is the filling of underground gasoline storage tanks at service stations. Gasoline is usually delivered to service stations in 30,000-liter (8,000-gal) tank trucks or smaller account trucks. Emissions are generated when gasoline vapors in the underground storage tank are displaced to the atmosphere by the gasoline being loaded into the tank. As with other loading losses, the quantity of loss in service station tank filling depends on several variables, including the method and rate of filling, the tank configuration, and the gasoline temperature, vapor pressure and composition. An average emission rate for submerged filling is 880 mg/L (7.3 lb/1000 gal) of transferred gasoline, and the rate for splash filling is 1380 mg/L (11.5 lb/1000 gal) transferred gasoline (see Table 5.2-7).⁵

Table 5.2-6 (Metric And English Units). TOTAL ORGANIC EMISSION FACTORS
FOR PETROLEUM MARINE VESSEL SOURCES^a

Emission Source	Gasoline ^b	Crude Oil ^c	Jet Naphtha (JP-4)	Jet Kerosene	Distillate Oil No. 2	Residual Oil No. 6
Loading operations						
Ships/ocean barges						
mg/L transferred	— ^d	73	60	0.63	0.55	0.004
lb/10 ³ gal transferred	— ^d	0.61	0.50	0.005	0.005	0.00004
Barges						
mg/L transferred	— ^d	120	150	1.60	1.40	0.011
lb/10 ³ gal transferred	— ^d	1.0	1.2	0.013	0.012	0.00009
Tanker ballasting						
mg/L ballast water	100	— ^e	ND	ND	ND	ND
lb/10 ³ gal ballast water	0.8	— ^e	ND	ND	ND	ND
Transit						
mg/week-L transported	320	150	84	0.60	0.54	0.003
lb/week-10 ³ gal transported	2.7	1.3	0.7	0.005	0.005	0.00003

^a Factors are for a dispensed product of 16°C (60°F). ND = no data.

^b Factors represent VOC as well as total organic emissions, because methane and ethane constitute a negligible fraction of gasoline evaporative emissions. All products other than crude oil can be assumed to have VOC factors equal to total organic factors. The example gasoline has an RVP of 69 kPa (10 psia).

^c VOC emission factors for a typical crude oil are 15% lower than the total organic factors shown, in order to account for methane and ethane. The example crude oil has an RVP of 34 kPa (5 psia).

^d See Table 5.2-2 for these factors.

^e See Table 5.2-4 for these factors.

Emissions from underground tank filling operations at service stations can be reduced by the use of a vapor balance system such as in Figure 5.2-5 (termed Stage I vapor control). The vapor balance system employs a hose that returns gasoline vapors displaced from the underground tank to the tank truck cargo compartments being emptied. The control efficiency of the balance system ranges from 93 to 100 percent. Organic emissions from underground tank filling operations at a service station employing a vapor balance system and submerged filling are not expected to exceed 40 mg/L (0.3 lb/1000 gal) of transferred gasoline.

Table 5.2-7 (Metric And English Units). EVAPORATIVE EMISSIONS FROM GASOLINE SERVICE STATION OPERATIONS^a

Emission Source	Emission Rate	
	mg/L Throughput	lb/10 ³ gal Throughput
Filling underground tank (Stage I)		
Submerged filling	880	7.3
Splash filling	1,380	11.5
Balanced submerged filling	40	0.3
Underground tank breathing and emptying ^b	120	1.0
Vehicle refueling operations (Stage II)		
Displacement losses (uncontrolled) ^c	1,320	11.0
Displacement losses (controlled)	132	1.1
Spillage	80	0.7

^a Factors are for VOC as well as total organic emissions, because of the methane and ethane content of gasoline evaporative emissions is negligible.

^b Includes any vapor loss between underground tank and gas pump.

^c Based on Equation 6, using average conditions.

A second source of vapor emissions from service stations is underground tank breathing. Breathing losses occur daily and are attributable to gasoline evaporation and barometric pressure changes. The frequency with which gasoline is withdrawn from the tank, allowing fresh air to enter to enhance evaporation, also has a major effect on the quantity of these emissions. An average breathing emission rate is 120 mg/L (1.0 lb/1000 gal) of throughput.

5.2.2.3 Motor Vehicle Refueling -

Service station vehicle refueling activity also produces evaporative emissions. Vehicle refueling emissions come from vapors displaced from the automobile tank by dispensed gasoline and from spillage. The quantity of displaced vapors depends on gasoline temperature, auto tank temperature, gasoline RVP, and dispensing rate. Equation 6 can be used to estimate uncontrolled displacement losses from vehicle refueling for a particular set of conditions.¹⁴

$$E_R = 264.2 [(-5.909) - 0.0949 (\Delta T) + 0.0884 (T_D) + 0.485 (RVP)] \quad (6)$$

where:

E_R = refueling emissions, mg/L
 ΔT = difference between temperature of fuel in vehicle tank and temperature of dispensed fuel, °F
 T_D = temperature of dispensed fuel, °F
RVP = Reid vapor pressure, psia

Note that this equation and the spillage loss factor are incorporated into the *MOBILE* model. The *MOBILE* model allows for disabling of this calculation if it is desired to include these emissions in the stationary area source portion of an inventory rather than in the mobile source portion. It is estimated that the uncontrolled emissions from vapors displaced during vehicle refueling average 1320 mg/L (11.0 lb/1000 gal) of dispensed gasoline.^{5,13}

Spillage loss is made up of contributions from prefill and postfill nozzle drip and from spit-back and

overflow from the vehicles's fuel tank filler pipe during filling. The amount of spillage loss can depend on several variables, including service station business characteristics, tank configuration, and operator techniques. An average spillage loss is 80 mg/L (0.7 lb/1000 gal) of dispensed gasoline.^{5,13}

Control methods for vehicle refueling emissions are based on conveying the vapors displaced from the vehicle fuel tank to the underground storage tank vapor space through the use of a special hose and nozzle, as depicted in Figure 5.2-7 (termed Stage II vapor control). In "balance" vapor control systems, the vapors are conveyed by natural pressure differentials established during refueling. In "vacuum assist" systems, the conveyance of vapors from the auto fuel tank to the underground storage tank is assisted by a vacuum pump. Tests on a few systems have indicated overall systems control efficiencies in the range of 88 to 92 percent.^{5,13} When inventorying these emissions as an area source, rule penetration and rule effectiveness should also be taken into account. *Procedures For Emission Inventory Preparation, Volume IV: Mobile Sources*, EPA-450/4-81-026d, provides more detail on this.

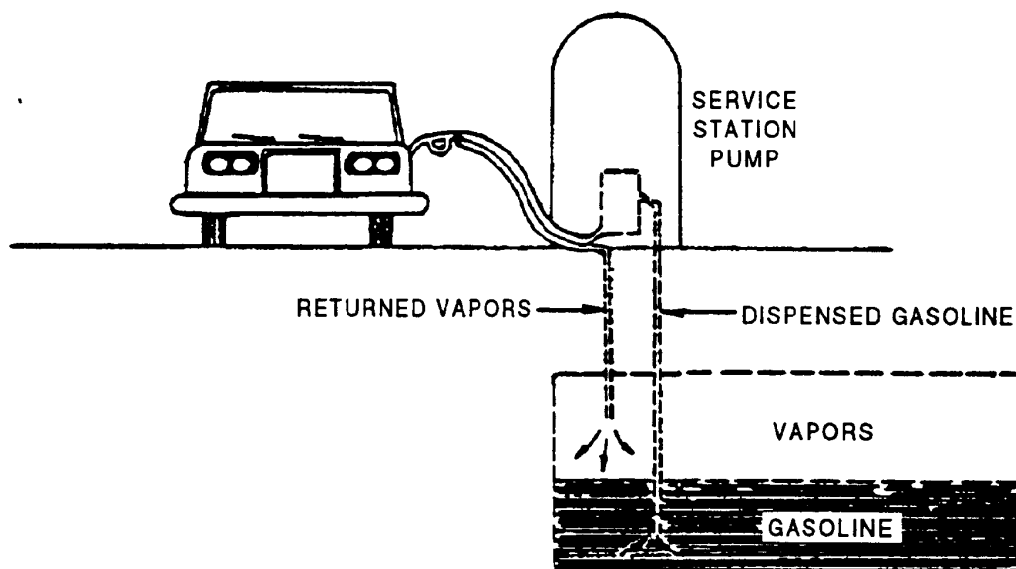


Figure 5.2-7. Automobile refueling vapor recovery system.

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7. LIQUID STORAGE TANKS

This chapter presents models for estimating air emissions from organic liquid storage tanks. It also contains detailed descriptions of typical varieties of such tanks, including horizontal, vertical, and underground fixed roof tanks, and internal and external floating roof tanks.

The emission estimation equations presented herein have been developed by the American Petroleum Institute (API), which retains the legal right to these equations. API has granted EPA permission for the nonexclusive, noncommercial distribution of this material to governmental and regulatory agencies. However, API reserves its rights regarding all commercial duplication and distribution of its material. Hence, the material presented is available for public use, but it cannot be sold without written permission from both the American Petroleum Institute and the U. S. Environmental Protection Agency.

The major pollutant of concern is volatile organic compounds. There also may be speciated organic compounds that may be toxic or hazardous.

$$Q = \frac{\pi}{4} D^2 \frac{\Sigma H_{QD}}{5.614} \quad (2-20)$$

ΣH_{QD} = the annual sum of the decreases in liquid level, ft/yr

D = tank diameter, ft

5.614 = the conversion of barrels to cubic feet, ft³/bbl

If ΣH_{QD} is unknown, Q can be taken as the annual net throughput.

Note 2. A listing of the average organic liquid density for select chemicals is provided in Tables 7.1-2 and 7.1-3. If W_L is not known for gasoline, an average value of 5.6 lb/gal can be assumed.

Note 3. For a self-supporting fixed roof or an external floating roof tank:

$$N_C = 0.$$

For a column-supported fixed roof:

N_C = use tank-specific information or see Table 7.1-11.

Note 4. Use tank-specific effective column diameter or

$F_C = 1.1$ for 9-inch by 7-inch built-up columns,

$F_C = 0.7$ for 8-inch-diameter pipe columns, and

$F_C = 1.0$ if column construction details are not known

Limit on Standing Idle Losses from Drain-Dry Tanks

When a drain-dry tank has been emptied, the only stock liquid available inside the tank is a thin layer that clings to the wetted surface of the tank interior (if free-standing liquid remains in or near a sump, or in puddles on the tank bottom, then the tank should be evaluated as having a partial heel, and not as drain dry – see Figure 7.1-20). The slope prevents a significant amount of stock liquid from remaining in the tank so that evaporation is much lower than from tanks with liquid heels. Due to the limited amount of liquid clinging to the interior of the tank, as shown in Figure 7.1-20, there would be no liquid remaining to replenish vapors once the clingage layer has evaporated. For this model, standing idle loss due to clingage is a one-time event rather than a daily event, involving only evaporation of the clingage layer.

The loss due to clingage is proportional to a clingage factor, which varies with the condition of the inside of the tank. A list of clingage factors are shown in Table 7.1-10. However, the clingage factors given in Table 7.1-10 are for the vertical shell of the tank, which is wiped by the rim seal each time the tank is emptied. The bottom of the tank is more nearly horizontal and is not wiped by a rim seal, and thus the clingage factors for a vertical shell would not be directly applicable to the tank bottom.

The factors are given in terms of barrels per thousand square feet. To convert the loss to pounds, the density of the liquid and the area of the tank bottom must be taken into account, as shown in Equation 3-11.

$$L_C = 0.042 C_S W_L \text{ Area} \quad (3-11)$$

where:

- L_C = clingage loss from the drain-dry tank, lb
- 0.042 = conversion factor, 1,000 gal/bbl
- C_S = clingage factor, bbl/1,000 ft²
- W_L = density of the liquid, lb/gal
- Area = area of the tank bottom, ft²

$$\text{Area} = \left(\frac{\pi D^2}{4} \right) \quad (3-12)$$

Among the conditions shown in Table 7.1-10, the one that best approximates a sludge-lined tank bottom is gunite-lined, particularly given that the tank bottom is nearly horizontal and is not wiped by a rim seal. Assuming that gasoline is being stored in the tank, a clingage factor of 0.15 and the area term in Equation 3-12 were substituted into Equation 3-11, which simplifies to Equation 3-13.

$$L_{SL} = 0.0063 W_L \frac{\pi D^2}{4} \quad (3-13)$$

The clingage loss should be constrained by an upper limit equal to the filling loss for an internal or domed external floating roof tank with a liquid heel. This is demonstrated in Equation 3-14.

$$L_{SLmax} = 0.60 \frac{P_{VA} V_V}{R T_V} M_V \quad (3-14)$$

where:

- L_{SLmax} = maximum standing idle loss for drain-dry tanks due to clingage, lb
- W_L = density of the liquid inside the tank, lb/gal
- D = diameter of the tank, feet
- P_{VA} = true vapor pressure of the liquid inside the tank, psia
- V_V = volume of the vapor space, ft³ (See Eq. 1-3)
- R = ideal gas constant, 10.731 psia ft³ /lb-mole °R
- T_V = average temperature of the vapor and liquid below the floating roof, °R (= T_{AA})
- M_V = stock vapor molecular weight, lb/lb-mole

Therefore, the standing idle loss for drain-dry tanks, shown in Equation 3-13, must be less than or equal to Equation 3-14. This relationship is shown by Equation 3-15.

$$L_{SL} \leq 0.60 \frac{P_{VA} V_V}{R T_V} M_V \quad (3-15)$$

7.1.3.3.2 Filling Losses

When a floating roof tank is refilled, there are additional emissions resulting from the roof being landed. These losses are called “filling losses” and continue until the liquid reaches the level of the floating roof.

The first contributor to filling losses is called the “arrival” component. These are the vapors that remain under the floating roof at the end of the standing idle period but have not been accounted for as standing idle losses. For example, in the case of a liquid heel evaporation takes place into the vapor space beneath the landed floating roof. The vapors that are expelled from this vapor space by breathing are accounted for as standing idle losses, and the vapors that remain upon the commencement of refilling are deemed the arrival component of filling losses.

The second contributor to filling losses is called the “generated” component. These are the vapors created by the incoming liquid as it evaporates during the filling operation. Even when filling a completely clean and gas-free tank, the incoming liquid will generate a certain amount of vapors.

Limit on Filling Loss for Tanks with a Liquid Heel

A constraint on the filling loss is added for floating roof tanks with a liquid heel in that the total emissions cannot exceed the amount of stock liquid initially left in the tank less the amount attributed to standing idle loss, plus the vapors generated by incoming liquid upon refilling. This upper limit, represented as L_{FLmax} , may be determined as follows:

Initial amount of stock liquid = $5.9 h_{le} W_L$ from Equation 3-4

Amount attributed to standing idle loss = L_{SL} from the applicable equation above for the given type of tank

Amount generated by incoming liquid = $0.15 P_{VA} V_V M_V / R T_V$

from Equation 3-18 evaluated for a drain-dry tank, to account for only the generated component of vapors

These components of the upper limit on filling loss for a tank with a liquid heel may be combined into the following equation:

$$L_{FL} \leq (5.9 D^2 h_{le} W_L) - L_{SL} + 0.15 \frac{P_{VA} V_V}{R T_V} M_V \quad (3-16)$$

General Equation for Filling Loss

The amount of vapor that is lost during filling is directly related to the volume of the vapor space and the saturation level of the vapor within the vapor space, as shown in Equation 3-17.

$$L_{FL} = (\text{vapor space volume}) (\text{vapor concentration}) (\text{vapor mol wt}) (\text{saturation factor}) \quad (3-17)$$

After substituting for the major terms in Equation 3-17, the equation can be simplified to Equation 3-18.

$$L_{FL} = \left(\frac{P_{VA} V_V}{R T_V} \right) M_V (C_{sf} S) \quad (3-18)$$

where:

L_{FL} = filling loss during roof landing, lb

P_{VA} = true vapor pressure of the liquid within the tank, psia

V_V = volume of the vapor space, ft³ (See Eq. 1-3)

R = ideal gas constant, 10.731 psia-ft³/(lb-mole-°R)

T_V = average temperature of the vapor below the floating roof, °R (see Equation 3-6)

M_V = stock vapor molecular weight, lb/lb-mole

C_{sf} = filling saturation correction factor for wind, dimensionless

S = filling saturation factor, dimensionless (0.60 for a full liquid heel; 0.50 for a partial liquid heel).

In the event of a change of service during the landing event, the equation should be run separately for the arrival and generated components. The arrival component should be based on the liquid properties of the prior service and a saturation factor of $(C_{sf} S - 0.15)$. The generated component should be based on the properties of the incoming liquid and a saturation factor of 0.15.

$$V_V = \frac{h_v \pi D^2}{4} \quad (3-22)$$

- h_v = height of the vapor space under the floating roof, ft
- D = tank diameter, ft
- R = ideal gas constant, 10.731 psia-ft³/(lb-mole-°R)
- M_V = stock vapor molecular weight, lb/lb-mole
- K_S = standing idle saturation factor, dimensionless
- S = filling saturation factor, dimensionless
- P^* = vapor pressure function, dimensionless

Drain-Dry Tanks

The “arrival” component of filling losses for drain-dry tanks is completely covered by the “clingage” loss. Once this initial loss occurs, there is no remaining liquid inside the tank. Therefore, any vapors remaining in the tank prior to introducing the incoming liquid would have already been accounted for as standing idle loss, and thus saturation of the arrival component for drain-dry tank filling losses is taken as 0. Similarly, a tank with a full or partial liquid heel for which evaporation of the entire heel has been accounted for as standing idle loss should be considered to have no arrival component of filling losses, nor should a tank that has been cleaned. Each of these scenarios is deemed “drain dry” for purposes of estimating the filling loss.

However, the “generated” component remains a valid aspect of the model. Therefore, the filling saturation factor will be lower for drain-dry tanks than for tanks with a liquid heel due to the lack of an “arrival” component. And, given the absence of an arrival component of vapors for filling loss, the filling saturation correction factor for wind is taken as 1.0.

AP-42 Chapter 5, *Petroleum Industry*, provides emission factors for the loading of gasoline and crude oil into compartments according to the prior state of the compartment. A drain-dry tank would be most similar to a tank that was cleaned before filling because a cleaned tank also lacks “arrival” losses. The emission factor (0.33 lb/1000 gallons) for this kind of tank can be converted to a saturation factor by assuming a pressure of 8 psia (the same assumption used in the formulation of the emission factor) and substituting the molecular weight of gasoline (64 lb/lb-mole). The resulting saturation factor of 0.15 is applied as the filling saturation factor for drain-dry tanks regardless of the stored liquid.

7.1.3.4 Tank Cleaning Emissions²³

The methodology presented in this section for estimating emissions associated with tank cleaning events is expressly for the estimation of vapors that are expelled from the tank during forced ventilation. These vapors potentially occur whenever forced ventilation of the tank is in operation while volatile organic material remains in the tank, regardless of whether any tank cleaning is actually taking place.

For purposes of estimating emissions, tank cleaning may be characterized as comprising the steps listed below.

Table 7.1-2. Properties (M_V , M_L , P_{VA} , W_L) Of Selected Petroleum Liquids ^{a, c}

Petroleum Liquid Mixture	Vapor Molecular Weight ^a	Liquid Molecular Weight ^b	Liquid Density ^a	ASTM D86 Distillation Slope ^c	Vapor Pressure Equation Constant ^d	Vapor Pressure Equation Constant ^d	True Vapor Pressure (at 60 °F)
	M_V	M_L	W_L	S	A	B	P_{VA}
	lb/lb-mole	lb/lb-mole	lb/gal	°F/vol %	dimensionless	°R	psia
Midcontinent Crude Oil	50	207	7.1	—	Figure 7.1-16	Figure 7.1-16	—
Refined Petroleum Stocks	—	—	—	—	Figure 7.1-15	Figure 7.1-15	—
Motor Gasoline RVP 13	62	92	5.6	3.0	11.644	5043.6	7.0
Motor Gasoline RVP 10	66 ^e	92	5.6	3.0	11.724	5237.3	5.2
Motor Gasoline RVP 7	68	92	5.6	3.0	11.833	5500.6	3.5
Light Naphtha RVP 9-14	—	—	—	3.5	—	—	—
Naphtha RVP 2-8	—	—	—	2.5	—	—	—
Aviation Gasoline	—	—	—	2.0	—	—	—
Jet Naphtha (JP-4)	80	120	6.4	—	11.368	5784.3	1.3
Jet Kerosene (Jet A)	130	162	7.0	—	12.390	8933.0	0.008
No. 2 Fuel Oil (Diesel)	130	188	7.1	—	12.101	8907.0	0.006
No. 6 Fuel Oil ^f	130	387	7.9	—	10.781	8933.0	0.002
Vacuum Residual Oil ^g	190	387	7.9	—	10.104	10,475.5	0.00004

^a References 10 and 11

^b Liquid molecular weights from “Memorandum from Patrick B. Murphy, Radian/RTP to James F. Durham, EPA/CPB Concerning Petroleum Refinery Liquid HAP and Properties Data, August 10, 1993,” as adopted in versions 3.1 and 4.0 of EPA’s TANKS software.

^c Reference 4.

^d For motor gasolines, see Figure 7.1-15;

for crude oil, see Figure 7.1-16;

for Jet Naphtha, Jet Kerosene, and No. 2 Fuel Oil, see Barnett and Hibbard¹⁰;

for No. 6 Fuel Oil.²²

^e Alternatively, in the absence of measured data, a value of 66 lb/lb-mole may be assumed for all gasolines, in that the variability shown as a function of RVP is speculative.

^f This is for a blend of Vacuum Residual Oil with a light distillate cutter stock, or similar mixture. Vapor pressure constants given will result in higher vapor pressure values than shown previously in AP-42 for Residual Oil No. 6.

^g This is the straight residue from the bottom of the vacuum distillation column, prior to any further processing or blending. Properties given for Vacuum Residual Oil are those given for Residual Oil No. 6 previously in AP-42.

Table 7.1-10. Average Clingage Factors, C_s (bbl/10³ ft²)^a

Product Stored	Shell Condition		
	Light Rust	Dense Rust	Guniting Lining
Gasoline	0.0015	0.0075	0.15
Single-component stocks	0.0015	0.0075	0.15
Crude oil	0.0060	0.030	0.60

^a Reference 5. If no specific information is available, the values in this table can be assumed to represent the most common or typical condition of tanks currently in use.

Table 7.1-11. Typical Number Of Columns As A Function Of Tank Diameter For Internal Floating Roof Tanks With Column Supported Fixed Roofs^a

Tank Diameter Range D, (ft)	Typical Number Of Columns, N_c
$0 < D \leq 85$	1
$85 < D \leq 100$	6
$100 < D \leq 120$	7
$120 < D \leq 135$	8
$135 < D \leq 150$	9
$150 < D \leq 170$	16
$170 < D \leq 190$	19
$190 < D \leq 220$	22
$220 < D \leq 235$	31
$235 < D \leq 270$	37
$270 < D \leq 275$	43
$275 < D \leq 290$	49
$290 < D \leq 330$	61
$330 < D \leq 360$	71
$360 < D \leq 400$	81

^a Reference 5. This table was derived from a survey of users and manufacturers. The actual number of columns in a particular tank may vary greatly with age, fixed roof style, loading specifications, and manufacturing prerogatives. Data in this table should not be used when actual tank data are available.



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1 Identification

: Product identifier

: Trade name: **Unisol® Liquid Red BK-50**

: Application of the substance / the mixture Dyestuff/Coloring agent

: Details of the supplier of the safety data sheet

: Manufacturer/Supplier:

United Color Manufacturing, Inc.
660 Newtown-Yardley Road
Newtown, PA 18940 USA

: For more information Website: www.unitedcolor.com

: Telephone: U.S. (215) 860-2165 / 800-852-5942

: Emergency telephone number:

Within Continental U.S., CHEMTREC 1-800-424-9300
Outside U.S., CHEMTREC +1-703-527-3887

2 Hazard(s) identification

: Classification of the substance or mixture



Flame

Flammable liquid and vapour.



Health hazard

Suspected of causing cancer.

Suspected of damaging fertility or the unborn child.

May cause damage to organs through prolonged or repeated exposure.

May be fatal if swallowed and enters airways.



Environment

Toxic to aquatic life with long lasting effects.



Causes skin irritation.

May cause respiratory irritation. May cause drowsiness or dizziness.

: Label elements

: GHS label elements

The product is classified and labeled according to the Globally Harmonized System (GHS).

: Hazard pictograms



GHS02



GHS07



GHS08



GHS09

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Trade name: Unisol® Liquid Red BK-50

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: Signal word Danger

: Hazard-determining components of labeling:

xylene
2-Naphthalenol, 1-[2-[4-(2-phenyldiazenyl)phenyl]diazenyl]-, ar-heptyl ar',ar"-Me derivs.
ethylbenzene
Kerosene (petroleum)

: Hazard statements

Flammable liquid and vapour.
Causes skin irritation.
Suspected of causing cancer.
Suspected of damaging fertility or the unborn child.
May cause respiratory irritation. May cause drowsiness or dizziness.
May cause damage to organs through prolonged or repeated exposure.
May be fatal if swallowed and enters airways.
Toxic to aquatic life with long lasting effects.

: Precautionary statements

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Use explosion-proof electrical/ventilating/lighting/equipment.
Do not breathe dust/fume/gas/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.
Avoid release to the environment.
Wear protective gloves / eye protection / face protection.
Wear protective gloves.
Wear protective gloves / protective clothing.
Ground/bond container and receiving equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wash thoroughly after handling.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
If swallowed: Immediately call a poison center/doctor.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Call a poison center/doctor if you feel unwell.
Specific treatment (see on this label).
IF exposed or concerned: Get medical advice/attention.
If skin irritation occurs: Get medical advice/attention.
Get medical advice/attention if you feel unwell.
Do NOT induce vomiting.
In case of fire: Use for extinction: CO2, powder or water spray.
Collect spillage.
Take off contaminated clothing and wash it before reuse.
Store locked up.
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Dispose of contents/container in accordance with local/regional/national/international regulations.

: Classification system:

: NFPA ratings (scale 0 - 4)



Health = 2
Fire = 3
Reactivity = 0

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Trade name: **Unisol® Liquid Red BK-50**

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: HMIS-ratings (scale 0 - 4)

HEALTH	2	Health = 2
FIRE	3	Fire = 3
REACTIVITY	0	Reactivity = 0

: Other hazards

: Results of PBT and vPvB assessment

: PBT: Not applicable.

: vPvB: Not applicable.

3 Composition/Information on ingredients

: Chemical characterization: Mixtures

: Description: Mixture of the substances listed below with nonhazardous additions.

: Dangerous components:

92257-31-3	2-Naphthalenol, 1-[2-[4-(2-phenyldiazenyl)phenyl]diazenyl]-, ar-heptyl ar',ar''-Me derivs.	30-40%
1330-20-7	xylene	25-35%
8008-20-6	Kerosene (petroleum)	20-30%
64742-94-5	Solvent naphtha (petroleum), heavy arom.	10-20%
100-41-4	ethylbenzene	5-20%

: Additional information: EPA Accession number 35371

4 First-aid measures

: Description of first aid measures

: General information:

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

: After inhalation: In case of unconsciousness place patient stably in side position for transportation.

: After skin contact: Immediately wash with water and soap and rinse thoroughly.

: After eye contact: Rinse opened eye for several minutes under running water.

: After swallowing: Immediately call a doctor.

: Information for doctor:

: Most important symptoms and effects, both acute and delayed

No further relevant information available.

: Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5 Fire-fighting measures

: Extinguishing media

: Suitable extinguishing agents: CO₂, sand, extinguishing powder. Do not use water.

: For safety reasons unsuitable extinguishing agents: Water with full jet

: Special hazards arising from the substance or mixture No further relevant information available.

: Advice for firefighters

: Protective equipment: No special measures required.

6 Accidental release measures

: Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

: Environmental precautions:

Inform respective authorities in case of seepage into water course or sewage system.

Do not allow to enter sewers/ surface or ground water.

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: Methods and material for containment and cleaning up:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

Do not flush with water or aqueous cleansing agents

: Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage

: Handling:

: Precautions for safe handling

Ensure good ventilation/exhaustion at the workplace.

Open and handle receptacle with care.

Prevent formation of aerosols.

: Information about protection against explosions and fires:

Keep ignition sources away - Do not smoke.

Protect from heat.

Protect against electrostatic charges.

Keep respiratory protective device available.

: Conditions for safe storage, including any incompatibilities

: Storage:

: Requirements to be met by storerooms and receptacles: No special requirements.

: Information about storage in one common storage facility: Not required.

: Further information about storage conditions:

Keep receptacle tightly sealed.

Protect from heat and direct sunlight.

: Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

: Additional information about design of technical systems: No further data; see item 7.

: Control parameters

: Components with limit values that require monitoring at the workplace:

1330-20-7 xylene

PEL Long-term value: 435 mg/m³, 100 ppm

REL Short-term value: 655 mg/m³, 150 ppm

Long-term value: 435 mg/m³, 100 ppm

TLV Short-term value: 651 mg/m³, 150 ppm

Long-term value: 434 mg/m³, 100 ppm

BEI

8008-20-6 Kerosene (petroleum)

REL Long-term value: 100 mg/m³

Kerosene only

TLV Long-term value: 200 mg/m³

as total hydrocarbon vapor; Skin; P

100-41-4 ethylbenzene

PEL Long-term value: 435 mg/m³, 100 ppm

REL Short-term value: 545 mg/m³, 125 ppm

Long-term value: 435 mg/m³, 100 ppm

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TLV	Long-term value: 87 mg/m ³ , 20 ppm BEI
: Ingredients with biological limit values:	
1330-20-7 xylene	
BEI	1.5 g/g creatinine Medium: urine Time: end of shift Parameter: Methylhippuric acids
100-41-4 ethylbenzene	
BEI	0.7 g/g creatinine Medium: urine Time: end of shift at end of workweek Parameter: Sum of mandelic acid and phenylglyoxylic acid (nonspecific, semi-quantitative)
	- Medium: end-exhaled air Time: not critical Parameter: Ethyl benzene (semi-quantitative)

: Additional information: The lists that were valid during the creation were used as basis.

: Exposure controls

: Personal protective equipment:

: General protective and hygienic measures:

- Keep away from foodstuffs, beverages and feed.
- Immediately remove all soiled and contaminated clothing.
- Wash hands before breaks and at the end of work.
- Store protective clothing separately.
- Avoid contact with the skin.
- Avoid contact with the eyes and skin.

: Breathing equipment:

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

: Protection of hands:



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

: Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

: Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

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: Eye protection:



Tightly sealed goggles

9 Physical and chemical properties

: Information on basic physical and chemical properties

: General Information

: Appearance:

: Form:	Fluid
: Color:	Red
: Odor:	Aromatic
: Odour threshold:	Not determined.

: pH-value: Not determined.

: Change in condition

: Melting point/Melting range:	Undetermined.
: Boiling point/Boiling range:	137 °C (279 °F)

: Flash point: > 35 °C (> 95 °F)

: Flammability (solid, gaseous): Not applicable.

: Ignition temperature: 254 °C (489 °F)

: Decomposition temperature: Not determined.

: Auto igniting: Product is not selfigniting.

: Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

: Explosion limits:

: Lower:	0.7 Vol %
: Upper:	7.0 Vol %

: Vapor pressure at 20 °C (68 °F): 6.7 hPa (5 mm Hg)

: Density:	Not determined.
: Relative density	Not determined.
: Vapour density	Not determined.
: Evaporation rate	Not determined.

: Solubility in / Miscibility with

: Water: Not miscible or difficult to mix.

: Partition coefficient (n-octanol/water): Not determined.

: Viscosity:

: Dynamic:	Not determined.
: Kinematic:	Not determined.

: Solvent content:

: Organic solvents:	32.6 %
: VOC content:	32.6 %

: Solids content: 30.9 %

: Other information: No further relevant information available.

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10 Stability and reactivity

- : **Reactivity**
- : **Chemical stability**
- : **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
- : **Possibility of hazardous reactions** No dangerous reactions known.
- : **Conditions to avoid** No further relevant information available.
- : **Incompatible materials:** No further relevant information available.
- : **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

- : **Information on toxicological effects**
- : **Acute toxicity:**

: LD/LC50 values that are relevant for classification:		
92257-31-3 2-Naphthalenol, 1-[2-[4-(2-phenyldiazenyl)phenyl]diazenyl]-, ar-heptyl ar',ar''-Me derivs.		
Oral	LD50	>5000 mg/kg (rat)
1330-20-7 xylene		
Oral	LD50	4300 mg/kg (rat)
Dermal	LD50	2000 mg/kg (rabbit)
8008-20-6 Kerosene (petroleum)		
Oral	LD50	>5000 mg/kg (rat)
Dermal	LD50	>2000 mg/kg (rabbit)
Inhalative	LC50/4 h	>5000 mg/l (rat)
64742-94-5 Solvent naphtha (petroleum), heavy arom.		
Oral	LD50	>5000 mg/kg (rat) (OECD Guideline 401)
Dermal	LD50	>2000 mg/kg (rabbit) (OECD Guideline 402)
Inhalative	LC50/4 h	4778 mg/l (rat) (OECD Guideline 403)
100-41-4 ethylbenzene		
Oral	LD50	3500 mg/kg (rat)
Dermal	LD50	17800 mg/kg (rabbit)

- : **Primary irritant effect:**
- : **on the skin:** Irritant to skin and mucous membranes.
- : **on the eye:** No irritating effect.
- : **Sensitization:** No sensitizing effects known.
- : **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant
- : **Carcinogenic Status:**
Contains Naphthalene. Naphthalene is classified as carcinogenic by IARC (Group 2B) and NTP (Group 2-Reasonably anticipated). Contains an o-Toluidine-based azo dye. Metabolic studies on some Azo-dyes, following prolonged skin or oral cavity contact, have detected reduction of azo bonds to aromatic amines. This product, therefore, could potentially metabolize to o-toluidine and o-aminoazotoluene upon prolonged skin or oral cavity contact. o-Toluidine and o-aminoazotoluene have been identified as animal carcinogens.
- : **Reproductive effects:**
May affect reproductive system. Contains: a version of 2-Naphthalenol,1-[[4-(phenylazo)phenyl]azo]-,ar-heptyl ar',ar''-me derivatives. A reproductive screening study in rats with some versions of 2-Naphthalenol,1-[[4-(phenylazo)phenyl]azo]-,ar-heptyl ar',ar''-me derivatives produced adverse effects on reproduction [ovarian atrophy; reduced litter size; reduced pup weight with no apparent abnormal

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morphology of the surviving pups] at 20 and 80 mg/kg/day. The relevance of these findings for humans is uncertain, but may be predictive of the potential to cause harm.

: Carcinogenic categories

: IARC (International Agency for Research on Cancer)		
1330-20-7	xylene	3
8008-20-6	Kerosene (petroleum)	2B
100-41-4	ethylbenzene	2B
: NTP (National Toxicology Program)		
None of the ingredients is listed.		
: OSHA-Ca (Occupational Safety & Health Administration)		
None of the ingredients is listed.		

12 Ecological information**: Toxicity**

: Aquatic toxicity:		
8008-20-6 Kerosene (petroleum)		
	EC50	10-100 mg/kg (Algae) 10-100 mg/kg (daphnia) 10-100 mg/kg (fish)
64742-94-5 Solvent naphtha (petroleum), heavy arom.		
Oral	LC50 aquatic	3.6 mg/l (Oncorhynchus mykiss)
	EC50	3.6 mg/kg (Oncorhynchus mykiss) (96 hr)
100-41-4 ethylbenzene		
	EC50	3.6 mg/kg (Algae) 1.81 mg/kg (daphnia) 4.2 mg/kg (fish)

: Persistence and degradability No further relevant information available.**: Behavior in environmental systems:****: Bioaccumulative potential** No further relevant information available.**: Mobility in soil** No further relevant information available.**: Ecotoxicological effects:****: Remark:** Toxic for fish**: Additional ecological information:****: General notes:**

Water hazard class 2 (Self-assessment): hazardous for water

Do not allow product to reach ground water, water course or sewage system.

Danger to drinking water if even small quantities leak into the ground.

Also poisonous for fish and plankton in water bodies.

Toxic for aquatic organisms

: Results of PBT and vPvB assessment**: PBT:** Not applicable.**: vPvB:** Not applicable.**: Other adverse effects** No further relevant information available.**13 Disposal considerations****: Waste treatment methods****: Recommendation:**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

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: Uncleaned packagings:

: Recommendation: Disposal must be made according to official regulations.

14 Transport information

: UN-Number	UN1993
: DOT, IMDG, IATA	
: UN proper shipping name	Flammable liquids, n.o.s. (Kerosene (petroleum), Xylenes)
: DOT	FLAMMABLE LIQUID, N.O.S. (Kerosene (petroleum), XYLENES)
: IMDG, IATA	
: Transport hazard class(es)	
: DOT	
	
: Class	3 Flammable liquids
: Label	3
: IMDG, IATA	
	
: Class	3 Flammable liquids
: Label	3
: Packing group	
: DOT, IMDG, IATA	III
: Environmental hazards:	Product contains environmentally hazardous substances: Naphthalene
: Marine pollutant:	No
: Special precautions for user	Warning: Flammable liquids
: Danger code (Kemler):	30
: EMS Number:	F-E,S-E
: Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
: Transport/Additional information:	
: DOT	
: Quantity limitations	On passenger aircraft/rail: 60 L On cargo aircraft only: 220 L
: IMDG	
: Limited quantities (LQ)	5L
: Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml

(Contd. on page 10)

**Safety Data Sheet**
acc. to OSHA HCS

Printing date 05/22/2015

Reviewed on 10/13/2014

Trade name: **Unisol® Liquid Red BK-50**

(Contd. of page 9)

: UN "Model Regulation":	UN1993, Flammable liquids, n.o.s. (Kerosene (petroleum), Xylenes), ENVIRONMENTALLY HAZARDOUS, 3, III
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15 Regulatory information

: Safety, health and environmental regulations/legislation specific for the substance or mixture
: Sara

: Section 355 (extremely hazardous substances):		
None of the ingredients is listed.		
: Section 313 (Specific toxic chemical listings):		
1330-20-7	xylene	
100-41-4	ethylbenzene	
: Sara 311/312 Hazards		
Fire Hazard, Acute Health Hazard, Chronic Health Hazard		
None of the ingredients is listed.		
: CERCLA Hazardous Substances and Corresponding RQ's		
1330-20-7	xylene	100 lbs or 45.4 kgs
100-41-4	ethylbenzene	1000 lbs or 454 kgs
91-20-3	Naphthalene	100 lbs or 45.4 kgs
: Clean Water Act		
None of the ingredients is listed.		
: Massachusetts Extraordinary Harardous Substances		
None of the ingredients is listed.		
: TSCA (Toxic Substances Control Act):		
All ingredients are listed.		
: California Right to Know Law		
1330-20-7	xylene	Yes
100-41-4	ethylbenzene	Yes
91-20-3	Naphthalene	Yes
: Massachusetts Right to Know Law		
1330-20-7	xylene	Yes
100-41-4	ethylbenzene	Yes
: Minnesota Right to Know Law		
1330-20-7	xylene	Yes
100-41-4	ethylbenzene	Yes
: New Jersey Right to Know Law		
1330-20-7	xylene	
100-41-4	ethylbenzene	
: Pennsylvania Right to Know Law		
1330-20-7	xylene	Yes
64742-94-5	Solvent naphtha (petroleum), heavy arom.	Yes
100-41-4	ethylbenzene	Yes
: Rhode Isalnd Right to Know Law		
1330-20-7	xylene	Yes
100-41-4	ethylbenzene	Yes

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**Safety Data Sheet**
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Printing date 05/22/2015

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Trade name: **Unisol® Liquid Red BK-50**

(Contd. of page 10)

: New Jersey Special Hazardous Substances		
91-20-3	Naphthalene	
: Illinois Toxic Air Contaminants		
91-20-3	Naphthalene	
: Pennsylvania Special Hazardous Substances		
91-20-3	Naphthalene	
: Proposition 65		
: Chemicals known to cause cancer:		
100-41-4	ethylbenzene	
91-20-3	Naphthalene	
: Chemicals known to cause reproductive toxicity for females:		
None of the ingredients is listed.		
: Chemicals known to cause reproductive toxicity for males:		
None of the ingredients is listed.		
: Chemicals known to cause developmental toxicity:		
None of the ingredients is listed.		
: Carcinogenic categories		
: EPA (Environmental Protection Agency)		
1330-20-7	xylene	I
100-41-4	ethylbenzene	D
: TLV (Threshold Limit Value established by ACGIH)		
1330-20-7	xylene	A4
8008-20-6	Kerosene (petroleum)	A3
100-41-4	ethylbenzene	A3
: NIOSH-Ca (National Institute for Occupational Safety and Health)		
None of the ingredients is listed.		

: **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

: **Hazard pictograms**

GHS02 GHS07 GHS08 GHS09

: **Signal word** Danger: **Hazard-determining components of labeling:**

xylene
2-Naphthalenol, 1-[2-[4-(2-phenyldiazenyl)phenyl]diazenyl]-, ar-heptyl ar',ar''-Me derivs.
ethylbenzene
Kerosene (petroleum)

: **Hazard statements**

Flammable liquid and vapour.
Causes skin irritation.
Suspected of causing cancer.
Suspected of damaging fertility or the unborn child.
May cause respiratory irritation. May cause drowsiness or dizziness.
May cause damage to organs through prolonged or repeated exposure.

(Contd. on page 12)



Safety Data Sheet
acc. to OSHA HCS

Page 12/13

Printing date 05/22/2015

Reviewed on 10/13/2014

Trade name: Unisol® Liquid Red BK-50

(Contd. of page 11)

May be fatal if swallowed and enters airways.

Toxic to aquatic life with long lasting effects.

: Precautionary statements

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Use explosion-proof electrical/ventilating/lighting/equipment.

Do not breathe dust/fume/gas/mist/vapors/spray.

Use only outdoors or in a well-ventilated area.

Avoid release to the environment.

Wear protective gloves / eye protection / face protection.

Wear protective gloves.

Wear protective gloves / protective clothing.

Ground/bond container and receiving equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

Wash thoroughly after handling.

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

If swallowed: Immediately call a poison center/doctor.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Call a poison center/doctor if you feel unwell.

Specific treatment (see on this label).

IF exposed or concerned: Get medical advice/attention.

If skin irritation occurs: Get medical advice/attention.

Get medical advice/attention if you feel unwell.

Do NOT induce vomiting.

In case of fire: Use for extinction: CO2, powder or water spray.

Collect spillage.

Take off contaminated clothing and wash it before reuse.

Store locked up.

Store in a well-ventilated place. Keep container tightly closed.

Store in a well-ventilated place. Keep cool.

Dispose of contents/container in accordance with local/regional/national/international regulations.

: Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

: Department issuing SDS: Regulatory Affairs department.

: Contact: J. Frederico, Ph.D

: Date of preparation / last revision 05/22/2015 / -

: Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

Flam. Liq. 3: Flammable liquids, Hazard Category 3

Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2

(Contd. on page 13)



Safety Data Sheet
acc. to OSHA HCS

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Reviewed on 10/13/2014

Trade name: **Unisol® Liquid Red BK-50**

(Contd. of page 12)

Carc. 2: Carcinogenicity, Hazard Category 2

Repr. 2: Reproductive toxicity, Hazard Category 2

STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3

STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2

Asp. Tox. 1: Aspiration hazard, Hazard Category 1

Aquatic Chronic 2: Hazardous to the aquatic environment - Chronic Hazard, Category 2

: * Data compared to the previous version altered.

SAFETY DATA SHEET

Western Refining Gasoline (All Grades)



Section 1. Identification

GHS product identifier : Western Refining Gasoline (All Grades)

Other means of identification : Regular Unleaded Gasoline, Midgrade Unleaded Gasoline, Premium Unleaded Gasoline, Ethanol-Enhanced Gasoline, Precertified Gasoline

Relevant identified uses of the substance or mixture and uses advised against

This SDS applies to: Federal Reformulated Gasoline, California Reformulated Gasoline, Wintertime Oxygenated Gasoline, Low RVP Gasoline and Conventional Gasoline.

Supplier's details : Western Refining Company LP
123 W. Mills Avenue
El Paso, TX 79901
Tel: 915-534-1488

Emergency telephone number (with hours of operation) : CHEMTREC, U.S. : 1-800-424-9300 International: +1-703-527-3877 (24/7)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
GERM CELL MUTAGENICITY - Category 1B
CARCINOGENICITY - Category 1A
TOXIC TO REPRODUCTION [Fertility] - Category 2
TOXIC TO REPRODUCTION [Unborn child] - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Narcotic effects] - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
ASPIRATION HAZARD - Category 1
AQUATIC TOXICITY (ACUTE) - Category 3
AQUATIC TOXICITY (CHRONIC) - Category 2

GHS label elements

Hazard pictograms



Signal word : Danger

Section 2. Hazards identification

Hazard statements

- : Highly flammable liquid and vapor.
- : Causes serious eye irritation.
- : Causes skin irritation.
- : May cause genetic defects.
- : May cause cancer.
- : Suspected of damaging fertility or the unborn child.
- : May be fatal if swallowed and enters airways.
- : May cause drowsiness and dizziness.
- : Causes damage to organs through prolonged or repeated exposure.
- : Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

- : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

Response

- : Collect spillage. Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage

- : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal

- : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified

- : None known.

Section 3. Composition/information on ingredients

Substance/mixture

- : Mixture

Other means of identification

- : Regular Unleaded Gasoline, Midgrade Unleaded Gasoline, Premium Unleaded Gasoline, Ethanol-Enhanced Gasoline, Precertified Gasoline

CAS number/other identifiers

CAS number

- : Not applicable.

Product code

- : Not available.

Ingredient name	%	CAS number
Gasoline	90 - 100	86290-81-5

Section 3. Composition/information on ingredients

Cumene

0 - 0.1

98-82-8

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Get medical attention if symptoms occur.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention if symptoms occur.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 20 minutes. Get medical attention if symptoms occur.
- Ingestion** : Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness.
- Skin contact** : Causes skin irritation.
- Ingestion** : Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Section 4. First aid measures

Skin contact : Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO₂, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet or water-based fire extinguishers.

Specific hazards arising from the chemical : Highly flammable liquid and vapor. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Section 6. Accidental release measures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

- Spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

United States

Ingredient name	Exposure limits
Gasoline	ACGIH TLV (United States, 3/2012). TWA: 300 ppm 8 hours. TWA: 890 mg/m ³ 8 hours. STEL: 500 ppm 15 minutes. STEL: 1480 mg/m ³ 15 minutes.
Xylene	ACGIH TLV (United States, 3/2012). STEL: 651 mg/m ³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 434 mg/m ³ 8 hours. TWA: 100 ppm 8 hours. OSHA PEL (United States, 6/2010). TWA: 100 ppm 8 hours. TWA: 435 mg/m ³ 8 hours.
Toluene	NIOSH REL (United States, 6/2009). STEL: 560 mg/m ³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 375 mg/m ³ 10 hours. TWA: 100 ppm 10 hours. OSHA PEL Z2 (United States, 11/2006). AMP: 500 ppm 10 minutes. CEIL: 300 ppm TWA: 200 ppm 8 hours. ACGIH TLV (United States, 3/2012). TWA: 20 ppm 8 hours.
Ethyl Alcohol	ACGIH TLV (United States, 3/2012). STEL: 1000 ppm 15 minutes. NIOSH REL (United States, 6/2009). TWA: 1900 mg/m ³ 10 hours. TWA: 1000 ppm 10 hours. OSHA PEL (United States, 6/2010). TWA: 1900 mg/m ³ 8 hours. TWA: 1000 ppm 8 hours.
n-Hexane	ACGIH TLV (United States, 3/2012). Absorbed through skin. TWA: 50 ppm 8 hours. NIOSH REL (United States, 6/2009). TWA: 180 mg/m ³ 10 hours. TWA: 50 ppm 10 hours. OSHA PEL (United States, 6/2010). TWA: 1800 mg/m ³ 8 hours. TWA: 500 ppm 8 hours.
Benzene	ACGIH TLV (United States, 3/2012). Absorbed through skin. STEL: 8 mg/m ³ 15 minutes. STEL: 2.5 ppm 15 minutes. TWA: 1.6 mg/m ³ 8 hours. TWA: 0.5 ppm 8 hours. NIOSH REL (United States, 6/2009). STEL: 1 ppm 15 minutes. TWA: 0.1 ppm 10 hours. OSHA PEL (United States, 6/2010). STEL: 5 ppm 15 minutes. TWA: 1 ppm 8 hours. OSHA PEL Z2 (United States, 11/2006). AMP: 50 ppm 10 minutes. CEIL: 25 ppm TWA: 10 ppm 8 hours.
1,2,4-Trimethylbenzene	ACGIH TLV (United States, 3/2012). TWA: 123 mg/m ³ 8 hours. TWA: 25 ppm 8 hours. NIOSH REL (United States, 6/2009). TWA: 125 mg/m ³ 10 hours. TWA: 25 ppm 10 hours.

Section 8. Exposure controls/personal protection

Ethylbenzene	OSHA PEL 1989 (United States, 3/1989). TWA: 25 ppm 8 hours. TWA: 125 mg/m³ 8 hours. ACGIH TLV (United States, 3/2012). TWA: 20 ppm 8 hours. NIOSH REL (United States, 6/2009). STEL: 545 mg/m³ 15 minutes. STEL: 125 ppm 15 minutes. TWA: 435 mg/m³ 10 hours. TWA: 100 ppm 10 hours. OSHA PEL (United States, 6/2010). TWA: 435 mg/m³ 8 hours. TWA: 100 ppm 8 hours.
Naphthalene	ACGIH TLV (United States, 3/2012). Absorbed through skin. STEL: 79 mg/m³ 15 minutes. STEL: 15 ppm 15 minutes. TWA: 52 mg/m³ 8 hours. TWA: 10 ppm 8 hours. NIOSH REL (United States, 6/2009). STEL: 75 mg/m³ 15 minutes. STEL: 15 ppm 15 minutes. TWA: 50 mg/m³ 10 hours. TWA: 10 ppm 10 hours. OSHA PEL (United States, 6/2010). TWA: 50 mg/m³ 8 hours. TWA: 10 ppm 8 hours.
Cumene	ACGIH TLV (United States, 3/2012). TWA: 50 ppm 8 hours. NIOSH REL (United States, 6/2009). Absorbed through skin. TWA: 245 mg/m³ 10 hours. TWA: 50 ppm 10 hours. OSHA PEL (United States, 6/2010). Absorbed through skin. TWA: 245 mg/m³ 8 hours. TWA: 50 ppm 8 hours.

Mexico

Ingredient name	Exposure limits
Gasoline	ACGIH TLV (United States, 3/2012). TWA: 300 ppm 8 hours. TWA: 890 mg/m³ 8 hours. STEL: 500 ppm 15 minutes. STEL: 1480 mg/m³ 15 minutes.
Xylene	NOM-010-STPS (Mexico, 9/2000). LMPE-PPT: 435 mg/m³ 8 hours. LMPE-PPT: 100 ppm 8 hours. LMPE-CT: 655 mg/m³ 15 minutes. LMPE-CT: 150 ppm 15 minutes.
Toluene	NOM-010-STPS (Mexico, 9/2000). Absorbed through skin. LMPE-PPT: 188 mg/m³ 8 hours. LMPE-PPT: 50 ppm 8 hours.
Ethyl Alcohol	NOM-010-STPS (Mexico, 9/2000). LMPE-PPT: 1900 mg/m³ 8 hours. LMPE-PPT: 1000 ppm 8 hours.
n-Hexane	NOM-010-STPS (Mexico, 9/2000). LMPE-PPT: 176 mg/m³ 8 hours. LMPE-PPT: 50 ppm 8 hours.
Benzene	NOM-010-STPS (Mexico, 9/2000). LMPE-CT: 16 mg/m³ 15 minutes. LMPE-CT: 5 ppm 15 minutes. LMPE-PPT: 3.2 mg/m³ 8 hours. LMPE-PPT: 1 ppm 8 hours.
1,2,4-Trimethylbenzene	NOM-010-STPS (Mexico, 9/2000). LMPE-CT: 170 mg/m³ 15 minutes. LMPE-CT: 35 ppm 15 minutes. LMPE-PPT: 125 mg/m³ 8 hours. LMPE-PPT: 25 ppm 8 hours.

Section 8. Exposure controls/personal protection

Ethylbenzene

NOM-010-STPS (Mexico, 9/2000).LMPE-CT: 545 mg/m³ 15 minutes.

LMPE-CT: 125 ppm 15 minutes.

LMPE-PPT: 435 mg/m³ 8 hours.

LMPE-PPT: 100 ppm 8 hours.

Naphthalene

NOM-010-STPS (Mexico, 9/2000).LMPE-CT: 75 mg/m³ 15 minutes.

LMPE-CT: 15 ppm 15 minutes.

LMPE-PPT: 50 mg/m³ 8 hours.

LMPE-PPT: 10 ppm 8 hours.

Appropriate engineering controls

- : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls

- : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

- : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

- : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection

- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Body protection

- : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection

- : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

- : Use a properly fitted, air-purifying or supplied air respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state

- : Liquid.

Color

- : Colorless to yellow.

Odor

- : Petroleum.

Odor threshold

- : Not available.

Section 9. Physical and chemical properties

pH	: Not available.
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Closed cup: <-40°C (<-40°F) [Tagliabue.]
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Lower: 1.3% Upper: 7.6%
Vapor pressure	: 34.5 to 103.4 kPa (258.55 to 775.66 mm Hg) [20°C] (5 psi - 15 psi @ 37.8°C (100°F))
Vapor density	: 3 to 4 [Air = 1]
Relative density	: 0.7 to 0.8
Solubility	: Insoluble in the following materials: cold water and hot water.
Solubility in water	: Not available.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: 257.22°C (495°F)
Decomposition temperature	: Not available.
SADT	: Not available.
Viscosity	: <1 SUS @ 37.8°C (100°F)

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
Incompatible materials	: Reactive or incompatible with the following materials: oxidizing materials, acids and alkalis.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Gasoline	LD50 Oral	Rat	13.6 g/kg	-
Xylene	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours
	LD50 Oral	Rat	4300 mg/kg	-
Toluene	LC50 Inhalation Vapor	Rat	49 g/m ³	4 hours
	LD50 Oral	Rat	636 mg/kg	-
Ethyl Alcohol	LC50 Inhalation Vapor	Rat	124700 mg/m ³	4 hours
	LD50 Oral	Rat	7 g/kg	-
n-Hexane	LC50 Inhalation Gas.	Rat	48000 ppm	4 hours
	LD50 Oral	Rat	15840 mg/kg	-
Benzene	LD50 Oral	Rat	930 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m ³	4 hours
	LD50 Oral	Rat	5 g/kg	-
Ethylbenzene	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Oral	Rat	3500 mg/kg	-
Naphthalene	LD50 Dermal	Rabbit	>20 g/kg	-
	LD50 Oral	Rat	490 mg/kg	-
Cumene	LC50 Inhalation Vapor	Rat	39000 mg/m ³	4 hours
	LD50 Oral	Rat	1400 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Xylene	Eyes - Mild irritant	Rabbit	-	87 mg	-
	Eyes - Severe irritant	Rabbit	-	24 hours 5 mg	-
	Skin - Mild irritant	Rat	-	8 hours 60 µL	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Moderate irritant	Rabbit	-	100%	-
Toluene	Eyes - Mild irritant	Rabbit	-	0.5 minutes 100 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 mg	-
	Eyes - Mild irritant	Rabbit	-	870 µg	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 mg	-
	Skin - Mild irritant	Pig	-	24 hours 250 µL	-
	Skin - Mild irritant	Rabbit	-	435 mg	-
	Skin - Moderate irritant	Rabbit	-	500 mg	-
Ethyl Alcohol	Eyes - Moderate irritant	Rabbit	-	100 µL	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 mg	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Eyes - Moderate irritant	Rabbit	-	0.066666667 minutes 100 mg	-
	Eyes - Severe irritant	Rabbit	-	500 mg	-
	Skin - Mild irritant	Rabbit	-	400 mg	-
n-Hexane	Eyes - Mild irritant	Rabbit	-	10 mg	-
Benzene	Eyes - Moderate irritant	Rabbit	-	88 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 mg	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 mg	-
	Skin - Mild irritant	Rat	-	8 hours 60 µL	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 mg	-
Ethylbenzene	Eyes - Severe irritant	Rabbit	-	500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 mg	-
Naphthalene	Skin - Mild irritant	Rabbit	-	495 mg	-
	Skin - Severe irritant	Rabbit	-	24 hours 0.05 mL	-
Cumene	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 10 mg	-
	Eyes - Mild irritant	Rabbit	-	86 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 100 mg	-

Sensitization

There is no data available.

Mutagenicity

There is no data available.

Carcinogenicity

Section 11. Toxicological information

Classification

Product/ingredient name	OSHA	IARC	ACGIH	NTP
Xylene	-	3	A4	-
Toluene	-	3	A4	-
Benzene	+	1	A1	Known to be a human carcinogen.
Ethylbenzene	-	2B	A3	-
Naphthalene	-	2B	A4	Reasonably anticipated to be a human carcinogen.
Cumene	-	2B	-	-

Reproductive toxicity

There is no data available.

Teratogenicity

There is no data available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Toluene	Category 3	Not applicable.	Narcotic effects
n-Hexane	Category 3	Not applicable.	Narcotic effects
1,2,4-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Cumene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Toluene	Category 2	Not determined	Not determined
n-Hexane	Category 2	Not determined	Not determined
Benzene	Category 1	Not determined	Not determined

Aspiration hazard

Name	Result
Gasoline	ASPIRATION HAZARD - Category 1
Toluene	ASPIRATION HAZARD - Category 1
n-Hexane	ASPIRATION HAZARD - Category 1
Benzene	ASPIRATION HAZARD - Category 1
Cumene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure

: Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eye contact

: Causes serious eye irritation.

Inhalation

: Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness.

Skin contact

: Causes skin irritation.

Ingestion

: Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact

: Adverse symptoms may include the following:
pain or irritation
watering
redness

Section 11. Toxicological information

- Inhalation** : Adverse symptoms may include the following:
 nausea or vomiting
 headache
 drowsiness/fatigue
 dizziness/vertigo
 unconsciousness
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations
- Skin contact** : Adverse symptoms may include the following:
 irritation
 redness
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations
- Ingestion** : Adverse symptoms may include the following:
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Long term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Potential chronic health effects

General : Causes damage to organs through prolonged or repeated exposure.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : May cause genetic defects.

Teratogenicity : Suspected of damaging the unborn child.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : Suspected of damaging fertility.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	10837.6 mg/kg
Dermal	7333.3 mg/kg
Inhalation (gases)	33333.3 ppm
Inhalation (vapors)	202 mg/L

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Xylene	Acute IC50 10 mg/L	Algae	72 hours
	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Toluene	Acute EC50 433 ppm Marine water	Algae - Skeletonema costatum	96 hours
	Acute EC50 12500 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 11600 µg/l Fresh water	Crustaceans - Gammarus pseudolimnaeus - Adult	48 hours
	Acute EC50 6000 µg/l Fresh water	Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
	Acute LC50 5500 µg/l Fresh water	Fish - Oncorhynchus kisutch - Fry	96 hours
	Chronic NOEC 500000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Daphnia - Daphnia magna	21 days
Ethyl Alcohol	Acute EC50 17.921 mg/L Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 2000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 25500 µg/l Marine water	Crustaceans - Artemia franchiscana - Larvae	48 hours
	Acute LC50 42000 µg/l Fresh water	Fish - Oncorhynchus mykiss	4 days
	Chronic NOEC 4.995 mg/L Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 0.375 µl/L Fresh water	Fish - Gambusia holbrooki - Larvae	12 weeks
n-Hexane	Acute LC50 113000 µg/l Fresh water	Fish - Oreochromis mossambicus	96 hours
Benzene	Acute EC50 29000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 1600000 µg/l Fresh water	Algae - Selenastrum sp.	96 hours
	Acute EC50 9230 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 21000 µg/l Marine water	Crustaceans - Artemia salina - Nauplii	48 hours
	Acute LC50 5.28 µl/L Fresh water	Fish - Oncorhynchus gorbuscha - Fry	96 hours
	Chronic NOEC 1.5 to 5.4 µl/L Marine water	Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	4 weeks
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pectinicus - Adult	48 hours
	Acute LC50 22.4 mg/L Fresh water	Fish - Tilapia zillii	96 hours
Ethylbenzene	Acute EC50 4600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 3600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute EC50 2970 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 5200 µg/l Marine water	Crustaceans - Americamysis bahia	48 hours
	Acute LC50 4200 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
Naphthalene	Acute EC50 1600 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 2350 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 213 µg/l Fresh water	Fish - Melanotaenia fluviatilis - Larvae	96 hours
Cumene	Acute EC50 2600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 11200 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 7400 µg/l Fresh water	Crustaceans - Artemia sp. - Nauplii	48 hours
	Acute LC50 2700 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Gasoline	2 to 7	-	high
Xylene	3.16	-	low
Toluene	2.69	8.317637711	low
Ethyl Alcohol	-0.32	-	low
n-Hexane	3.9	-	low
Benzene	2.13	4.265795188	low
1,2,4-Trimethylbenzene	3.8	120.226443461	low
Ethylbenzene	3.1	-	low
Naphthalene	3.3	85.11380382	low
Cumene	3.66	35.481338923	low

Section 12. Ecological information

Mobility in soil

Soil/water partition coefficient (K_{oc}) : There is no data available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

United States - RCRA Toxic hazardous waste "U" List

Ingredient	CAS #	Status	Reference number
Toluene	108-88-3	Listed	U220
Xylene	1330-20-7	Listed	U239
Benzene	71-43-2	Listed	U019
Naphthalene	91-20-3	Listed	U165

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	UN1203	UN1203	UN1203
UN proper shipping name	GASOLINE	GASOLINE. Marine pollutant (n-Hexane, Benzene)	GASOLINE
Transport hazard class(es)	3 	3  	3 
Packing group	II	II	II
Environmental hazards	Yes.	Yes.	No.
Additional information	-	<u>Emergency schedules (EmS)</u> F-E, S-E	-

AERG : 128

Section 14. Transport information

Special precautions for user : **Transport within user's premises**: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) PAIR**: Naphthalene
TSCA 8(a) CDR Exempt/Partial exemption: Not determined
United States inventory (TSCA 8b): Not determined.
Clean Water Act (CWA) 307: Toluene; Benzene; Ethylbenzene; Naphthalene
Clean Water Act (CWA) 311: Toluene; Xylene; Benzene; Ethylbenzene; Naphthalene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Fire hazard
 Immediate (acute) health hazard
 Delayed (chronic) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Gasoline	90 - 100	Yes.	No.	No.	No.	No.
Xylene	5 - 15	Yes.	No.	No.	Yes.	No.
Toluene	5 - 15	Yes.	No.	No.	Yes.	Yes.
Ethyl Alcohol	0.1 - 10	Yes.	No.	No.	Yes.	No.
n-Hexane	0.5 - 5	Yes.	No.	No.	Yes.	Yes.
Benzene	0.1 - 4.9	Yes.	No.	No.	Yes.	Yes.
1,2,4-Trimethylbenzene	0.5 - 4	Yes.	No.	No.	Yes.	No.
Ethylbenzene	0.1 - 3	Yes.	No.	No.	Yes.	Yes.
Naphthalene	0.1 - 2	No.	No.	No.	Yes.	Yes.
Cumene	0 - 0.1	Yes.	No.	No.	Yes.	Yes.

Section 15. Regulatory information

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Xylene	1330-20-7	0.5 - 15
	Toluene	108-88-3	0.5 - 15
	n-Hexane	110-54-3	0.5 - 5
	Benzene	71-43-2	0.1 - 4.9
	1,2,4-Trimethylbenzene	95-63-6	0.5 - 4
	Ethylbenzene	100-41-4	0.1 - 3
	Naphthalene	91-20-3	0.1 - 2
Supplier notification	Xylene	1330-20-7	0.5 - 15
	Toluene	108-88-3	0.5 - 15
	n-Hexane	110-54-3	0.5 - 5
	Benzene	71-43-2	0.1 - 4.9
	1,2,4-Trimethylbenzene	95-63-6	0.5 - 4
	Ethylbenzene	100-41-4	0.1 - 3
	Naphthalene	91-20-3	0.1 - 2

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts

: The following components are listed: Toluene; Xylene; Ethyl Alcohol; n-Hexane; Benzene; 1,2,4-Trimethylbenzene; Ethylbenzene; Naphthalene

New York

: The following components are listed: Toluene; Xylene; n-Hexane; Benzene; Ethylbenzene; Naphthalene; Cumene

New Jersey

: The following components are listed: Toluene; Xylene; Ethyl Alcohol; n-Hexane; Benzene; 1,2,4-Trimethylbenzene; Ethylbenzene; Naphthalene; Cumene

Pennsylvania

: The following components are listed: Gasoline; Toluene; Xylene; Ethyl Alcohol; n-Hexane; Benzene; 1,2,4-Trimethylbenzene; Ethylbenzene; Naphthalene; Cumene

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Toluene	No.	Yes.	No.	7000 µg/day (ingestion) 13000 µg/day (inhalation)
Benzene	Yes.	Yes.	6.4 µg/day (ingestion) 13 µg/day (inhalation)	24 µg/day (ingestion) 49 µg/day (inhalation)
Ethylbenzene	Yes.	No.	41 µg/day (ingestion) 54 µg/day (inhalation)	No.
Naphthalene	Yes.	No.	Yes.	No.
Cumene	Yes.	No.	No.	No.

Mexico

Classification



International regulations

Section 15. Regulatory information

International lists	Australia inventory (AICS): All components are listed or exempted. China inventory (IECSC): Not determined. Japan inventory: Not determined. Korea inventory: All components are listed or exempted. Malaysia Inventory (EHS Register): Not determined. New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted. Philippines inventory (PICCS): All components are listed or exempted. Taiwan inventory (CSNN): Not determined.
Chemical Weapons Convention List Schedule I Chemicals	: Not listed
Chemical Weapons Convention List Schedule II Chemicals	: Not listed
Chemical Weapons Convention List Schedule III Chemicals	: Not listed

Section 16. Other information

History

Date of issue mm/dd/yyyy	: 06/30/2013
Date of previous issue	: 05/30/2012
Version	: 4
Revised Section(s)	: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16
Prepared by	: KMK Regulatory Services Inc.
Key to abbreviations	ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) UN = United Nations

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Safety Data Sheet



SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

CHEVRON and TEXACO REGULAR UNLEADED GASOLINES

Product Use: Fuel

Product Number(s): 201000 [See Section 16 for Additional Product Numbers]

Synonyms: Calco Regular Unleaded Gasoline, Chevron Regular Unleaded Gasoline, Chevron UL/CQ Gasoline, Gasolines, Automotive, Texaco Unleaded Gasoline

Company Identification

Chevron Products Company

6001 Bollinger Canyon Rd., T3325/B10

San Ramon, CA 94583

United States of America

Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency

Chevron Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information

Product Information: (800) 582-3835

SDS Requests: (800) 414-6737

SPECIAL NOTES: This MSDS applies to: all motor gasoline.

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION: Flammable liquid: Category 1. Aspiration toxicant: Category 1. Carcinogen: Category 1A. Target organ toxicant (repeated exposure): Category 1. Eye irritation: Category 2A. Germ Cell Mutagen: Category 1B. Skin irritation: Category 2. Reproductive toxicant (developmental): Category 2. Target organ toxicant (central nervous system): Category 3. Acute aquatic toxicant: Category 2. Chronic aquatic toxicant: Category 2.



Signal Word: Danger

Physical Hazards: Extremely flammable liquid and vapor.

Health Hazards: May be fatal if swallowed and enters airways. May cause genetic defects. May cause cancer. Causes skin irritation. Causes serious eye irritation. Suspected of damaging the unborn child. May cause drowsiness or dizziness.

Target Organs: Causes damage to organs (Blood/Blood Forming Organs) through prolonged or repeated exposure.

Environmental Hazards: Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:

General: Keep out of reach of children. Read label before use.

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. -- No smoking. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use explosion-proof electrical/ventilating/lighting/equipment. Do not breathe dust/fume/gas/mist/vapours/spray. Avoid breathing dust/fume/gas/mist/vapours/spray. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. Use personal protective equipment as required. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment.

Response: IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with water/shower. IF SWALLOWED: Immediately call a poison center or doctor/physician. Do NOT induce vomiting. Call a poison center or doctor/physician if you feel unwell. Get medical advice/attention if you feel unwell. IF exposed or concerned: Get medical advice/attention. In case of fire: Use media specified in the SDS to extinguish. Specific treatment (see Notes to Physician on this label). Collect spillage.

Storage: Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store locked up.

Disposal: Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

HAZARDS NOT OTHERWISE CLASSIFIED: Not Applicable

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Gasoline	86290-81-5	100 %vol/vol
Toluene (methylbenzene)	108-88-3	1 - 35 %vol/vol
Xylene (contains o-, m-, & p- xylene isomers in varying amounts)	1330-20-7	1 - 15 %vol/vol
Pentane, 2,2,4-trimethyl- (Isooctane)	540-84-1	1 - 13 %vol/vol
Butane	106-97-8	1 - 12 %vol/vol
Ethanol	64-17-5	0 - 10 %vol/vol
Benzene	71-43-2	0.1 - 4.9 %vol/vol
Hexane	110-54-3	1 - 5 %vol/vol
Heptane	142-82-5	1 - 4 %vol/vol
Ethyl benzene	100-41-4	0.1 - 3 %vol/vol
Cyclohexane	110-82-7	1 - 3 %vol/vol
Naphthalene	91-20-3	0.1 - 2 %vol/vol
Methylcyclohexane	108-87-2	1 - 2 %vol/vol

Motor gasoline is considered a mixture by EPA under the Toxic Substances Control Act (TSCA). The refinery streams used to blend motor gasoline are all on the TSCA Chemical Substances Inventory. The appropriate CAS number for refinery blended motor gasoline is 86290-81-5. The product specifications of motor gasoline sold in your area will depend on applicable Federal and State regulations.

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye: Flush eyes with water immediately while holding the eyelids open. Remove contact lenses, if worn, after initial flushing, and continue flushing for at least 15 minutes. Get immediate medical attention.

Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.

Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue or if any other symptoms develop.

Most important symptoms and effects, both acute and delayed

IMMEDIATE HEALTH EFFECTS

Eye: Contact with the eyes causes severe irritation. Symptoms may include pain, tearing, reddening, swelling and impaired vision.

Skin: Contact with the skin causes irritation. Skin contact may cause drying or defatting of the skin. Contact with the skin is not expected to cause an allergic skin response. Symptoms may include pain, itching, discoloration, swelling, and blistering.

Ingestion: Highly toxic; may be fatal if swallowed. Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death. May be irritating to mouth, throat, and stomach. Symptoms may include pain, nausea, vomiting, and diarrhea.

Inhalation: Excessive or prolonged breathing of this material may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of consciousness, coma or death.

DELAYED OR OTHER HEALTH EFFECTS:

Reproduction and Birth Defects: Contains material that may cause harm to the unborn child if inhaled above the recommended exposure limit.

Cancer: Prolonged or repeated exposure to this material may cause cancer. Gasoline has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Whole gasoline exhaust has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains benzene, which has been classified as a carcinogen by the National Toxicology Program (NTP) and a Group 1 carcinogen (carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains ethylbenzene which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Genetic Toxicity: Contains material that may cause heritable genetic damage based on animal data.

Target Organs: Contains material that may cause damage to the following organ(s) following repeated inhalation at concentrations above the recommended exposure limit: Blood/Blood Forming Organs Risk depends on duration and level of exposure. See Section 11 for additional information.

Indication of any immediate medical attention and special treatment needed

Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

Unusual Fire Hazards: See Section 7 for proper handling and storage.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Precautionary Measures: This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures, and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Never siphon gasoline by mouth.

Do not store in open or unlabeled containers. **READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.** Do not get in eyes, on skin, or on clothing. Do not get in eyes. Do not taste or swallow. Do not breathe vapor or fumes. Wash thoroughly after handling. Keep out of the reach of children.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank

cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

General Storage Information: DO NOT USE OR STORE near heat, sparks, flames, or hot surfaces . USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below the recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: Wear protective equipment to prevent eye contact. Selection of protective equipment may include safety glasses, chemical goggles, face shields, or a combination depending on the work operations conducted.

Skin Protection: Wear protective clothing to prevent skin contact. Selection of protective clothing may include gloves, apron, boots, and complete facial protection depending on operations conducted.

Suggested materials for protective gloves include: Nitrile Rubber, Viton, Chlorinated Polyethylene (or Chlorosulfonated Polyethylene), Polyurethane.

Respiratory Protection: Determine if airborne concentrations are below the recommended occupational exposure limits for jurisdiction of use. If airborne concentrations are above the acceptable limits, wear an approved respirator that provides adequate protection from this material, such as: Air-Purifying Respirator for Organic Vapors.

When used as a fuel, this material can produce carbon monoxide in the exhaust. Determine if airborne concentrations are below the occupational exposure limit for carbon monoxide. If not, wear an approved positive-pressure air-supplying respirator.

Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Agency	TWA	STEL	Ceiling	Notation
Gasoline	ACGIH	300 ppm (weight)	500 ppm (weight)	--	A3
Toluene (methylbenzene)	ACGIH	20 ppm (weight)	--	--	--
Toluene (methylbenzene)	OSHA Z-2	200 ppm (weight)	--	300 ppm (weight)	--
Xylene (contains o-, m-, & p- xylene isomers in varying amounts)	ACGIH	100 ppm (weight)	150 ppm (weight)	--	--
Xylene (contains o-, m-, & p- xylene isomers in varying amounts)	OSHA Z-1	435 mg/m3	--	--	--
Pentane, 2,2,4-trimethyl- (Isooctane)	OSHA Z-1	2350 mg/m3	--	--	--
Pentane, 2,2,4-trimethyl- (Isooctane)	ACGIH	300 ppm (weight)	--	--	--
Butane	ACGIH	--	1000 ppm (weight)	--	--
Ethanol	ACGIH	1000 ppm (weight)	--	--	A4 A3
Ethanol	OSHA Z-1	1900 mg/m3	--	--	--
Benzene	ACGIH	.5 ppm (weight)	2.5 ppm (weight)	--	Skin A1 Skin
Benzene	OSHA SRS	1 ppm (weight)	5 ppm (weight)	--	--
Benzene	OSHA Z-2	10 ppm (weight)	--	25 ppm (weight)	--
Benzene	CVX	1 ppm (weight)	5 ppm (weight)	--	--
Hexane	ACGIH	50 ppm (weight)	--	--	Skin
Hexane	OSHA Z-1	1800 mg/m3	--	--	--
Heptane	ACGIH	400 ppm (weight)	500 ppm (weight)	--	--
Heptane	OSHA Z-1	2000 mg/m3	--	--	--
Ethyl benzene	ACGIH	20 ppm (weight)	125 ppm (weight)	--	A3
Ethyl benzene	OSHA Z-1	435 mg/m3	--	--	--
Cyclohexane	ACGIH	100 ppm (weight)	--	--	--
Cyclohexane	OSHA Z-1	1050 mg/m3	--	--	--

Naphthalene	ACGIH	10 ppm (weight)	15 ppm (weight)	--	Skin
Naphthalene	OSHA Z-1	50 mg/m3	--	--	--
Methylcyclohexane	ACGIH	400 ppm (weight)	--	--	--
Methylcyclohexane	OSHA Z-1	2000 mg/m3	--	--	--

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Colorless to yellow

Physical State: Liquid

Odor: Petroleum odor

Odor Threshold: No data available

pH: Not Applicable

Vapor Pressure: 5 psi - 15 psi (Typical) @ 37.8 °C (100 °F)

Vapor Density (Air = 1): 3 - 4 (Typical)

Initial Boiling Point: 27.2°C (81°F) - 204.4°C (400°F) (Typical)

Solubility: Insoluble in water; miscible with most organic solvents.

Freezing Point: Not Applicable

Melting Point: Not Applicable

Specific Gravity: 0.70 g/ml - 0.80 g/ml @ 15.6°C (60.1°F) (Typical)

Viscosity: <1 SUS @ 37.8°C (100°F)

Evaporation Rate: No data available

Decomposition temperature: No data available

Octanol/Water Partition Coefficient: 2 - 7

FLAMMABLE PROPERTIES:

Flammability (solid, gas): No Data Available

Flashpoint: (Tagliabue Closed Cup ASTM D56) < -45 °C (< -49 °F)

Autoignition: > 280 °C (> 536 °F)

Flammability (Explosive) Limits (% by volume in air): Lower: 1.4 Upper: 7.6

SECTION 10 STABILITY AND REACTIVITY

Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Incompatibility With Other Materials: Not applicable

Hazardous Decomposition Products: None known (None expected)

Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Serious Eye Damage/Irritation: The eye irritation hazard is based on evaluation of data for product components.

Skin Corrosion/Irritation: For a 4-hour exposure, the Primary Irritation Index (PII) in rabbits is: 4.8/8.0.

Skin Sensitization: This material did not cause skin sensitization reactions in a Buehler guinea pig test.

Acute Dermal Toxicity: LD50: >3.75 g/kg (rabbit).

Acute Oral Toxicity: LD50: >5 ml/kg (rat).

Acute Inhalation Toxicity: 4 hour(s) LD50: >20000 mg/m³ (rat).

Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The hazard evaluation is based on data for components or a similar material.

Carcinogenicity: The hazard evaluation is based on data for components or a similar material. Gasoline has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Whole gasoline exhaust has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains benzene, which has been classified as a carcinogen by the National Toxicology Program (NTP) and a Group 1 carcinogen (carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Contains naphthalene, which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC). Contains ethylbenzene which has been classified as a Group 2B carcinogen (possibly carcinogenic to humans) by the International Agency for Research on Cancer (IARC).

Reproductive Toxicity: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Single Exposure: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Repeated Exposure: The hazard evaluation is based on data for components or a similar material.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains naphthalene.

GENERAL TOXICITY: Exposure to naphthalene has been reported to cause methemoglobinemia and/or hemolytic anemia, especially in humans deficient in the enzyme glucose-6-phosphate dehydrogenase. Laboratory animals given repeated oral doses of naphthalene have developed cataracts.

REPRODUCTIVE TOXICITY AND BIRTH DEFECTS: Naphthalene did not cause birth defects when administered orally to rabbits, rats, and mice during pregnancy, but slightly reduced litter size in mice at dose levels that were lethal to the pregnant females. Naphthalene has been reported to cross the human placenta.

GENETIC TOXICITY: Naphthalene caused chromosome aberrations and sister chromatid exchanges in Chinese hamster ovary cells, but was not a mutagen in several other in-vitro tests.

CARCINOGENICITY: In a study conducted by the National Toxicology Program (NTP), mice exposed to 10 or 30 ppm of naphthalene by inhalation daily for two years had chronic inflammation of the nose and lungs and increased incidences of metaplasia in those tissues. The incidence of benign lung tumors (alveolar/bronchiolar adenomas) was significantly increased in the high-dose female group but not in the male groups. In another two-year inhalation study conducted by NTP, exposure of rats to 10, 30, and 60 ppm naphthalene caused increases in the incidences of a variety of nonneoplastic lesions in the nose. Increases in nasal tumors were seen in both sexes, including olfactory neuroblastomas in females at 60 ppm and adenomas of the respiratory epithelium in males at all exposure levels. The relevance of these effects to humans has not been established. No carcinogenic effect was reported in a 2-year feeding study in rats receiving naphthalene at 41 mg/kg/day.

This product contains cyclohexane.

Cyclohexane primarily affects the central nervous systems of laboratory animals and humans. Acute or prolonged inhalation of cyclohexane at levels below the recommended exposure limits does not result in toxic effects while acute exposures to levels above these recommended limits can cause reversible central nervous system depression. Prolonged exposures of laboratory animals to high levels (up to low thousands of parts per million) have also caused reversible effects which included hyperactivity, diminished response to stimuli, and adaptive liver changes while very high levels (high thousands of parts per million) were fatal. No developmental effects were seen in rats or rabbits following exposures of up to 7000 ppm cyclohexane. No reproductive effects occurred in rats, although postnatal pup growth was reduced at 7000 ppm in a similar manner as observed in the parental animals. Cyclohexane has not been shown to be mutagenic in several in vitro and in vivo assays and has not produced tumors in several dermal application long-term bioassays. Based on these results and the lack of any mutagenic or genotoxic metabolites, cyclohexane is not expected to be mutagenic or genotoxic. Following dermal exposure, cyclohexane is rapidly absorbed, metabolized, and excreted.

This product contains butane.

An atmospheric concentration of 100,000 ppm (10%) butane is not noticeably irritating to the eyes, nose or respiratory tract, but will produce slight dizziness in a few minutes of exposure. No chronic systemic effect has been reported from occupational exposure.

This product contains benzene.

GENETIC TOXICITY/CANCER: Repeated or prolonged breathing of benzene vapor has been associated with the development of chromosomal damage in experimental animals and various blood diseases in humans ranging from aplastic anemia to leukemia (a form of cancer). All of these diseases can be fatal. In some individuals, benzene exposure can sensitize cardiac tissue to epinephrine which may precipitate fatal ventricular fibrillation.

REPRODUCTIVE/DEVELOPMENTAL TOXICITY: No birth defects have been shown to occur in pregnant laboratory animals exposed to doses not toxic to the mother. However, some evidence of fetal toxicity such as delayed physical development has been seen at such levels. The available information on the effects of benzene on human pregnancies is inadequate but it has been established that benzene can cross the human placenta.

OCCUPATIONAL: The OSHA Benzene Standard (29 CFR 1910.1028) contains detailed requirements for training, exposure monitoring, respiratory protection and medical surveillance triggered by the exposure level. Refer to the OSHA Standard before using this product.

This product contains n-hexane.

TARGET ORGAN TOXICITY: Prolonged or repeated ingestion, skin contact or breathing of vapors of n-hexane has been shown to cause peripheral neuropathy. Recovery ranges from no recovery to complete recovery depending upon the severity of the nerve damage. Exposure to 1000 ppm n-hexane for 18 hr/day for 61 days has been shown to cause testicular damage in rats. However, when rats were exposed to higher concentrations for shorter daily periods (10,000 ppm for 6 h/day, 5 days/wk for 13 weeks), no testicular lesions were seen.

CARCINOGENICITY: Chronic exposure to commercial hexane (52% n-hexane) at a concentration of 9000ppm was not carcinogenic to rats or to male mice, but did result in an increased incidence of liver tumors in female mice. No carcinogenic effects were observed in female mice exposed to 900 or 3000 ppm hexane or in male mice. The relevance for humans of these hexane-induced mouse liver tumors is questionable.

GENETIC TOXICITY: n-Hexane caused chromosome aberrations in bone marrow of rats, but was negative in the AMES and mouse lymphoma tests.

This product contains ethanol (ethyl alcohol).

Chronic ingestion of ethanol can damage the liver, nervous system and heart. Chronic heavy consumption of alcoholic beverages has been associated with an increased risk of cancer. Ingestion of ethanol during pregnancy can cause human birth defects such as fetal alcohol syndrome. Gasolines are highly volatile and can produce significant concentrations of vapor at ambient temperatures. Gasoline vapor is heavier than air and at high concentrations may accumulate in confined spaces to present both safety and health hazards. When vapor exposures are low, or short duration and infrequent, such as during refueling and tanker loading/unloading, neither total hydrocarbon nor components such as benzene are likely to result in any adverse health effects. In situations such as accidents or spills where exposure to gasoline vapor is potentially high, attention should be paid to potential toxic effects of specific components. Information about specific components in gasoline can be found in Sections 2/3, 8 and 15 of this MSDS. More detailed information on the health hazards of specific gasoline components can be obtained calling the Chevron Emergency Information Center (see Section 1 for phone numbers).

Pathological misuse of solvents and gasoline, involving repeated and prolonged exposure to high concentrations of vapor is a significant exposure on which there are many reports in the medical literature. As with other solvents, persistent abuse involving repeated and prolonged exposures to high concentrations of vapor has been reported to result in central nervous system damage and eventually, death. In a study in which ten human volunteers were exposed for 30 minutes to approximately 200, 500 or 1000 ppm concentrations of gasoline vapor, irritation of the eyes was the only significant effect observed, based on both subjective and objective assessments.

Lifetime inhalation of wholly vaporized unleaded gasoline at 2056 ppm has caused increased liver tumors

in female mice and kidney cancer in male rats. In their 1988 review of carcinogenic risk from gasoline, The International Agency for Research on Cancer (IARC) noted that, because published epidemiology studies did not include any exposure data, only occupations where gasoline exposure may have occurred were reviewed. These included gasoline service station attendants and automobile mechanics. IARC also noted that there was no opportunity to separate effects of combustion products from those of gasoline itself. Although IARC allocated gasoline a final overall classification of Group 2B, i.e. possibly carcinogenic to humans, this was based on limited evidence in experimental animals plus supporting evidence including the presence in gasoline of benzene. The actual evidence for carcinogenicity in humans was considered inadequate.

MUTAGENICITY: Gasoline was not mutagenic, with or without activation, in the Ames assay (*Salmonella typhimurium*), *Saccharomyces cerevisiae*, or mouse lymphoma assays. In addition, point mutations were not induced in human lymphocytes. Gasoline was not mutagenic when tested in the mouse dominant lethal assay. Administration of gasoline to rats did not cause chromosomal aberrations in their bone marrow cells.

EPIDEMIOLOGY: To explore the health effects of workers potentially exposed to gasoline vapors in the marketing and distribution sectors of the petroleum industry, the American Petroleum Institute sponsored a cohort mortality study (Publication 4555), a nested case-control study (Publication 4551), and an exposure assessment study (Publication 4552). Histories of exposure to gasoline were reconstructed for cohort of more than 18,000 employees from four companies for the time period between 1946 and 1985. The results of the cohort mortality study indicated that there was no increased mortality from either kidney cancer or leukemia among marketing and marine distribution employees who were exposed to gasoline in the petroleum industry, when compared to the general population. More importantly, based on internal comparisons, there was no association between mortality from kidney cancer or leukemia and various indices of gasoline exposure. In particular, neither duration of employment, duration of exposure, age at first exposure, year of first exposure, job category, cumulative exposure, frequency of peak exposure, nor average intensity of exposure had any effect on kidney cancer or leukemia mortality. The results of the nested case-control study confirmed the findings of the original cohort study. That is, exposure to gasoline at the levels experienced by this cohort of distribution workers is not a significant risk factor for leukemia (all cell types), acute myeloid leukemia, kidney cancer or multiple myeloma.

This product contains ethylbenzene.

BIRTH DEFECTS AND REPRODUCTION: Ethylbenzene is not expected to cause birth defects or other developmental effects based on well-conducted studies in rabbits and rats sponsored by NIOSH. Other studies in rats and mice which reported urinary tract malformations have many deficiencies and have limited usefulness in evaluating human risk. Reproductive effects are not expected based on a NIOSH study of fertility, and lack of effects observed for sperm counts and motility, estrous cycle and pathology of reproductive organs following repeated exposures. **HEARING:** Statistically significant losses in outer hair cells (OHCs) were observed in rats exposed to ≥ 200 ppm ethylbenzene, 6 hours/day, 6 days/week for 13 weeks, after an 8-week recovery period. Following longer exposure, inner hair cells losses were also observed in rats exposed to ≥ 600 ppm ethylbenzene, but only occasionally in rats exposed to 400 ppm. The Lowest Observed Adverse Effect Level in rats (LOAEL) was 200 ppm for losses of OHCs. Guinea pigs exposed to ethylbenzene at 2,500 ppm, 6 hours/day for 5 days did not show auditory deficits or losses in OHCs. The concentration of ethylbenzene used in the JP-8 study was approximately 10 ppm. **GENETIC TOXICITY:** Ethylbenzene tested negative in the bacterial mutation test, Chinese Hamster Ovary (CHO) cell in vitro assay, sister chromatid exchange assay and an unscheduled DNA synthesis assay. Conflicting results have been reported for the mouse lymphoma cell assay. Increased micronuclei were reported in an

in vitro Syrian hamster embryo cell assay; however, two in vivo micronuclei studies in mice were negative. In Syrian hamster embryo cells in vitro, cell transformation was observed at 7 days of incubation but not at 24 hours. Based on these results, ethylbenzene is not expected to be mutagenic or clastogenic.

CARCINOGENICITY: In studies conducted by the National Toxicology Program, rats and mice were exposed to ethylbenzene at 25, 250 and 750 ppm for six hours per day, five days per week for 103 weeks. In rats exposed to 750 ppm, the incidence of kidney tubule hyperplasia and tumors was increased. Testicular tumors develop spontaneously in nearly all rats if allowed to complete their natural life span; in this study, the development of these tumors appeared to be enhanced in male rats exposed to 750 ppm. In mice, the incidences of lung tumors in males and liver tumors in females exposed to 750 ppm were increased as compared to control mice but were within the range of incidences observed historically in control mice. Other liver effects were observed in male mice exposed to 250 and 750 ppm. The incidences of hyperplasia were increased in the pituitary gland in female mice at 250 and 750 ppm and in the thyroid in male and female mice at 750 ppm.

This product contains toluene.

GENERAL TOXICITY: The primary effects of exposure to toluene in animals and humans are on the central nervous system. Solvent abusers, who typically inhale high concentrations (thousands of ppm) for brief periods of time, in addition to experiencing respiratory tract irritation, often suffer permanent central nervous system effects that include tremors, staggered gait, impaired speech, hearing and vision loss, and changes in brain tissue. Death in some solvent abusers has been attributed to cardiac arrhythmias, which appear to have been triggered by epinephrine acting on solvent sensitized cardiac tissue. Although liver and kidney effects have been seen in some solvent abusers, results of animal testing with toluene do not support these as primary target organs.

HEARING: Humans who were occupationally exposed to concentrations of toluene as low as 100 ppm for long periods of time have experienced hearing deficits. Hearing loss, as demonstrated using behavioral and electrophysiological testing as well as by observation of structural damage to cochlear hair cells, occurred in experimental animals exposed to toluene. It also appears that toluene exposure and noise may interact to produce hearing deficits.

COLOR VISION: In a single study of workers exposed to toluene at levels under 50 ppm, small decreases in the ability to discriminate colors in the blue-yellow range have been reported for female workers. This effect, which should be investigated further, is very subtle and would not likely have been noticed by the people tested.

REPRODUCTIVE/DEVELOPMENTAL TOXICITY: Toluene may also cause mental and/or growth retardation in the children of female solvent abusers who directly inhale toluene (usually at thousands of ppm) when they are pregnant. Toluene caused growth retardation in rats and rabbits when administered at doses that were toxic to the mothers. In rats, concentrations of up to 5000 ppm did not cause birth defects. No effects were observed in the offspring at doses that did not intoxicate the pregnant animals. The exposure level at which no effects were seen (No Observed Effect Level, NOEL) is 750 ppm in the rat and 500 ppm in the rabbit.

This product contains xylene.

ACUTE TOXICITY: The primary effects of exposure to xylene in animals and humans are on the central nervous system. In addition, in some individuals, xylene exposure can sensitize cardiac tissue to epinephrine which may precipitate fatal ventricular fibrillation. **DEVELOPMENTAL TOXICITY:** Xylene has been reported to cause developmental toxicity in rats and mice exposed by inhalation during pregnancy.

The effects noted consisted of delayed development and minor skeletal variations. In addition, when pregnant mice were exposed by ingestion to a level that killed nearly one-third of the test group, lethality (resorptions) and malformations (primarily cleft palate) occurred. Since xylene can cross the placenta, it may be appropriate to prevent exposure during pregnancy. GENETIC TOXICITY/CARCINOGENICITY: Xylene was not genotoxic in several mutagenicity testing assays including the Ames test. In a cancer study sponsored by the National Toxicology Program (NTP), technical grade xylene gave no evidence of carcinogenicity in rats or mice dosed daily for two years. HEARING: Mixed xylenes have been shown to cause measurable hearing loss in rats exposed to 800 ppm in the air for 14 hours per day for six weeks. Exposure to 1450 ppm xylene for 8 hours caused hearing loss while exposure to 1700 ppm for 4 hours did not. Although no information is available for lower concentrations, other chemicals that cause hearing loss in rats at relatively high concentrations do not cause hearing loss in rats at low concentrations. Worker exposure to xylenes at the permissible exposure limit (100 ppm, time-weighted average) is not expected to cause hearing loss.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

96 hour(s) LC50: 2.7 mg/l (Oncorhynchus mykiss)
96 hour(s) LC50: 1.8 mg/l (Mysidopsis bahia)
96 hour(s) LC50: 8.3 mg/l (Cyprinodon variegatus)
48 hour(s) LC50: 3.0 mg/l (Daphnia magna)

MOBILITY

No data available.

PERSISTENCE AND DEGRADABILITY

This material is expected to be readily biodegradable. Following spillage, the more volatile components of gasoline will be rapidly lost, with concurrent dissolution of these and other constituents into the water. Factors such as local environmental conditions (temperature, wind, mixing or wave action, soil type, etc), photo-oxidation, biodegradation and adsorption onto suspended sediments, can contribute to the weathering of spilled gasoline.

The aqueous solubility of non-oxygenated unleaded gasoline, based on analysis of benzene, toluene, ethylbenzene+xylenes and naphthalene, is reported to be 112 mg/l. Solubility data on individual gasoline constituents also available.

POTENTIAL TO BIOACCUMULATE

Bioconcentration Factor: No data available.
Octanol/Water Partition Coefficient: 2 - 7

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by international, country, or local laws and regulations. Check governmental regulations and local authorities for approved disposal of this material.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: UN1203, GASOLINE, 3, II; OPTIONAL DISCLOSURE: UN1203, GASOLINE, 3, II, MARINE POLLUTANT (GASOLINE)

IMO/IMDG Shipping Description: UN1203, GASOLINE, 3, II, FLASH POINT SEE SECTION 5 OR 9, MARINE POLLUTANT (GASOLINE)

ICAO/IATA Shipping Description: UN1203, GASOLINE, 3, II

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:
Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES:	1. Immediate (Acute) Health Effects:	YES
	2. Delayed (Chronic) Health Effects:	YES
	3. Fire Hazard:	YES
	4. Sudden Release of Pressure Hazard:	NO
	5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	03=EPCRA 313
01-2A=IARC Group 2A	04=CA Proposition 65
01-2B=IARC Group 2B	05=MA RTK
02=NTP Carcinogen	06=NJ RTK
	07=PA RTK

The following components of this material are found on the regulatory lists indicated.

Toluene (methylbenzene)	04, 05, 07
Xylene (contains o-, m-, & p- xylene isomers in varying amounts)	03, 05, 06, 07
Ethanol	01-1, 02, 04, 05, 07
Cyclohexane	05, 06, 07
Naphthalene	01-2B, 02, 04, 05, 06, 07
Pentane, 2,2,4-trimethyl- (Isooctane)	05, 06, 07
Methylcyclohexane	05, 06, 07
Benzene	01-1, 02, 03, 04, 05, 06, 07
Butane	05, 06, 07
Hexane	05, 06, 07
Ethyl benzene	01-2B, 03, 04, 05, 07
Gasoline	01-2B, 07
Heptane	05, 06, 07

CERCLA REPORTABLE QUANTITIES(RQ)/EPCRA 302 THRESHOLD PLANNING QUANTITIES(TPQ):

Component	Component RQ	Component TPQ	Product RQ
Benzene	10 lbs	None	186 lbs
Cyclohexane	1000 lbs	None	34188 lbs
Ethyl benzene	1000 lbs	None	34964 lbs
Hexane	5000 lbs	None	129149 lbs
Naphthalene	100 lbs	None	4000 lbs
Pentane, 2,2,4-trimethyl- (Isooctane)	1000 lbs	None	6270 lbs
Toluene (methylbenzene)	1000 lbs	None	2627 lbs
Xylene (contains o-, m-, & p- xylene isomers in varying amounts)	100 lbs	None	649 lbs

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), EINECS (European Union), ENCS (Japan), IECSC (China), KECI (Korea), PICCS (Philippines), TSCA (United States).

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 1 Flammability: 4 Reactivity: 0

HMIS RATINGS: Health: 2* Flammability: 4 Reactivity: 0

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

Additional Product Number(s): 201023, 201054, 201055, 201075, 201090, 201105, 201106, 201120, 201121, 201122, 201126, 201128, 201131, 201136, 201141, 201142, 201148, 201153, 201158, 201161, 201162, 201168, 201175, 201181, 201185, 201186, 201188, 201216, 201217, 201218, 201236, 201237, 201238, 201266, 201267, 201268, 201277, 201278, 201279, 201286, 201287, 201289, 201296, 201297, 201298, 201849, 201850, 201855, 201856, 201857, 204000, 204001, 204002, 204003, 204010, 204011, 204022, 204023, 204046, 204047, 204070, 204071, 204088, 204089, 204104, 204105, 204116, 204117, 204140, 204141, 204164, 204165, 204188, 204189, 204200, 204201, 204207, 204212, 204213, 204224, 204225, 204248, 204249, 204272, 204273, 204290, 204291, 204322, 204323, 204324, 204350, 204352, 204354, 204356, 204358, 204359, 204364, 204365, 204370, 204371, 204376, 204377, 204382, 204383, 204388, 204389, 204394, 204395, 204400, 204401, 204406, 204407, 204412, 204413, 204418, 204419, 204424, 204425, 204430, 204431, 204436, 204437, 204442, 204446, 204450, 204454, 204458, 204462, 204466, 204467, 204484, 204485, 204502, 204503, 204520, 204521, 204538, 204539, 204556, 204557, 204574, 204575, 204592, 204593, 204610, 204611, 204628, 204629, 204646, 204647, 204664, 204665, 204682, 204690, 204691, 204696, 204697, 204702, 204703, 204708, 204709, 204721, 204722, 204727, 204728, 204739, 241765

REVISION STATEMENT: This revision updates the following sections of this Safety Data Sheet: 1,16
Revision Date: JANUARY 07, 2016

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
GHS - Globally Harmonized System	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
HMIS - Hazardous Materials Information System	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration
NCEL - New Chemical Exposure Limit	EPA - Environmental Protection Agency
SCBA - Self-Contained Breathing Apparatus	

Prepared according to the 29 CFR 1910.1200 (2012) by Chevron Energy Technology Company, 6001 Bollinger Canyon Road San Ramon, CA 94583.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with

which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

SAFETY DATA SHEET

Denatured Fuel Ethanol



Section 1. Identification

GHS product identifier : Denatured Fuel Ethanol
Other means of identification : Ethanol, denatured fuel ethanol

Relevant identified uses of the substance or mixture and uses advised against

Not available.

Supplier's details : Western Refining Company LP
 123 W. Mills Avenue
 El Paso, TX 79901
 Tel: 915-534-1488

Emergency telephone number (with hours of operation) : CHEMTREC, U.S. : 1-800-424-9300 International: +1-703-527-3877 (24/7)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2B
 GERM CELL MUTAGENICITY - Category 1B
 CARCINOGENICITY - Category 1A

GHS label elements
Hazard pictograms



Signal word : Danger
Hazard statements : Highly flammable liquid and vapor.
 Causes eye irritation.
 May cause genetic defects.
 May cause cancer.

Precautionary statements
Prevention

: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Wash hands thoroughly after handling.

Response

: IF exposed or concerned: Get medical attention. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Section 2. Hazards identification

- Storage** : Store locked up. Store in a well-ventilated place. Keep cool.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.
- Hazards not otherwise classified** : None known.

Section 3. Composition/information on ingredients

- Substance/mixture** : Mixture
- Other means of identification** : Ethanol, denatured fuel ethanol

CAS number/other identifiers

- CAS number** : Not applicable.
- Product code** : Not available.

Ingredient name	%	CAS number
Ethyl Alcohol	60 - 100	64-17-5
Gasoline	1 - 5	86290-81-5
Gasoline, natural	1 - 5	8006-61-9
Benzene	0 - 0.1	71-43-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.
- Skin contact** : Flush contaminated skin with plenty of water. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 20 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Section 4. First aid measures

- Eye contact** : Causes eye irritation.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : May be irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
irritation
watering
redness
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO₂, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet or water-based fire extinguishers.

- Specific hazards arising from the chemical** : Highly flammable liquid and vapor. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

- Special protective actions for fire-fighters** : Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

- Spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Ethyl Alcohol	ACGIH TLV (United States, 6/2013). STEL: 1000 ppm 15 minutes. NIOSH REL (United States, 4/2013). TWA: 1900 mg/m ³ 10 hours. TWA: 1000 ppm 10 hours. OSHA PEL (United States, 2/2013). TWA: 1900 mg/m ³ 8 hours. TWA: 1000 ppm 8 hours.
Gasoline	ACGIH TLV (United States, 3/2012). TWA: 300 ppm 8 hours. TWA: 890 mg/m ³ 8 hours. STEL: 500 ppm 15 minutes. STEL: 1480 mg/m ³ 15 minutes.
Gasoline, natural	OSHA PEL 1989 (United States, 3/1989). STEL: 1500 mg/m ³ 15 minutes. STEL: 500 ppm 15 minutes. TWA: 900 mg/m ³ 8 hours. TWA: 300 ppm 8 hours.
Benzene	ACGIH TLV (United States, 6/2013). Absorbed through skin. STEL: 8 mg/m ³ 15 minutes. STEL: 2.5 ppm 15 minutes. TWA: 1.6 mg/m ³ 8 hours. TWA: 0.5 ppm 8 hours. NIOSH REL (United States, 4/2013). STEL: 1 ppm 15 minutes. TWA: 0.1 ppm 10 hours. OSHA PEL (United States, 2/2013). STEL: 5 ppm 15 minutes. TWA: 1 ppm 8 hours. OSHA PEL Z2 (United States, 2/2013). AMP: 50 ppm 10 minutes. CEIL: 25 ppm TWA: 10 ppm 8 hours.

Appropriate engineering controls

- : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls

- : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures

- : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

- : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.

Skin protection

Hand protection

- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Section 8. Exposure controls/personal protection

- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Use a properly fitted, air-purifying or supplied air respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Liquid.
- Color** : Colorless.
- Odor** : Characteristic gasoline odor. [Strong]
- Odor threshold** : Not available.
- pH** : Not available.
- Melting point** : Not available.
- Boiling point** : 73.89 to 79.44°C (165 to 175°F)
- Flash point** : Closed cup: 10 to 13°C (50 to 55.4°F) [Pensky-Martens.]
- Burning time** : Not applicable.
- Burning rate** : Not applicable.
- Evaporation rate** : 1.7 (Butyl acetate = 1)
- Flammability (solid, gas)** : Not available.
- Lower and upper explosive (flammable) limits** : Not available.
- Vapor pressure** : Not available.
- Vapor density** : 1.6 [Air = 1]
- Relative density** : 0.79
- Solubility** : Insoluble in water.
- Solubility in water** : Not available.
- Partition coefficient: n-octanol/water** : Not available.
- Auto-ignition temperature** : >365°C (>689°F)
- Decomposition temperature** : Not available.
- SADT** : Not available.
- Viscosity** : Not available.

Section 10. Stability and reactivity

- Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
- Incompatible materials** : Reactive or incompatible with the following materials: oxidizing materials, acids and alkalis.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ethyl Alcohol	LC50 Inhalation Vapor	Rat	124700 mg/m ³	4 hours
	LD50 Oral	Rat	7 g/kg	-
Gasoline	LD50 Oral	Rat	13.6 g/kg	-
Benzene	LD50 Oral	Rat	930 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Ethyl Alcohol	Eyes - Moderate irritant	Rabbit	-	100 µL	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 mg	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Eyes - Moderate irritant	Rabbit	-	0.066666667 minutes 100 mg	-
Gasoline, natural	Eyes - Severe irritant	Rabbit	-	500 mg	-
	Skin - Mild irritant	Rabbit	-	400 mg	-
	Eyes - Mild irritant	Human	-	8 hours 140 ppm	-
	Eyes - Moderate irritant	Man	-	1 hours 500 ppm	-
Benzene	Eyes - Moderate irritant	Rabbit	-	88 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 mg	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 mg	-
	Skin - Mild irritant	Rat	-	8 hours 60 µL	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 mg	-

Sensitization

There is no data available.

Mutagenicity

There is no data available.

Carcinogenicity

Classification

Product/ingredient name	OSHA	IARC	ACGIH	NTP
Gasoline, natural	-	2B	-	-
Benzene	+	1	A1	Known to be a human carcinogen.

Section 11. Toxicological information

Reproductive toxicity

There is no data available.

Teratogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Benzene	Category 1	Not determined	Not determined

Aspiration hazard

Name	Result
Gasoline	ASPIRATION HAZARD - Category 1
Gasoline, natural	ASPIRATION HAZARD - Category 1
Benzene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Eye contact : Causes eye irritation.
Inhalation : No known significant effects or critical hazards.
Skin contact : No known significant effects or critical hazards.
Ingestion : May be irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
 irritation
 watering
 redness
Inhalation : No known significant effects or critical hazards.
Skin contact : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Long term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Potential chronic health effects

General : No known significant effects or critical hazards.
Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Section 11. Toxicological information

Mutagenicity	: May cause genetic defects.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

There is no data available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ethyl Alcohol	Acute EC50 17.921 mg/L Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 2000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 25500 µg/l Marine water	Crustaceans - Artemia franchiscana - Larvae	48 hours
Gasoline, natural	Acute LC50 42000 µg/l Fresh water	Fish - Oncorhynchus mykiss	4 days
	Chronic NOEC 4.995 mg/L Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 0.375 µl/L Fresh water	Fish - Gambusia holbrooki - Larvae	12 weeks
Benzene	Acute EC50 17.5 mg/L Marine water	Crustaceans - Artemia sp. - Nauplii	48 hours
	Acute EC50 1.5 mg/L Marine water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute EC50 29000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 1600000 µg/l Fresh water	Algae - Selenastrum sp.	96 hours
	Acute EC50 9230 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 21000 µg/l Marine water	Crustaceans - Artemia salina - Nauplii	48 hours
	Acute LC50 5.28 µl/L Fresh water	Fish - Oncorhynchus gorbuscha - Fry	96 hours
	Chronic NOEC 1.5 to 5.4 µl/L Marine water	Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	4 weeks

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Ethyl Alcohol	-0.32	-	low
Gasoline	2 to 7	-	high
Benzene	2.13	4.265795188	low

Mobility in soil

Soil/water partition coefficient (K_{oc}) : There is no data available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	UN1987	UN1987	UN1987
UN proper shipping name	ALCOHOLS, N.O.S. (Ethanol)	ALCOHOLS, N.O.S. (Ethanol)	ALCOHOLS, N.O.S. (Ethanol)
Transport hazard class(es)	3 	3 	3 
Packing group	II	II	II
Environmental hazards	No.	No.	No.
Additional information	-	<u>Emergency schedules (EmS)</u> F-E, S-D	-

AERG : 127

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined
United States inventory (TSCA 8b): Not determined.
Clean Water Act (CWA) 307: Benzene
Clean Water Act (CWA) 311: Benzene

Section 15. Regulatory information

Clean Air Act Section 112 : Not listed

(b) Hazardous Air
Pollutants (HAPs)

**Clean Air Act Section 602
Class I Substances** : Not listed

**Clean Air Act Section 602
Class II Substances** : Not listed

**DEA List I Chemicals
(Precursor Chemicals)** : Not listed

**DEA List II Chemicals
(Essential Chemicals)** : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Ethyl Alcohol	60 - 100	Yes.	No.	No.	Yes.	No.
Gasoline	1 - 5	Yes.	No.	No.	No.	Yes.
Gasoline, natural	1 - 5	No.	No.	No.	No.	Yes.
Benzene	0 - 0.1	Yes.	No.	No.	Yes.	Yes.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Benzene	71-43-2	0 - 0.1
Supplier notification	Benzene	71-43-2	0 - 0.1

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: Ethyl Alcohol; Gasoline, natural
New York : The following components are listed: Benzene
New Jersey : The following components are listed: Ethyl Alcohol; Gasoline, natural; Benzene
Pennsylvania : The following components are listed: Ethyl Alcohol; Gasoline; Benzene

California Prop. 65

No products were found.

Section 15. Regulatory information

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Benzene	Yes.	Yes.	6.4 µg/day (ingestion) 13 µg/day (inhalation)	24 µg/day (ingestion) 49 µg/day (inhalation)

International regulations

International lists

- : **Australia inventory (AICS)**: All components are listed or exempted.
- : **China inventory (IECSC)**: Not determined.
- : **Japan inventory**: Not determined.
- : **Korea inventory**: All components are listed or exempted.
- : **Malaysia Inventory (EHS Register)**: Not determined.
- : **New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
- : **Philippines inventory (PICCS)**: All components are listed or exempted.
- : **Taiwan inventory (CSNN)**: Not determined.

Chemical Weapons Convention List Schedule I Chemicals

- : Not listed

Chemical Weapons Convention List Schedule II Chemicals

- : Not listed

Chemical Weapons Convention List Schedule III Chemicals

- : Not listed

Section 16. Other information

History

- Date of issue mm/dd/yyyy** : 07/31/2014
- Date of previous issue** : 06/30/2013
- Version** : 2
- Revised Section(s)** : 8, 16.
- Prepared by** : KMK Regulatory Services Inc.
- Key to abbreviations** :
 - ATE = Acute Toxicity Estimate
 - BCF = Bioconcentration Factor
 - GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 - IATA = International Air Transport Association
 - IBC = Intermediate Bulk Container
 - IMDG = International Maritime Dangerous Goods
 - LogPow = logarithm of the octanol/water partition coefficient
 - MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 - UN = United Nations

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



Safety Data Sheet

NEMO 1127

SDS no. NEMO1127

Date of issue/Date of revision 10/9/2020

Section 1. Identification

GHS product identifier : NEMO 1127
Product use : Petrochemical industry: Fuel additive.

In case of emergency - Chemical

0800-70-77-022 (Brazil)
01-800-681-9531 (Mexico)
+1-703-527-3887 (International)
+1-703-741-5979 (Spanish language)
+1-800-424-9300 (US & Canada)

Manufacturer / Supplier

Afton Chemical Corporation
500 Spring St.
Richmond, VA 23219
USA

Afton Chemical Canada Corporation
5045 South Service Road
Suite 101
Burlington, ON L7L 5Y7
905-631-5470

Non-Emergency Telephone: +1-804-788-5800

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN IRRITATION - Category 2
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
ASPIRATION HAZARD - Category 1

GHS label elements

Hazard pictograms



Signal word

: Danger

Hazard statements

: Flammable liquid and vapor.
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause respiratory irritation.
May cause drowsiness or dizziness.
Suspected of causing cancer.

Precautionary statements

Section 2. Hazards identification

- Prevention** : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing and eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating or lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Wash thoroughly after handling.
- Response** : IF exposed or concerned: Get medical advice or attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or doctor. Do NOT induce vomiting. Take off contaminated clothing and wash it before reuse. IF ON SKIN: Wash with plenty of water. If skin irritation occurs: Get medical advice or attention. In case of fire, use water spray (fog), foam, dry chemical or CO₂.
- Storage** : Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.
- Additional hazards** : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	CAS number	Conc. (% w/w)	US GHS Classification
Solvent naphtha (petroleum), light arom.	64742-95-6	≥35 - ≤45	FLAMMABLE LIQUIDS - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 ASPIRATION HAZARD - Category 1
1,2,4-trimethylbenzene	95-63-6	≥10 - ≤15	FLAMMABLE LIQUIDS - Category 3 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 ASPIRATION HAZARD - Category 1
Polyolefin alkyl phenol alkyl amine Polyolefin alkyl phenol alkyl amine mesitylene	Proprietary Proprietary 108-67-8	≥10 - ≤15 ≥10 - ≤15 ≥5 - ≤10	SKIN IRRITATION - Category 2 SKIN IRRITATION - Category 2 FLAMMABLE LIQUIDS - Category 3 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 ASPIRATION HAZARD - Category 1
1,2,3-trimethylbenzene	526-73-8	≥1 - ≤3	FLAMMABLE LIQUIDS - Category 3 SKIN IRRITATION - Category 2

Section 3. Composition/information on ingredients

2-ethylhexanol	104-76-7	$\geq 1 - \leq 3$	EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 FLAMMABLE LIQUIDS - Category 3 CARCINOGENICITY - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 ASPIRATION HAZARD - Category 1
cumene	98-82-8	$\geq 0.5 - < 1$	

Any concentration shown as a range is to protect confidentiality or is due to batch variation. If specific chemical identify is withheld, it is to protect confidentiality.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : If inhaled, remove to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. If not breathing, give artificial respiration. If breathing is difficult, administer oxygen.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse. Continue to rinse for at least 15 minutes.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Section 4. First aid measures

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.
- Skin contact** : Causes skin irritation.
- Ingestion** : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
 - pain or irritation
 - watering
 - redness
- Inhalation** : Adverse symptoms may include the following:
 - respiratory tract irritation
 - coughing
 - nausea or vomiting
 - headache
 - drowsiness/fatigue
 - dizziness/vertigo
 - unconsciousness
- Skin contact** : Adverse symptoms may include the following:
 - irritation
 - redness
- Ingestion** : Adverse symptoms may include the following:
 - nausea or vomiting

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : In case of fire, use water spray (fog), foam, dry chemical or CO₂.
- Unsuitable extinguishing media** : Do not use water jet.

- Specific hazards arising from the chemical** : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
 - carbon dioxide
 - carbon monoxide
 - nitrogen oxides

Section 5. Fire-fighting measures

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not swallow. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

- : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Ingredient name	Exposure limits
1,2,4-trimethylbenzene	ACGIH TLV (United States, 3/2019). TWA: 25 ppm 8 hours. TWA: 123 mg/m ³ 8 hours.
mesitylene	ACGIH TLV (United States, 3/2019). TWA: 25 ppm 8 hours. TWA: 123 mg/m ³ 8 hours.
1,2,3-trimethylbenzene	ACGIH TLV (United States, 3/2019). TWA: 25 ppm 8 hours. TWA: 123 mg/m ³ 8 hours.
cumene	ACGIH TLV (United States, 3/2019). TWA: 50 ppm 8 hours. OSHA PEL (United States, 5/2018). Absorbed through skin. TWA: 50 ppm 8 hours. TWA: 245 mg/m ³ 8 hours.

- Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

- Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

- Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 8. Exposure controls/personal protection

- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Liquid.
- Color** : Yellow. to Amber.
- Odor** : Aromatic.
- Odor threshold** : Not available.
- pH** : Not available.
- Melting point** : Not available.
- Boiling point** : Not available.
- Flash point** : Closed cup: 42°C (107.6°F) [Pensky-Martens. Minimum]
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Not available.
- Lower and upper explosive (flammable) limits** : Not available.
- Vapor pressure** : Not available.
- Vapor density** : Not available.
- Density** : 0.919 g/cm³
- Relative density** : 0.9195
- Solubility** : Not available.
- Partition coefficient: n-octanol/water** : Not available.
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : Not available.
- Viscosity** : Kinematic (40°C (104°F)): 0.14 cm²/s (14 cSt)
Not available.
- Explosive properties** : Not available.
- Oxidizing properties** : Not available.

Section 10. Stability and reactivity

- Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
- Incompatible materials** : Reactive or incompatible with the following materials:
oxidizing materials
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Test	Result	Species	Dose	Exposure	Remarks
Solvent naphtha (petroleum), light arom.	403 Acute Inhalation Toxicity	LC50 Inhalation Vapor	Rat	>5.6 mg/l	4 hours	Based on data for a similar substance.
	402 Acute Dermal Toxicity	LD50 Dermal	Rabbit	>2000 mg/kg	-	Based on data for a similar substance.
	401 Acute Oral Toxicity	LD50 Oral	Rat	>5000 mg/kg	-	Based on data for a similar substance.
1,2,4-trimethylbenzene	None available.	LC50 Inhalation Vapor	Rat	>10200 mg/m ³	4 hours	Based on data for a similar substance.
	None available.	LD50 Dermal	Rat	>3440 mg/kg	-	Based on data for a similar substance.
	None available.	LD50 Oral	Rat	6000 mg/kg	-	-
Polyolefin alkyl phenol alkyl amine	402 Acute Dermal Toxicity	LD50 Dermal	Rat	>2000 mg/kg	-	Based on data for a similar substance.
	423 Acute Oral toxicity - Acute Toxic Class Method	LD50 Oral	Rat	>5000 mg/kg	-	Based on data for a similar substance.
	402 Acute Dermal Toxicity	LD50 Dermal	Rat	>2000 mg/kg	-	Based on data for a similar substance.
Polyolefin alkyl phenol alkyl amine	423 Acute Oral toxicity - Acute Toxic Class Method	LD50 Oral	Rat	>5000 mg/kg	-	Based on data for a similar substance.
	402 Acute Dermal Toxicity	LD50 Dermal	Rat	>2000 mg/kg	-	Based on data for a similar substance.
	423 Acute Oral toxicity - Acute Toxic Class Method	LD50 Oral	Rat	>5000 mg/kg	-	Based on data for a similar substance.
mesitylene	None available.	LC50 Inhalation Vapor	Rat	>10.2 mg/l	4 hours	Based on data for a similar substance.
	None available.	LD50 Dermal	Rat	>3440 mg/kg	-	Based on data for a similar substance.
	None available.	LD50 Oral	Rat	>5000 mg/kg	-	-

Section 11. Toxicological information

1,2,3-trimethylbenzene	None available.	LC50 Inhalation Vapor	Rat	24 mg/l	4 hours	-
2-ethylhexanol	None available.	LD50 Oral	Rat	5000 mg/kg	-	-
	403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat	1 to 5.3 mg/l	4 hours	-
	None available.	LC50 Inhalation Vapor	Rat	>0.89 mg/l	4 hours	-
	None available.	LD50 Dermal	Rat	1970 mg/kg	-	WOE does not support classification
cumene	401 Acute Oral Toxicity	LD50 Oral	Rat	2040 mg/kg	-	-
	None available.	LD50 Dermal	Rabbit	>10000 mg/kg	-	-
	None available.	LD50 Oral	Rat	2260 mg/kg	-	-

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Test	Species	Result	Remarks
Solvent naphtha (petroleum), light arom.	None available.	Rabbit	Skin - Mild irritant	-
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Not an Irritant	-
1,2,4-trimethylbenzene	None available.	Rabbit	Skin - Irritant	Based on data for a similar substance.
Polyolefin alkyl phenol alkyl amine	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	Based on data for a similar substance.
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Not an Irritant	Based on data for a similar substance.
Polyolefin alkyl phenol alkyl amine	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	Not H315 at<50% On basis of test data
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Not an Irritant	-
mesitylene	None available.	Rabbit	Skin - Irritant	-
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Irritant	Based on data for a similar substance.
2-ethylhexanol	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	-
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Irritant	-
cumene	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Not an Irritant	-
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Not an Irritant	-

Conclusion/Summary

Skin : Causes skin irritation.

Eyes : Not available.

Respiratory : May cause respiratory irritation.

Sensitization

Product/ingredient name	Test	Route of exposure	Species	Result	Remarks
Solvent naphtha (petroleum), light arom.	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
1,2,4-trimethylbenzene	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
mesitylene	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
cumene	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	-

Section 11. Toxicological information

Conclusion/Summary

Skin : Not available.

Respiratory : Not available.

Mutagenicity

Product/ingredient name	Test	Experiment	Result	Remarks
Solvent naphtha (petroleum), light arom.	471 Bacterial Reverse Mutation Test None available.	Experiment: In vitro Subject: Bacteria	Negative	Based on data for a similar substance.
1,2,4-trimethylbenzene	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	Based on data for a similar substance.
mesitylene	476 <i>In vitro</i> Mammalian Cell Gene Mutation Test 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Mammalian-Animal Experiment: In vitro Subject: Bacteria	Negative Negative	- Based on data for a similar substance.
2-ethylhexanol	476 <i>In vitro</i> Mammalian Cell Gene Mutation Test 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Mammalian-Animal Experiment: In vitro Subject: Bacteria	Negative Negative	- Based on data for a similar substance.
cumene	473 <i>In vitro</i> Mammalian Chromosomal Aberration Test 471 Bacterial Reverse Mutation Test None available.	Experiment: In vitro Subject: Bacteria Experiment: In vitro Subject: Mammalian-Animal	Negative Negative	- -
	474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vivo Subject: Mammalian-Animal	Equivocal	-

Conclusion/Summary : Not available.

Carcinogenicity

Result

Product/ingredient name	Test	Species	Exposure	Result	Remarks
Solvent naphtha (petroleum), light arom.	451 Carcinogenicity Studies	Rat	113 months; 5 days per week	Negative - Inhalation - NOAEL	-
2-ethylhexanol	451 Carcinogenicity Studies	Mouse	18 months; 5 days per week	Negative - Oral - NOAEL	-
	451 Carcinogenicity Studies	Rat	24 months; 5 days per week	Negative - Oral - NOAEL	-
cumene	451 Carcinogenicity Studies	Rat	105 weeks; 6 hours per day	Positive - Inhalation - TC	-

Conclusion/Summary : Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
cumene	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

Section 11. Toxicological information

Product/ingredient name	Test	Route of exposure	Species	Maternal toxicity	Fertility	Development toxin	Remarks
Solvent naphtha (petroleum), light arom.	421 Reproduction/ Developmental Toxicity Screening Test	Inhalation	Rat	Negative	Negative	Negative	Based on data for a similar substance.
1,2,4-trimethylbenzene	416 Two-Generation Reproduction Toxicity Study	Inhalation	Rat	Negative	Negative	Negative	Based on data for a similar substance.
	416 Two-Generation Reproduction Toxicity Study	Inhalation	Rat	Positive	Negative	Negative	Based on data for a similar substance.
Polyolefin alkyl phenol alkyl amine	421 Reproduction/ Developmental Toxicity Screening Test	Oral	Rat	Positive	Negative	Negative	-
mesitylene	416 Two-Generation Reproduction Toxicity Study	Inhalation	Rat	Positive	Negative	Negative	Based on data for a similar substance.
2-ethylhexanol	416 Two-Generation Reproduction Toxicity Study	Oral	Rat	Negative	Negative	Negative	-
cumene	413 Subchronic Inhalation Toxicity: 90-day Study	Inhalation	Rat	Positive	Negative	Negative	-

Conclusion/Summary : Not available.

Teratogenicity

Product/ingredient name	Test	Species	Result	Remarks
Solvent naphtha (petroleum), light arom.	414 Prenatal Developmental Toxicity Study	Rat	Negative - Inhalation	Based on data for a similar substance.
1,2,4-trimethylbenzene	414 Prenatal Developmental Toxicity Study	Rat	Negative - Inhalation	-
mesitylene	414 Prenatal Developmental Toxicity Study	Rat	Negative - Inhalation	-
2-ethylhexanol	414 Prenatal Developmental Toxicity Study	Rat	Negative - Dermal	-
	414 Prenatal Developmental Toxicity Study	Mouse	Negative - Oral	-
	414 Prenatal Developmental Toxicity Study	Rat	Negative - Inhalation	-
cumene	414 Prenatal Developmental Toxicity Study	Rabbit	Negative - Inhalation	-
	414 Prenatal Developmental Toxicity Study	Rat	Negative - Inhalation	-

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Section 11. Toxicological information

Name	Category	Route of exposure	Target organs
Solvent naphtha (petroleum), light arom.	Category 3	-	Respiratory tract irritation
1,2,4-trimethylbenzene	Category 3	-	Narcotic effects
mesitylene	Category 3	-	Respiratory tract irritation
1,2,3-trimethylbenzene	Category 3	-	Respiratory tract irritation
2-ethylhexanol	Category 3	-	Respiratory tract irritation
cumene	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Not available.			

Aspiration hazard

Name	Result
Solvent naphtha (petroleum), light arom.	ASPIRATION HAZARD - Category 1
1,2,4-trimethylbenzene	ASPIRATION HAZARD - Category 1
mesitylene	ASPIRATION HAZARD - Category 1
cumene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Skin, Eyes, Ingestion, and Inhalation

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.
- Skin contact** : Causes skin irritation.
- Ingestion** : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : Adverse symptoms may include the following:
nausea or vomiting

Section 11. Toxicological information

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Test	Species	Dose	Exposure	Result	Remarks
Solvent naphtha (petroleum), light arom.	None available.	Rat	500 mg/kg	-	Sub-acute NOAEL Oral	Based on data for a similar substance.
1,2,4-trimethylbenzene	453 Combined Chronic Toxicity/ Carcinogenicity Studies	Rat	1.402 mg/l	109 weeks	Chronic NOAEL Inhalation Vapor	Based on data for a similar substance.
	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	600 mg/kg	-	Sub-chronic NOAEL Oral	Based on data for a similar substance.
	452 Chronic Toxicity Studies	Rat	1800 mg/m ³	12 months	Chronic NOAEL Inhalation Vapor	Based on data for a similar substance.
Polyolefin alkyl phenol alkyl amine	407 Repeated Dose 28-day Oral Toxicity Study in Rodents	Rat	150 mg/kg	-	Sub-acute NOAEL Oral	Based on data for a similar substance.
Polyolefin alkyl phenol alkyl amine	421 Reproduction/ Developmental Toxicity Screening Test	Rat	100 mg/kg	-	Sub-acute NOAEL Oral	-
mesitylene	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	600 mg/kg	-	Sub-chronic NOAEL Oral	-
	413 Subchronic Inhalation Toxicity: 90-day Study	Rat	1.23 mg/l	3 months	Sub-chronic NOAEL Inhalation Vapor	Based on data for a similar substance.
1,2,3-trimethylbenzene	None available.	Rat	25 ppm	4 weeks	Sub-acute LOAEL Inhalation Vapor	-
	None available.	Rat	123 mg/m ³	3 months	Sub-chronic NOAEL Inhalation Vapor	-
2-ethylhexanol	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	125 mg/kg	-	Sub-chronic NOEL Oral	-
	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	250 mg/kg	-	Sub-chronic NOAEL Oral	-
	413 Subchronic Inhalation Toxicity: 90-day Study	Rat	640 mg/m ³	90 days	Sub-chronic NOAEL Inhalation Vapor	-
cumene	None available.	Rat	535.8 mg/kg	-	Sub-chronic NOAEL Oral	-

Section 11. Toxicological information

	413 Subchronic Inhalation Toxicity: 90-day Study	Rat	125 ppm	90 days	Sub-chronic NOAEL Inhalation Vapor	-
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Conclusion/Summary	: Not available.
General	: No known significant effects or critical hazards.
Carcinogenicity	: Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure	Remarks
Solvent naphtha (petroleum), light arom.	Acute EL50 3.1 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Acute EL50 4.5 mg/l	Daphnia - Daphnia magna	48 hours	Based on data for a similar substance.
	Acute LL50 8.2 mg/l	Fish - Pimephales promelas	96 hours	Based on data for a similar substance.
	Chronic NOEC 0.4 mg/l	Daphnia - Daphnia magna	21 days	Based on data for a similar substance.
	Chronic NOEL 0.5 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
1,2,4-trimethylbenzene	Chronic NOEL 2.6 mg/l	Fish - Pimephales promelas	14 days	Based on data for a similar substance.
	Acute LC50 3.6 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute LC50 7.72 mg/l	Fish - Pimephales promelas	96 hours	-
Polyolefin alkyl phenol alkyl amine	Acute EC50 5.4 mg/l	Algae	96 hours	Based on data for a similar substance.
	Chronic NOEC 3.65 mg/l	Algae	96 hours	Based on data for a similar substance.
	Chronic NOEC 3.38 mg/l	Daphnia	21 days	Based on data for a similar substance.
Polyolefin alkyl phenol alkyl amine	Acute EC50 5.4 mg/l	Algae	96 hours	Based on data for a similar substance.
	Chronic NOEC 3.65 mg/l	Algae	96 hours	Based on data for a similar substance.
	Chronic NOEC 3.38 mg/l	Daphnia	21 days	Based on data for a similar substance.
mesitylene	Acute EL50 53 mg/l	Algae - Desmodesmus subspicatus	48 hours	-
	Acute LL50 6 mg/l	Daphnia - Daphnia magna	48 hours	-

Section 12. Ecological information

1,2,3-trimethylbenzene	Acute LL50 12.52 mg/l	Fish - Carassius auratus	96 hours	-
	Chronic EL10 16 mg/l	Algae - Desmodesmus subspicatus	48 hours	-
	Chronic NOEC 0.4 mg/l	Daphnia - Daphnia magna	21 days	-
	Acute EC50 4.4 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
2-ethylhexanol	Acute EC50 2.7 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute LC50 7.8 mg/l	Fish - Oryzias latipes	96 hours	-
	Chronic NOEC 1.9 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Acute EC50 39 mg/l	Daphnia - Daphnia magna	48 hours	-
cumene	Acute EL50 16.6 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
	Acute LC50 17.1 mg/l	Fish - Leuciscus idus melanotus	96 hours	-
	Chronic EL10 5.3 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
	Acute EC50 2.01 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
	Acute EC50 2.14 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute EL50 >2000 mg/l	Micro-organism	3 hours	-
	Acute LC50 4.8 mg/l	Fish - Oncorhynchus mykiss	96 hours	-
	Chronic EC10 1.35 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
	Chronic NOEC 0.35 mg/l	Daphnia - Daphnia magna	21 days	QSAR result.
	Chronic NOEC 0.38 mg/l	Fish - D. rerio and P. promelas	28 days	QSAR result.

Conclusion/Summary : Toxic to aquatic life with long lasting effects.

Persistence and degradability

Product/ingredient name	Test	Result	Remarks
Polyolefin alkyl phenol alkyl amine	OECD 301D Ready Biodegradability - Closed Bottle Test	4 % - Not readily - 28 days	Based on data for a similar substance.
mesitylene	-	42 % - Not readily - 28 days	-
1,2,3-trimethylbenzene	-	42 % - Not readily - 28 days	Based on data for a similar substance.
2-ethylhexanol	OECD 301C Ready Biodegradability - Modified MITI Test (I)	100 % - Readily - 14 days	-
cumene	-	70 % - Readily - 20 days	-

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Solvent naphtha (petroleum), light arom.	-	10 to 2500	high
1,2,4-trimethylbenzene	3.63	243	low
mesitylene	3.42	161	low
1,2,3-trimethylbenzene	3.66	194.98	low
2-ethylhexanol	2.9	25.33	low
cumene	3.55	35.48	low

Section 12. Ecological information

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	NA1993	UN1993	UN1993	UN1993
UN proper shipping name	Combustible liquid, n. o.s. (Solvent naphtha, Trimethylbenzenes)	FLAMMABLE LIQUID, N.O.S. (Solvent naphtha, Trimethylbenzenes). Marine pollutant	FLAMMABLE LIQUID, N.O.S. (Solvent naphtha; Trimethylbenzenes) Marine pollutant	FLAMMABLE LIQUID, N.O.S. (Solvent naphtha, Trimethylbenzenes)
Transport hazard class(es)	Combustible liquid.	3 	3 	3 
Packing group	III	III	III	III
Environmental hazards	No.	Yes.	Yes.	Yes.

Additional information

IMDG : Marine pollutant

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations

EPA Significant New Use Rule (SNUR) : Polyalkenylalkylphenol generic
Phenol, 2-[[[3-(dimethylamino)propyl]amino]methyl]-6-methyl-, 4-polybutene derivs.

United States - TSCA 5(a)2 - Final significant new use rules
United States - TSCA 5(a)2 - Final significant new use rules

Section 15. Regulatory information

EPA Consent Order	:	Formaldehyde, reaction product with an alkylated phenol and an aliphatic amine (PROVISIONAL)	United States - TSCA 5(e) - Substances consent order
	:	Phenol, 2-[[[3-(dimethylamino)propyl]amino]methyl]-6-methyl-, 4-polybutene derivs.	United States - TSCA 5(e) - Substances consent order
	:	Alkenyl succinimide (PROVISIONAL)	United States - TSCA 5(e) - Substances consent order

United States - TSCA 12(b) - Chemical export notification

List name	Status	Name on list	Ref. number
United States - TSCA 12(b) - Chemical export notification	One time notification	Formaldehyde, reaction product with an alkylated phenol and an aliphatic amine PROVISIONAL	P-01-0629
United States - TSCA 12(b) - Chemical export notification	One time notification	Phenol, 2-[[[3-(dimethylamino)propyl]amino]methyl]-6-methyl-, 4-polybutene derivs.	P-99-0531
United States - TSCA 12(b) - Chemical export notification	One time notification	Alkenyl succinimide PROVISIONAL	P-08-0069

CERCLA Reportable quantity : CERCLA: Hazardous substances.: o-cresol: 100 lbs. (45.4 kg); phenol: 1000 lbs. (454 kg); xylene: 100 lbs. (45.4 kg); cumene: 5000 lbs. (2270 kg); benzene: 10 lbs. (4.54 kg); acetaldehyde: 1000 lbs. (454 kg); furan: 100 lbs. (45.4 kg); propylene oxide: 100 lbs. (45.4 kg); ethylbenzene: 1000 lbs. (454 kg); naphthalene: 100 lbs. (45.4 kg); potassium hydroxide: 1000 lbs. (454 kg); 1-methylnaphthalene: No RQ is being assigned to the generic or broad class.; 2-methylnaphthalene: No RQ is being assigned to the generic or broad class.;

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
o-cresol	≤0.001	Yes.	1000 / 10000	-	100	-
furan	≤0.001	Yes.	500	64.1	100	12.8
propylene oxide	≤0.001	Yes.	10000	1444.3	100	14.4
phenol	≤0.00001	Yes.	500 / 10000	-	1000	-

SARA 311/312

Classification : FLAMMABLE LIQUIDS - Category 3
 SKIN IRRITATION - Category 2
 CARCINOGENICITY - Category 2
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
 ASPIRATION HAZARD - Category 1

Composition/information on ingredients

Name	%	Classification
Solvent naphtha (petroleum), light arom.	≥35 - ≤45	FLAMMABLE LIQUIDS - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 ASPIRATION HAZARD - Category 1
1,2,4-trimethylbenzene	≥10 - ≤15	HNOC - Static-accumulating flammable liquid FLAMMABLE LIQUIDS - Category 3 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 ASPIRATION HAZARD - Category 1
Polyolefin alkyl phenol alkyl amine	≥10 - ≤15	SKIN IRRITATION - Category 2
Polyolefin alkyl phenol alkyl	≥10 - ≤15	SKIN IRRITATION - Category 2

Section 15. Regulatory information

amine mesitylene	≥5 - ≤10	FLAMMABLE LIQUIDS - Category 3 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
1,2,3-trimethylbenzene	≥1 - ≤3	ASPIRATION HAZARD - Category 1 FLAMMABLE LIQUIDS - Category 3 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
2-ethylhexanol	≥1 - ≤3	FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
cumene	≥0.5 - <1	FLAMMABLE LIQUIDS - Category 3 CARCINOGENICITY - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 ASPIRATION HAZARD - Category 1

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	1,2,4-trimethylbenzene	95-63-6	≥10 - ≤15
Supplier notification	1,2,4-trimethylbenzene	95-63-6	≥10 - ≤15

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State - California Prop. 65

 **WARNING:** This product contains a chemical known to the State of California to cause cancer.

WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

Ingredient name	%	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Cumene	≥0.5 - <1	Yes.	No.	-	-
Benzene	<0.1	Yes.	Yes.	Yes.	Yes.
Naphthalene	≤0.01	Yes.	No.	Yes.	-
Ethylbenzene	≤0.01	Yes.	No.	Yes.	-
Furan	≤0.001	Yes.	No.	-	-
Propylene oxide	≤0.001	Yes.	No.	-	-
Acetaldehyde	≤0.0001	Yes.	No.	Yes.	-

www.P65Warnings.ca.gov.

Canadian regulations

Canadian NPRI : The following components are listed: light aromatic solvent naphtha; 1,2,4-trimethylbenzene; trimethylbenzene; trimethylbenzene

CEPA Toxic substances : None of the components are listed.

International Inventory Status

Australia : All components are listed or exempted.

Canada : At least one component is not listed in DSL but all such components are listed in NDSL.

China : At least one component is not listed.

Japan : At least one component is not listed.

Section 15. Regulatory information

Republic of Korea	: At least one component is not listed.
New Zealand	: All components are listed or exempted.
Philippines	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
United States Active	: All components are active or exempted.
Europe	: For information on compliance with regulation (EC) No. 1907/2006 (REACH) and amendments please contact your Afton representative.

Section 16. Other information

History

Date of issue/Date of revision : 10/9/2020

Prepared by : EHS Department (Tel: +1 804 788 5800)

Key to abbreviations

: ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations
WOE = Weight of Evidence

Indicates information that has changed from previously issued version.

Notice to reader

This information and these recommendations are offered in good faith and believed to be correct as of the date hereof. Information and recommendations are supplied upon the condition that the recipients will make their own decision as to safety and suitability for their purposes. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature, are made with respect to the product or the information and recommendations. Afton makes no representation as to completeness or accuracy. In no event will Afton be responsible for damages of any nature whatsoever resulting from the use or reliance upon the information and recommendations.

Section 1. Identification

Product name : TOLAD™ 9116S ADDITIVE
™ a trademark of Baker Hughes Incorporated.

Product code : T9116S

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Fuel additive.

Print date : 9/16/2016

Validation date : 9/16/2016

Version : 1.01

Supplier's details : Baker Petrolite LLC
12645 W. Airport Blvd.
Sugar Land, TX 77478
For Product Information/SDSs Call: 800-231-3606
(8:00 a.m. - 5:00 p.m. CST, Monday - Friday) 281-276-5400

Emergency telephone number (with hours of operation) : CHEMTREC: 800-424-9300 (U.S. 24 hour)
Baker Petrolite: 800-231-3606
(001)281-276-5400
CANUTEC: 613-996-6666 (Canada 24 hours)
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A
CARCINOGENICITY - Category 2
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements

Hazard pictograms :



Signal word : Warning

Hazard statements : Flammable liquid and vapor.
Causes serious eye irritation.
Causes skin irritation.
Suspected of causing cancer.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Section 2. Hazards identification

- Prevention** : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Avoid release to the environment. Wash hands thoroughly after handling.
- Response** : Collect spillage. IF exposed or concerned: Get medical attention. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.
- Storage** : Store locked up. Store in a well-ventilated place. Keep cool.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.
- Hazards not otherwise classified** : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
Light aromatic naphtha	10 - 20	64742-95-6
1,2,4-Trimethylbenzene	5 - 10	95-63-6
1,3,5-Trimethylbenzene	1 - 5	108-67-8
Xylene	1 - 5	1330-20-7
1,2,3-Trimethylbenzene	1 - 5	526-73-8
Kerosene (petroleum)	1 - 5	8008-20-6
Cumene	0.1 - 1	98-82-8
Dodecylbenzenesulfonic acid	0.1 - 1	27176-87-0

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Check for and remove any contact lenses. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Get medical attention.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Section 4. First aid measures

- Eye contact** : Causes serious eye irritation.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : Causes skin irritation.
- Ingestion** : No known significant effects or critical hazards.

Over-exposure signs/symptoms

- Eye contact** : pain or irritation, watering, redness
- Inhalation** : No specific data.
- Skin contact** : irritation, redness
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Additional information

If product is ingested and vomiting occurs naturally, have person lean forward to reduce the risk of aspiration into the lungs.

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO₂, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.

- Specific hazards arising from the chemical** : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

- Hazardous thermal decomposition products** : carbon dioxide, carbon monoxide

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use only non-sparking tools. Take precautionary measures against electrostatic discharges.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Light aromatic naphtha	None.
1,2,4-Trimethylbenzene	ACGIH TLV (United States, 4/2014). TWA: 123 mg/m ³ , 0 times per shift, 8 hours. TWA: 25 ppm, 0 times per shift, 8 hours. OSHA PEL 1989 (United States, 3/1989). TWA: 125 mg/m ³ , 0 times per shift, 8 hours. TWA: 25 ppm, 0 times per shift, 8 hours.
1,3,5-Trimethylbenzene	ACGIH TLV (United States, 4/2014). TWA: 123 mg/m ³ , 0 times per shift, 8 hours. TWA: 25 ppm, 0 times per shift, 8 hours. OSHA PEL 1989 (United States, 3/1989). TWA: 125 mg/m ³ , 0 times per shift, 8 hours. TWA: 25 ppm, 0 times per shift, 8 hours.
Xylene	ACGIH TLV (United States, 4/2014). STEL: 651 mg/m ³ , 0 times per shift, 15 minutes. STEL: 150 ppm, 0 times per shift, 15 minutes. TWA: 434 mg/m ³ , 0 times per shift, 8 hours. TWA: 100 ppm, 0 times per shift, 8 hours. OSHA PEL (United States, 2/2013). TWA: 435 mg/m ³ , 0 times per shift, 8 hours. TWA: 100 ppm, 0 times per shift, 8 hours. OSHA PEL 1989 (United States, 3/1989). STEL: 655 mg/m ³ , 0 times per shift, 15 minutes. STEL: 150 ppm, 0 times per shift, 15 minutes. TWA: 435 mg/m ³ , 0 times per shift, 8 hours. TWA: 100 ppm, 0 times per shift, 8 hours.
1,2,3-Trimethylbenzene	ACGIH TLV (United States, 4/2014). TWA: 123 mg/m ³ , 0 times per shift, 8 hours. TWA: 25 ppm, 0 times per shift, 8 hours. OSHA PEL 1989 (United States, 3/1989). TWA: 125 mg/m ³ , 0 times per shift, 8 hours. TWA: 25 ppm, 0 times per shift, 8 hours.
Kerosene (petroleum)	ACGIH TLV (United States, 4/2014). Absorbed through skin. TWA: 200 mg/m ³ , (as total hydrocarbon vapor), 0 times per shift, 8 hours.
Cumene	ACGIH TLV (United States, 4/2014). TWA: 50 ppm, 0 times per shift, 8 hours.

Section 8. Exposure controls/personal protection

Dodecylbenzenesulfonic acid	OSHA PEL (United States, 2/2013). Absorbed through skin. TWA: 245 mg/m³, 0 times per shift, 8 hours. TWA: 50 ppm, 0 times per shift, 8 hours. OSHA PEL 1989 (United States, 3/1989). Absorbed through skin. TWA: 245 mg/m³, 0 times per shift, 8 hours. TWA: 50 ppm, 0 times per shift, 8 hours. None.
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Consult local authorities for acceptable exposure limits.

If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.

Eye/face protection : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles.

Hand protection : Chemical-resistant gloves.

Skin protection : Wear long sleeves to prevent repeated or prolonged skin contact.

Respiratory protection : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Color : Amber. [Light]

Odor : Aromatic hydrocarbon.

Odor threshold : Not available.

pH : 4.18

: 5% of product in 75% isopropanol / 25% water solution

Melting/freezing point : Not available.

Boiling point : Not available.

Initial Boiling Point : Not available.

Flash point : Closed cup: 58.89°C (138°F) [SFCC]

Burning time : Not applicable.

Burning rate : Not applicable.

Evaporation rate : Not available.

Flammability (solid, gas) : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Section 9. Physical and chemical properties

Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: >1 [Air = 1]
Relative density	: 0.8893 (15.6°C)
Density	: 7.4195 (lbs/gal)
Solubility in water	: Insoluble
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Dynamic (-1.11°C): 11.6 cP
VOC	: Not available.
Pour Point	: -3.9°C (25°F)

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
Incompatible materials	: Reactive or incompatible with the following materials: oxidizing materials and acids.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Light aromatic naphtha	LD50 Oral	Rat	2900 mg/kg	-
	LC50 Inhalation Vapor	Rat	18000 mg/m ³	4 hours
1,2,4-Trimethylbenzene	LD50 Oral	Rat	5 g/kg	-
	LC50 Inhalation Vapor	Rat	24000 mg/m ³	4 hours
1,3,5-Trimethylbenzene	LD50 Oral	Rat	5000 mg/kg	-
	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours
Xylene	LD50 Dermal	Rabbit	>1700 mg/kg	-
	LD50 Oral	Male rat	3523 mg/kg	-
Kerosene (petroleum)	LD50 Oral	Rat	4300 mg/kg	-
	LD50 Oral	Rat	15 g/kg	-
Cumene	LC50 Inhalation Vapor	Mouse	10000 mg/m ³	7 hours
	LC50 Inhalation Vapor	Rat	39000 mg/m ³	4 hours
	LD50 Dermal	Rabbit	10600 mg/kg	-
	LD50 Oral	Rat	2.9 g/kg	-

Section 11. Toxicological information

Dodecylbenzenesulfonic acid	LD50 Oral	Rat	650 mg/kg	-
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Irritation/Corrosion

No applicable toxicity data

Sensitization

No applicable toxicity data

Mutagenicity

No applicable toxicity data

Carcinogenicity

Product/ingredient name	OSHA	IARC	NTP
Xylene	-	3	-
Kerosene (petroleum)	-	3	-
Cumene	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

No applicable toxicity data

Teratogenicity

No applicable toxicity data

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Light aromatic naphtha	Category 3	Not applicable.	Narcotic effects
1,2,4-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
1,3,5-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Xylene	Category 3	Not applicable.	Narcotic effects
1,2,3-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
Kerosene (petroleum)	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
Cumene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not applicable.

Aspiration hazard

Name	Result
Light aromatic naphtha	ASPIRATION HAZARD - Category 1
Xylene	ASPIRATION HAZARD - Category 1
1,2,3-Trimethylbenzene	ASPIRATION HAZARD - Category 1
Kerosene (petroleum)	ASPIRATION HAZARD - Category 1
Cumene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Dermal, Inhalation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Section 11. Toxicological information

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	13980.6 mg/kg
Dermal	78571.4 mg/kg
Inhalation (gases)	357142.9 ppm
Inhalation (vapors)	200.9 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pecteniscus	48 hours
1,3,5-Trimethylbenzene	Acute LC50 22.4 mg/l Fresh water	Fish - Tilapia zillii	96 hours
	Acute LC50 12520 to 15050 µg/l Fresh water	Fish - Carassius auratus	96 hours
Xylene	Chronic NOEC 400 µg/l Fresh water	Daphnia - Daphnia magna	21 days
	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
Cumene	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Acute EC50 2600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute LC50 7400 to 11290 µg/l Fresh water	Crustaceans - Artemia sp.	48 hours
	Acute LC50 30500 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 2700 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1993	UN1993	UN1993	UN1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)	FLAMMABLE LIQUID, N.O.S. (Contains: Light aromatic naphtha, 1,2, 4-Trimethylbenzene)
Transport hazard class(es)	3  	3  	3  	3 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	This product may be re-classified as "Combustible Liquid," unless transported by vessel or aircraft. Non-bulk packages (less than or equal to 119 gal) of combustible liquids, that are marine pollutants, are not regulated as hazardous materials in package sizes less than the product reportable quantity, unless transported by vessel.	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3), 2.7 (Marine pollutant mark).	Emergency schedules (EmS) F-E S-E	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

DOT Reportable Quantity Xylene, 963 gal of this product.

Section 14. Transport information

Marine pollutant : Light aromatic naphtha
1,2,4-Trimethylbenzene

North-America NAERG : 128

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export**: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Ethylbenzene; Naphthalene; Benzene
Clean Water Act (CWA) 311: Xylene; Ethylbenzene; Naphthalene; o-Xylene;
Dodecylbenzenesulphonic acid; Benzene

United States - Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) :

List name	Status	Ingredient name	Name on list	Conc.
United States - Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)	Listed	Xylene	Xylenes	1 - 5

SARA 302/304 : No products were found.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

SARA 313

	Product name	CAS number	%
Supplier notification	1,2,4-Trimethylbenzene	95-63-6	5 - 10
	Xylene	1330-20-7	1 - 5

Canada

Canada (CEPA DSL) : All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



History

Date of printing : 9/16/2016

Notice to reader

NOTE: The information on this SDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This SDS was prepared and is to be used for this product. If the product is used as a component in another

Section 16. Other information

product, this SDS information may not be applicable.



Safety Data Sheet

HiTEC® 65016 Fuel Additive

SDS no. H65016

Date of issue/Date of revision 2/4/2020

Section 1. Identification

GHS product identifier : HiTEC® 65016 Fuel Additive
Product use : Petrochemical industry: Fuel additive.

In case of emergency - Chemical

0800-70-77-022 (Brazil)
01-800-681-9531 (Mexico)
+1-703-527-3887 (International)
+1-703-741-5979 (Spanish language)
+1-800-424-9300 (US & Canada)

Manufacturer / Supplier

Afton Chemical Corporation
500 Spring St.
Richmond, VA 23219
USA

Afton Chemical Canada Corporation
5045 South Service Road
Suite 101
Burlington, ON L7L 5Y7
905-631-5470

Non-Emergency Telephone: +1-804-788-5800

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (gastrointestinal tract, thymus) - Category 2
ASPIRATION HAZARD - Category 1

GHS label elements

Hazard pictograms



Signal word

: Danger

Section 2. Hazards identification

- Hazard statements** : Flammable liquid and vapor.
Causes serious eye irritation.
Causes skin irritation.
Suspected of causing cancer.
May be fatal if swallowed and enters airways.
May cause respiratory irritation.
May cause drowsiness or dizziness.
May cause damage to organs through prolonged or repeated exposure. (gastrointestinal tract, thymus)
- Precautionary statements**
- Prevention** : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Wash hands thoroughly after handling.
- Response** : Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention. In case of fire, use water spray (fog), foam, dry chemical or CO₂.
- Storage** : Store locked up. Store in a well-ventilated place. Keep cool.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.
- Additional hazards** : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	CAS number	Conc. (% w/w)	US GHS Classification
Solvent naphtha (petroleum), light arom.	64742-95-6	≥25 - ≤35	FLAMMABLE LIQUIDS - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
Polyolefin alkyl phenol alkyl amine 2-ethylhexanol	Proprietary 104-76-7	≥15 - ≤25 ≥10 - ≤15	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 ASPIRATION HAZARD - Category 1 SKIN IRRITATION - Category 2 FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
1,2,4-trimethylbenzene	95-63-6	≥10 - ≤15	FLAMMABLE LIQUIDS - Category 3 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2

Section 3. Composition/information on ingredients

mesitylene	108-67-8	≥3 - ≤5	EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 FLAMMABLE LIQUIDS - Category 3 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 ASPIRATION HAZARD - Category 1
2-(heptadecenyl)-4,5-dihydro-1H-imidazole-1-ethanol	27136-73-8	≥1 - <3	ACUTE TOXICITY (oral) - Category 4 SKIN CORROSION - Category 1C SERIOUS EYE DAMAGE - Category 1 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (gastrointestinal tract, thymus) (oral) - Category 2
1,2,3-trimethylbenzene	526-73-8	≥1 - ≤3	FLAMMABLE LIQUIDS - Category 3 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
cumene	98-82-8	≥0.5 - <1	FLAMMABLE LIQUIDS - Category 3 CARCINOGENICITY - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 ASPIRATION HAZARD - Category 1

* HMIRA registration number:12261. Filing date: 10/10/2018.

Any concentration shown as a range is to protect confidentiality or is due to batch variation. If specific chemical identify is withheld, it is to protect confidentiality.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact

: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation

: If inhaled, remove to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. If not breathing, give artificial respiration. If breathing is difficult, administer oxygen.

Skin contact

: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse. Continue to rinse for at least 15 minutes.

Section 4. First aid measures

- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.
- Skin contact** : Causes skin irritation.
- Ingestion** : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : Adverse symptoms may include the following:
nausea or vomiting

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : In case of fire, use water spray (fog), foam, dry chemical or CO₂.
- Unsuitable extinguishing media** : Do not use water jet.

- Specific hazards arising from the chemical** : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

- Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Section 8. Exposure controls/personal protection

Environmental exposure controls	: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
Individual protection measures	
Hygiene measures	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Eye/face protection	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
Skin protection	
Hand protection	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Body protection	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid. [Clear.]
Color	: Amber.
Odor	: Not available.
Odor threshold	: Not available.
pH	: Not available.
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Closed cup: 45°C (113°F) [Pensky-Martens. Minimum]
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Density	: 0.898 g/cm ³
Relative density	: 0.8986

Section 9. Physical and chemical properties

Solubility	: Not available.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Kinematic (40°C (104°F)): 0.097 cm²/s (9.7 cSt) Not available.
Explosive properties	: Not available.
Oxidizing properties	: Not available.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
Incompatible materials	: Reactive or incompatible with the following materials: oxidizing materials
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Test	Result	Species	Dose	Exposure	Remarks
Solvent naphtha (petroleum), light arom.	403 Acute Inhalation Toxicity	LC50 Inhalation Vapor	Rat	>5.6 mg/l	4 hours	Based on data for a similar substance.
	402 Acute Dermal Toxicity	LD50 Dermal	Rabbit	>2000 mg/kg	-	Based on data for a similar substance.
	401 Acute Oral Toxicity	LD50 Oral	Rat	>5000 mg/kg	-	Based on data for a similar substance.
Polyolefin alkyl phenol alkyl amine	402 Acute Dermal Toxicity	LD50 Dermal	Rat	>2000 mg/kg	-	Based on data for a similar substance.
	423 Acute Oral toxicity - Acute Toxic Class Method	LD50 Oral	Rat	>5000 mg/kg	-	Based on data for a similar substance.
	403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat	1 to 5.3 mg/l	4 hours	-
2-ethylhexanol	None available.	LC50 Inhalation Vapor	Rat	>0.89 mg/l	4 hours	-
	None available.	LD50 Dermal	Rat	1970 mg/kg	-	WOE does not support classification

Section 11. Toxicological information

1,2,4-trimethylbenzene	401 Acute Oral Toxicity None available.	LD50 Oral	Rat	2040 mg/kg	-	-
		LC50 Inhalation Vapor	Rat	>10200 mg/m ³	4 hours	Based on data for a similar substance.
	None available.	LD50 Dermal	Rat	>3440 mg/kg	-	Based on data for a similar substance.
mesitylene	None available. None available.	LD50 Oral LC50 Inhalation Vapor	Rat Rat	6000 mg/kg >10.2 mg/l	- 4 hours	- Based on data for a similar substance.
	None available.	LD50 Dermal	Rat	>2000 mg/kg	-	Based on data for a similar substance.
	401 Acute Oral Toxicity	LD50 Oral	Rat	>5000 mg/kg	-	Based on data for a similar substance.
2-(heptadecenyl)-4,5-dihydro-1H-imidazole-1-ethanol	401 Acute Oral Toxicity	LD50 Oral	Rat	1265 mg/kg	-	Based on data for a similar substance.
1,2,3-trimethylbenzene	None available.	LC50 Inhalation Vapor	Rat	24 mg/l	4 hours	-
cumene	None available. None available.	LD50 Oral LC50 Inhalation Vapor	Rat Rat	5000 mg/kg 40 mg/l	- 4 hours	- -
	None available. None available.	LD50 Dermal LD50 Oral	Rabbit Rat	>10000 mg/kg 2260 mg/kg	- -	- -

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Test	Species	Result	Remarks
Solvent naphtha (petroleum), light arom.	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Not an Irritant	-
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Not an Irritant	-
Polyolefin alkyl phenol alkyl amine	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	Based on data for a similar substance.
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Not an Irritant	Based on data for a similar substance.
2-ethylhexanol	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	-
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Irritant	-
1,2,4-trimethylbenzene	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	Based on data for a similar substance.
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Irritant	Based on data for a similar substance.
mesitylene	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	-
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Irritant	Based on data for a similar substance.
2-(heptadecenyl)-4,5-dihydro-1H-imidazole-1-ethanol	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Visible necrosis	Based on data for a similar substance.
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Visible necrosis	Based on data for a similar substance.
cumene	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Not an Irritant	-
	None available.	Rabbit	Eyes - Not an Irritant	-

Conclusion/Summary

Skin : Causes skin irritation.

Section 11. Toxicological information

Eyes : Causes serious eye irritation.

Respiratory : May cause respiratory irritation.

Sensitization

Product/ingredient name	Test	Route of exposure	Species	Result	Remarks
Solvent naphtha (petroleum), light arom.	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	-
1,2,4-trimethylbenzene	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
mesitylene	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
2-(heptadecenyl)-4,5-dihydro-1H-imidazole-1-ethanol	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
cumene	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	-

Conclusion/Summary

Skin : Not available.

Respiratory : Not available.

Mutagenicity

Product/ingredient name	Test	Experiment	Result	Remarks
Solvent naphtha (petroleum), light arom.	471 Bacterial Reverse Mutation Test None available.	Experiment: In vitro Subject: Bacteria	Negative	-
2-ethylhexanol	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	-
	473 <i>In vitro</i> Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Bacteria	Negative	-
		Experiment: In vitro Subject: Mammalian-Animal	Negative	-
1,2,4-trimethylbenzene	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	-
	476 <i>In vitro</i> Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	Based on data for a similar substance.
mesitylene	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	-
	476 <i>In vitro</i> Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	Based on data for a similar substance.
2-(heptadecenyl)-4,5-dihydro-1H-imidazole-1-ethanol	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	Based on data for a similar substance.
	473 <i>In vitro</i> Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	Based on data for a similar substance.
cumene	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative	-
	None available.	Experiment: In vitro Subject: Mammalian-Animal	Negative	-
	474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vivo Subject: Mammalian-Animal	Equivocal	-

Conclusion/Summary : Not available.

Carcinogenicity

Result

Section 11. Toxicological information

Product/ingredient name	Test	Species	Exposure	Result	Remarks
2-ethylhexanol	451 Carcinogenicity Studies	Mouse	18 months; 5 days per week	Negative - Oral - NOAEL	-
cumene	451 Carcinogenicity Studies	Rat	105 weeks; 6 hours per day	Positive - Inhalation - TC	-

Conclusion/Summary : The classification of this product is based on the concentration of the carcinogenic substance present: Cumene

Classification

Product/ingredient name	OSHA	IARC	NTP
cumene	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

Product/ingredient name	Test	Route of exposure	Species	Maternal toxicity	Fertility	Development toxin	Remarks
Solvent naphtha (petroleum), light arom.	421 Reproduction/ Developmental Toxicity Screening Test	Inhalation	Rat	Negative	Negative	Negative	-
2-ethylhexanol	416 Two-Generation Reproduction Toxicity Study	Oral	Rat	Negative	Negative	Negative	-
1,2,4-trimethylbenzene	416 Two-Generation Reproduction Toxicity Study	Inhalation	Rat	Positive	Negative	Negative	Based on data for a similar substance.
mesitylene	416 Two-Generation Reproduction Toxicity Study	Inhalation	Rat	Positive	Negative	Negative	Based on data for a similar substance.
2-(heptadecenyl) -4,5-dihydro-1H-imidazole-1-ethanol	422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Oral	Rat	Positive	Negative	Negative	Based on data for a similar substance.
cumene	413 Subchronic Inhalation Toxicity: 90-day Study	Inhalation	Rat	Positive	Negative	Negative	-

Conclusion/Summary : Not available.

Teratogenicity

Product/ingredient name	Test	Species	Result	Remarks
Solvent naphtha (petroleum), light arom.	414 Prenatal Developmental Toxicity Study	Rat	Negative - Route of exposure unreported	-
2-ethylhexanol	414 Prenatal Developmental Toxicity Study	Mouse	Negative - Oral	-
1,2,4-trimethylbenzene	414 Prenatal Developmental Toxicity Study	Rat	Negative - Route of exposure unreported	-
mesitylene	414 Prenatal Developmental Toxicity Study	Rat	Negative - Route of exposure unreported	-
cumene	414 Prenatal Developmental Toxicity Study	Rabbit	Negative - Route of exposure	-

Section 11. Toxicological information

			unreported	
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Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Solvent naphtha (petroleum), light arom.	Category 3 Category 3	Not applicable. Not applicable.	Narcotic effects Respiratory tract irritation
2-ethylhexanol	Category 3	Not applicable.	Respiratory tract irritation
1,2,4-trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
mesitylene	Category 3	Not applicable.	Respiratory tract irritation
1,2,3-trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
cumene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
2-(heptadecenyl)-4,5-dihydro-1H-imidazole-1-ethanol	Category 2	Oral	gastrointestinal tract and thymus

Aspiration hazard

Name	Result
Solvent naphtha (petroleum), light arom. mesitylene cumene	ASPIRATION HAZARD - Category 1 ASPIRATION HAZARD - Category 1 ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Skin, Eyes, Ingestion, and Inhalation

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.
- Skin contact** : Causes skin irritation.
- Ingestion** : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Section 11. Toxicological information

- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : Adverse symptoms may include the following:
nausea or vomiting

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Potential chronic health effects

Product/ingredient name	Test	Species	Dose	Exposure	Result	Remarks
Solvent naphtha (petroleum), light arom.	None available.	Rat	500 mg/kg	-	Sub-acute NOAEL Oral	-
	453 Combined Chronic Toxicity/ Carcinogenicity Studies	Rat	1.402 mg/l	90 days	Sub-chronic NOAEL Inhalation Vapor	-
Polyolefin alkyl phenol alkyl amine	407 Repeated Dose 28-day Oral Toxicity Study in Rodents	Rat	150 mg/kg	-	Sub-acute NOAEL Oral	Based on data for a similar substance.
2-ethylhexanol	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	125 mg/kg	-	Sub-chronic NOAEL Oral	-
	413 Subchronic Inhalation Toxicity: 90-day Study	Rat	640 mg/m ³	90 days	Sub-chronic NOAEL Inhalation Vapor	-
1,2,4-trimethylbenzene	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	600 mg/kg	-	Sub-chronic NOAEL Oral	-
	452 Chronic Toxicity Studies	Rat	1800 mg/m ³	12 months	Chronic NOAEL Inhalation Vapor	Based on data for a similar substance.
mesitylene	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	600 mg/kg	-	Sub-chronic NOAEL Oral	-
	413 Subchronic Inhalation Toxicity: 90-day Study	Rat	1.23 mg/l	3 months	Sub-chronic NOAEL Inhalation Vapor	-
1,2,3-trimethylbenzene	None available.	Rat	25 ppm	4 weeks	Sub-acute LOAEL Inhalation Vapor	-
	None available.	Rat	123 mg/m ³	3 months	Sub-chronic NOAEL Inhalation Vapor	-
cumene	None available.	Rat	22.8 mg/kg	-	Sub-chronic LOAEL Oral	-

- Conclusion/Summary** : Not available.

Section 11. Toxicological information

General	: May cause damage to organs through prolonged or repeated exposure.
Carcinogenicity	: Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure	Remarks
Solvent naphtha (petroleum), light arom.	Acute EL50 3.1 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Acute EL50 4.5 mg/l	Daphnia - Daphnia magna	48 hours	Based on data for a similar substance.
	Acute LL50 8.2 mg/l	Fish - Pimephales promelas	96 hours	Based on data for a similar substance.
	Chronic NOEC 0.4 mg/l	Daphnia - Daphnia magna	21 days	Based on data for a similar substance.
	Chronic NOEL 0.5 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Chronic NOEL 2.6 mg/l	Fish - Pimephales promelas	14 days	Based on data for a similar substance.
Polyolefin alkyl phenol alkyl amine	Acute EC50 5.4 mg/l	Algae	96 hours	Based on data for a similar substance.
	Chronic NOEC 3.65 mg/l	Algae	96 hours	Based on data for a similar substance.
	Chronic NOEC 3.38 mg/l	Daphnia	21 days	Based on data for a similar substance.
2-ethylhexanol	Acute EC50 39 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute EL50 16.6 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
	Acute LC50 17.1 mg/l	Fish - Leuciscus idus melanotus	96 hours	-
	Chronic EL10 5.3 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
1,2,4-trimethylbenzene mesitylene	Acute LC50 3.6 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute LC50 7.72 mg/l	Fish - Pimephales promelas	96 hours	-
	Acute EL50 53 mg/l	Algae - Desmodesmus subspicatus	48 hours	-
	Acute LL50 6 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute LL50 12.52 mg/l	Fish - Carassius auratus	96 hours	-
	Chronic EL10 16 mg/l	Algae - Desmodesmus subspicatus	48 hours	-
	Chronic NOEC 0.4 mg/l	Daphnia - Daphnia magna	21 days	-
	Acute EC50 0.03 mg/l	Algae - Desmodesmus subspicatus	72 hours	Based on data for a similar substance.

Section 12. Ecological information

1,2,3-trimethylbenzene	Acute EC50 0.163 mg/l	Daphnia - Daphnia magna	48 hours	Based on data for a similar substance.
	Acute EC50 48 mg/l	Micro-organism	3 hours	-
cumene	Acute LL50 0.33 mg/l	Fish - Danio rerio	96 hours	-
	Chronic EC10 0.014 mg/l	Algae - Desmodesmus subspicatus	72 hours	Based on data for a similar substance.
	Acute EC50 4.4 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Acute EC50 2.7 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute LC50 7.8 mg/l	Fish - Oryzias latipes	96 hours	-
	Chronic NOEC 1.9 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Acute EC50 2.01 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
	Acute EC50 2.14 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute EL50 >2000 mg/l	Micro-organism	3 hours	-
	Acute LC50 4.8 mg/l	Fish - Oncorhynchus mykiss	96 hours	-
	Chronic EC10 1.35 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
	Chronic NOEC 0.35 mg/l	Daphnia - Daphnia magna	21 days	QSAR result.
	Chronic NOEC 0.38 mg/l	Fish - D. rerio and P. promelas	28 days	QSAR result.

Conclusion/Summary : Toxic to aquatic life with long lasting effects.

Persistence and degradability

Product/ingredient name	Test	Result	Remarks
2-ethylhexanol	OECD 301C Ready Biodegradability - Modified MITI Test (I)	100 % - Readily - 14 days	-
mesitylene	-	42 % - Not readily - 28 days	-
2-(heptadecenyl)-4,5-dihydro-1H-imidazole-1-ethanol	OECD 301F Ready Biodegradability - Manometric Respirometry Test	<20 % - Not readily - 28 days	-
1,2,3-trimethylbenzene	-	42 % - Not readily - 28 days	Based on data for a similar substance.
cumene	-	70 % - Readily - 20 days	-

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Solvent naphtha (petroleum), light arom.	-	10 to 2500	high
2-ethylhexanol	2.9	25.33	low
1,2,4-trimethylbenzene	3.63	243	low
mesitylene	3.42	161	low
1,2,3-trimethylbenzene	3.66	194.98	low
cumene	3.55	35.48	low

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	NA1993	Combustible liquid, n.o.s. (Solvent naphtha, Trimethylbenzenes)	Combustible liquid.	III		
TDG Classification	UN1993	Flammable liquid, n.o.s. (Solvent naphtha, Trimethylbenzenes). Marine pollutant	3	III		
IMDG Class	UN1993	Flammable liquid, n.o.s. (Solvent naphtha, Trimethylbenzenes). Marine pollutant	3	III		Remarks Marine pollutant
IATA-DGR Class	UN1993	FLAMMABLE LIQUID, N.O. S. (Solvent naphtha, Trimethylbenzenes)	3	III		-

Notice to reader

The above transport information is provided to assist in the proper classification of this product and may not be suitable for all shipping conditions.

Section 15. Regulatory information

U.S. Federal regulations :

[SARA 302/304](#)

[Composition/information on ingredients](#)

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
o-cresol	≤0.001	Yes.	1000 / 10000	-	100	-
furan	≤0.001	Yes.	500	64.1	100	12.8
propylene oxide	≤0.001	Yes.	10000	1444.3	100	14.4
phenol	≤0.00001	Yes.	500 / 10000	-	1000	-

[SARA 311/312](#)

Section 15. Regulatory information

Classification : FLAMMABLE LIQUIDS - Category 3
 SKIN IRRITATION - Category 2
 EYE IRRITATION - Category 2A
 CARCINOGENICITY - Category 2
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (gastrointestinal tract, thymus) - Category 2
 ASPIRATION HAZARD - Category 1

Composition/information on ingredients

Name	%	Classification
Solvent naphtha (petroleum), light arom.	≥25 - ≤35	FLAMMABLE LIQUIDS - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 ASPIRATION HAZARD - Category 1 HNOC - Static-accumulating flammable liquid
Polyolefin alkyl phenol alkyl amine	≥15 - ≤25	SKIN IRRITATION - Category 2
2-ethylhexanol	≥10 - ≤15	FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
1,2,4-trimethylbenzene	≥10 - ≤15	FLAMMABLE LIQUIDS - Category 3 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
mesitylene	≥3 - ≤5	FLAMMABLE LIQUIDS - Category 3 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 ASPIRATION HAZARD - Category 1
2-(heptadecenyl)-4,5-dihydro-1H-imidazole-1-ethanol	≥1 - <3	ACUTE TOXICITY (oral) - Category 4 SKIN CORROSION - Category 1C SERIOUS EYE DAMAGE - Category 1 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (gastrointestinal tract, thymus) (oral) - Category 2
1,2,3-trimethylbenzene	≥1 - ≤3	FLAMMABLE LIQUIDS - Category 3 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
cumene	≥0.5 - <1	FLAMMABLE LIQUIDS - Category 3 CARCINOGENICITY - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 ASPIRATION HAZARD - Category 1

Section 15. Regulatory information

	Product name	CAS number	%
Form R - Reporting requirements	1,2,4-trimethylbenzene	95-63-6	≥10 - ≤15
Supplier notification	1,2,4-trimethylbenzene	95-63-6	≥10 - ≤15

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

RQ (Reportable quantity) : CERCLA: Hazardous substances.: o-cresol: 100 lbs. (45.4 kg); phenol: 1000 lbs. (454 kg); xylene: 100 lbs. (45.4 kg); cumene: 5000 lbs. (2270 kg); benzene: 10 lbs. (4.54 kg); naphthalene: 100 lbs. (45.4 kg); 1-methylnaphthalene: No RQ is being assigned to the generic or broad class.; 2-methylnaphthalene: No RQ is being assigned to the generic or broad class.; ethylbenzene: 1000 lbs. (454 kg); potassium hydroxide: 1000 lbs. (454 kg); acetaldehyde: 1000 lbs. (454 kg); furan: 100 lbs. (45.4 kg); propylene oxide: 100 lbs. (45.4 kg); bis(2-ethylhexyl) phthalate: 100 lbs. (45.4 kg);

EPA Significant New Use Rule (SNUR) : Polyalkenylalkylphenol generic United States - TSCA 5(a)2 - Final significant new use rules

EPA Consent Order : Formaldehyde, reaction product with an alkylated phenol and an aliphatic amine (PROVISIONAL) United States - TSCA 5(e) - Substances consent order

United States - TSCA 12(b) - Chemical export notification

List name	Status	Name on list	Ref. number
United States - TSCA 12(b) - Chemical export notification	One time notification	Formaldehyde, reaction product with an alkylated phenol and an aliphatic amine PROVISIONAL	P-01-0629

State - California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

Ingredient name	%	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Cumene	≥0.5 - <1	Yes.	No.	-	-
Benzene	<0.1	Yes.	Yes.	Yes.	Yes.
Naphthalene	<0.1	Yes.	No.	Yes.	-
Ethylbenzene	≤0.01	Yes.	No.	Yes.	-
Di(2-ethylhexyl)phthalate	≤0.01	Yes.	Yes.	Yes.	Yes.
Furan	≤0.001	Yes.	No.	-	-
Propylene oxide	≤0.001	Yes.	No.	-	-
Acetaldehyde	≤0.0001	Yes.	No.	Yes.	-

Canadian regulations

Canadian NPRI : The following components are listed: Trimethylbenzene; 1,2,4-Trimethylbenzene; Light aromatic solvent naphtha; Trimethylbenzene

CEPA Toxic substances : None of the components are listed.

International Inventory Status

Australia : All components are listed or exempted.
Canada : All components are listed or exempted.
China : All components are listed or exempted.
Japan : All components are listed or exempted.
Republic of Korea : All components are listed or exempted.
New Zealand : All components are listed or exempted.
Philippines : All components are listed or exempted.
Taiwan : All components are listed or exempted.
United States Active : All components are active or exempted.
Europe : For information on compliance with regulation (EC) No. 1907/2006 (REACH) and amendments please contact your Afton representative.

Section 16. Other information

History

Date of issue/Date of revision : 2/4/2020

Prepared by : EHS Department (Tel: +1 804 788 5800)

Key to abbreviations :

- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- UN = United Nations
- WOE = Weight of Evidence

▣ Indicates information that has changed from previously issued version.

Notice to reader

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Safety Data Sheet

HiTEC® 6676 Fuel Additive

SDS no. H6676

Date of issue/Date of revision 9/23/2019

Section 1. Identification

GHS product identifier : HiTEC® 6676 Fuel Additive
Product use : Petrochemical industry: Fuel additive.

In case of emergency - Chemical

0800-70-77-022 (Brazil)
01-800-681-9531 (Mexico)
+1-703-527-3887 (International)
+1-703-741-5979 (Spanish language)
+1-800-424-9300 (US & Canada)

Manufacturer / Supplier

Afton Chemical Corporation
500 Spring St.
Richmond, VA 23219
USA

Afton Chemical Canada Corporation
5045 South Service Road
Suite 101
Burlington, ON L7L 5Y7
905-631-5470

Non-Emergency Telephone: +1-804-788-5800

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 3
SKIN IRRITATION - Category 2
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
ASPIRATION HAZARD - Category 1

GHS label elements

Hazard pictograms



Signal word

: Danger

Hazard statements

: Flammable liquid and vapor.
Causes skin irritation.
Suspected of causing cancer.
May be fatal if swallowed and enters airways.
May cause respiratory irritation.
May cause drowsiness or dizziness.

Precautionary statements

Section 2. Hazards identification

- Prevention** : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Wash hands thoroughly after handling. Ground/bond container and receiving equipment.
- Response** : IF exposed or concerned: Get medical attention. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical attention. In case of fire, use water spray (fog), foam, dry chemical or CO₂.
- Storage** : Store locked up. Store in a well-ventilated place. Keep cool.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.
- Additional hazards** : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	CAS number	Conc. (% w/w)	US GHS Classification
Solvent naphtha (petroleum), light arom., High flash aromatic naphtha, type I	64742-95-6	≥35 - ≤45	FLAMMABLE LIQUIDS - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 ASPIRATION HAZARD - Category 1
Polyolefin alkyl phenol alkyl amine 1,2,4-trimethylbenzene	Proprietary * 95-63-6	≥25 - ≤35 ≥10 - ≤15	SKIN IRRITATION - Category 2 FLAMMABLE LIQUIDS - Category 3 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
mesitylene	108-67-8	≥5 - ≤10	FLAMMABLE LIQUIDS - Category 3 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
2-ethylhexanol, 1-Hexanol, 2-ethyl-	104-76-7	≥1 - ≤3	ASPIRATION HAZARD - Category 1 FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

Section 3. Composition/information on ingredients

1,2,3-trimethylbenzene	526-73-8	≥1 - ≤3	FLAMMABLE LIQUIDS - Category 3 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
cumene	98-82-8	≥0.5 - <1	FLAMMABLE LIQUIDS - Category 3 CARCINOGENICITY - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 ASPIRATION HAZARD - Category 1

Any concentration shown as a range is to protect confidentiality or is due to batch variation. If specific chemical identify is withheld, it is to protect confidentiality.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : If inhaled, remove to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. If not breathing, give artificial respiration. If breathing is difficult, administer oxygen.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse. Continue to rinse for at least 15 minutes.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.
- Skin contact** : Causes skin irritation.
- Ingestion** : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

Section 4. First aid measures

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : Adverse symptoms may include the following:
nausea or vomiting

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : In case of fire, use water spray (fog), foam, dry chemical or CO₂.
- Unsuitable extinguishing media** : Do not use water jet.

- Specific hazards arising from the chemical** : Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not swallow. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
1,2,4-trimethylbenzene	ACGIH TLV (United States, 3/2017). TWA: 25 ppm 8 hours.
mesitylene	TWA: 123 mg/m ³ 8 hours. ACGIH TLV (United States, 3/2017). TWA: 25 ppm 8 hours.
1,2,3-trimethylbenzene	TWA: 123 mg/m ³ 8 hours. ACGIH TLV (United States, 3/2017). TWA: 25 ppm 8 hours.
cumene	TWA: 123 mg/m ³ 8 hours. ACGIH TLV (United States, 3/2017). TWA: 50 ppm 8 hours. OSHA PEL (United States, 6/2016). Absorbed through skin. TWA: 50 ppm 8 hours. TWA: 245 mg/m ³ 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Section 8. Exposure controls/personal protection

Hand protection	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Body protection	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid.
Color	: Amber.
Odor	: Petroleum-like
Odor threshold	: Not available.
pH	: Not available.
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Closed cup: 44°C (111.2°F) [Pensky-Martens. Minimum]
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Density	: 0.908 g/cm ³ [60.1°F (15.6°C)]
Relative density	: 0.9099
Solubility	: Not available.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Kinematic (40°C): 0.1 cm ² /s
Viscosity	: Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Take precautionary measures against electrostatic discharges.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Test	Result	Species	Dose	Exposure	Remarks
Solvent naphtha (petroleum), light arom.	403 Acute Inhalation Toxicity	LC50 Inhalation Vapor	Rat	>7.63 mg/l	4 hours	-
	402 Acute Dermal Toxicity	LD50 Dermal	Rabbit	>2000 mg/kg	-	-
	None available.	LD50 Oral	Rat	8400 mg/kg	-	-
Polyolefin alkyl phenol alkyl amine	402 Acute Dermal Toxicity	LD50 Dermal	Rat	>2000 mg/kg	-	Based on data for a similar substance.
	423 Acute Oral toxicity - Acute Toxic Class Method	LD50 Oral	Rat	>5000 mg/kg	-	Based on data for a similar substance.
1,2,4-trimethylbenzene	None available.	LC50 Inhalation Vapor	Rat	>10200 mg/m³	4 hours	Based on data for a similar substance.
	None available.	LD50 Dermal	Rat	>3440 mg/kg	-	Based on data for a similar substance.
mesitylene	None available.	LD50 Oral	Rat	6000 mg/kg	-	-
	None available.	LC50 Inhalation Vapor	Rat	>10.2 mg/l	4 hours	Based on data for a similar substance.
	None available.	LD50 Dermal	Rat	>2000 mg/kg	-	Based on data for a similar substance.
	401 Acute Oral Toxicity	LD50 Oral	Rat	>5000 mg/kg	-	Based on data for a similar substance.
2-ethylhexanol	403 Acute Inhalation Toxicity	LC50 Inhalation Dusts and mists	Rat	1 to 5.3 mg/l	4 hours	-
	None available.	LC50 Inhalation Vapor	Rat	>0.89 mg/l	4 hours	-
	None available.	LD50 Dermal	Rat	1970 mg/kg	-	WOE does not support

Section 11. Toxicological information

1,2,3-trimethylbenzene	401 Acute Oral Toxicity	LD50 Oral	Rat	2040 mg/kg	-	classification
	None available.	LC50 Inhalation Vapor	Rat	24 mg/l	4 hours	-
cumene	None available.	LD50 Oral	Rat	5000 mg/kg	-	-
	None available.	LC50 Inhalation Vapor	Rat	40 mg/l	4 hours	-
	None available.	LD50 Dermal	Rabbit	>10000 mg/kg	-	-
	None available.	LD50 Oral	Rat	2260 mg/kg	-	-

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Test	Species	Result	Remarks
Solvent naphtha (petroleum), light arom.	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Mild irritant	-
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Mild irritant	-
Polyolefin alkyl phenol alkyl amine	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	Based on data for a similar substance.
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Mild irritant	Based on data for a similar substance.
1,2,4-trimethylbenzene	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	Based on data for a similar substance.
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Mild irritant	Based on data for a similar substance.
mesitylene	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	-
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Irritant	Based on data for a similar substance.
2-ethylhexanol	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Irritant	-
	405 Acute Eye Irritation/Corrosion	Rabbit	Eyes - Irritant	-
cumene	404 Acute Dermal Irritation/Corrosion	Rabbit	Skin - Mild irritant	-
	None available.	Rabbit	Eyes - Mild irritant	-

Conclusion/Summary

Skin : Causes skin irritation.

Eyes : Not available.

Respiratory : May cause respiratory irritation.

Sensitization

Product/ingredient name	Test	Route of exposure	Species	Result	Remarks
Solvent naphtha (petroleum), light arom.	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	-
1,2,4-trimethylbenzene	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
mesitylene	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	Based on data for a similar substance.
cumene	406 Skin Sensitization	skin	Guinea pig	Not sensitizing	-

Conclusion/Summary

Skin : Not available.

Respiratory : Not available.

Mutagenicity

Section 11. Toxicological information

Product/ingredient name	Test	Experiment	Result	Remarks
Solvent naphtha (petroleum), light arom.	471 Bacterial Reverse Mutation Test None available.	Experiment: In vitro Subject: Bacteria	Negative	-
1,2,4-trimethylbenzene	471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Negative	-
mesitylene	476 <i>In vitro</i> Mammalian Cell Gene Mutation Test 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria Experiment: In vitro Subject: Mammalian-Animal	Negative Negative	- Based on data for a similar substance.
2-ethylhexanol	476 <i>In vitro</i> Mammalian Cell Gene Mutation Test 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Mammalian-Animal Experiment: In vitro Subject: Bacteria	Negative Negative	- Based on data for a similar substance.
cumene	473 <i>In vitro</i> Mammalian Chromosomal Aberration Test 471 Bacterial Reverse Mutation Test None available.	Experiment: In vitro Subject: Bacteria Experiment: In vitro Subject: Mammalian-Animal	Negative Negative	- -
	474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vivo Subject: Mammalian-Animal	Equivocal	-

Conclusion/Summary : Not available.

Carcinogenicity **Result**

Product/ingredient name	Test	Species	Exposure	Result	Remarks
2-ethylhexanol	451 Carcinogenicity Studies	Mouse	18 months; 5 days per week	Negative - Oral - NOAEL	-
cumene	451 Carcinogenicity Studies	Rat	105 weeks; 6 hours per day	Positive - Inhalation - TC	-

Conclusion/Summary : Suspected of causing cancer.

Classification

Product/ingredient name	OSHA	IARC	NTP
cumene	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

Product/ingredient name	Test	Route of exposure	Species	Maternal toxicity	Fertility	Development toxin	Remarks
Solvent naphtha (petroleum), light arom.	421 Reproduction/ Developmental Toxicity Screening Test	Inhalation	Rat	Negative	Negative	Negative	-
1,2,4-trimethylbenzene	416 Two-Generation Reproduction Toxicity Study	Inhalation	Rat	Positive	Negative	Negative	Based on data for a similar substance.
mesitylene	416 Two-Generation Reproduction Toxicity Study	Inhalation	Rat	Positive	Negative	Negative	Based on data for a similar substance.
2-ethylhexanol	416 Two-Generation Reproduction	Oral	Rat	Negative	Negative	Negative	-

Section 11. Toxicological information

cumene	Toxicity Study 413 Subchronic Inhalation Toxicity: 90-day Study	Inhalation	Rat	Positive	Negative	Negative	-
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Conclusion/Summary : Not available.

Teratogenicity

Product/ingredient name	Test	Species	Result	Remarks
Solvent naphtha (petroleum), light arom.	414 Prenatal Developmental Toxicity Study	Rat	Negative - Route of exposure unreported	-
1,2,4-trimethylbenzene	414 Prenatal Developmental Toxicity Study	Rat	Negative - Route of exposure unreported	-
mesitylene	414 Prenatal Developmental Toxicity Study	Rat	Negative - Route of exposure unreported	-
2-ethylhexanol	414 Prenatal Developmental Toxicity Study	Mouse	Negative - Oral	-
cumene	414 Prenatal Developmental Toxicity Study	Rabbit	Negative - Route of exposure unreported	-

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Solvent naphtha (petroleum), light arom.	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
1,2,4-trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
mesitylene	Category 3	Not applicable.	Respiratory tract irritation
2-ethylhexanol	Category 3	Not applicable.	Respiratory tract irritation
1,2,3-trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
cumene	Category 3	Not applicable.	Respiratory tract irritation

Aspiration hazard

Name	Result
Solvent naphtha (petroleum), light arom. mesitylene cumene	ASPIRATION HAZARD - Category 1 ASPIRATION HAZARD - Category 1 ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Skin, Eyes, Ingestion, and Inhalation

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.
- Skin contact** : Causes skin irritation.
- Ingestion** : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Section 11. Toxicological information

Eye contact	: Adverse symptoms may include the following: pain or irritation watering redness
Inhalation	: Adverse symptoms may include the following: respiratory tract irritation coughing nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
Skin contact	: Adverse symptoms may include the following: irritation redness
Ingestion	: Adverse symptoms may include the following: nausea or vomiting

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Test	Species	Dose	Exposure	Result	Remarks
Solvent naphtha (petroleum), light arom.	None available.	Rat	500 mg/kg	-	Sub-acute NOAEL Oral	-
	453 Combined Chronic Toxicity/ Carcinogenicity Studies	Rat	1.402 mg/l	90 days	Sub-chronic NOAEL Inhalation Vapor	-
Polyolefin alkyl phenol alkyl amine	407 Repeated Dose 28-day Oral Toxicity Study in Rodents	Rat	150 mg/kg	-	Sub-acute NOAEL Oral	Based on data for a similar substance.
1,2,4-trimethylbenzene	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	600 mg/kg	-	Sub-chronic NOAEL Oral	-
	452 Chronic Toxicity Studies	Rat	1800 mg/m ³	12 months	Chronic NOAEL Inhalation Vapor	Based on data for a similar substance.
mesitylene	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	600 mg/kg	-	Sub-chronic NOAEL Oral	-
	413 Subchronic Inhalation Toxicity: 90-day Study	Rat	1.23 mg/l	3 months	Sub-chronic NOAEL Inhalation Vapor	-
2-ethylhexanol	408 Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	125 mg/kg	-	Sub-chronic NOAEL Oral	-
	413 Subchronic Inhalation Toxicity: 90-day Study	Rat	640 mg/m ³	90 days	Sub-chronic NOAEL Inhalation	-

Section 11. Toxicological information

1,2,3-trimethylbenzene	None available.	Rat	25 ppm	4 weeks	Vapor Sub-acute LOAEL Inhalation Vapor	-
	None available.	Rat	123 mg/m ³	3 months	Sub-chronic NOAEL Inhalation Vapor	-
cumene	None available.	Rat	22.8 mg/kg	-	Sub-chronic LOAEL Oral	-

Conclusion/Summary	: Not available.
General	: No known significant effects or critical hazards.
Carcinogenicity	: Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	456109.4 mg/kg
Inhalation (vapors)	84.83 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure	Remarks
Solvent naphtha (petroleum), light arom.	Acute EL50 3.1 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Acute EL50 4.5 mg/l	Daphnia - Daphnia magna	48 hours	Based on data for a similar substance.
	Acute LL50 8.2 mg/l	Fish - Pimephales promelas	96 hours	Based on data for a similar substance.
	Chronic NOEC 0.4 mg/l	Daphnia - Daphnia magna	21 days	Based on data for a similar substance.
	Chronic NOEL 0.5 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Chronic NOEL 2.6 mg/l	Fish - Pimephales promelas	14 days	Based on data for a similar substance.
1,2,4-trimethylbenzene mesitylene	Acute LC50 3.6 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute LC50 7.72 mg/l	Fish - Pimephales promelas	96 hours	-
	Acute EL50 53 mg/l	Algae - Desmodesmus subspicatus	48 hours	-
	Acute LL50 6 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute LL50 12.52 mg/l	Fish - Carassius auratus	96 hours	-
	Chronic EL10 16 mg/l	Algae - Desmodesmus subspicatus	48 hours	-

Section 12. Ecological information

2-ethylhexanol	Chronic NOEC 0.4 mg/l	Daphnia - Daphnia magna	21 days	-
	Acute EC50 39 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute EL50 16.6 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
1,2,3-trimethylbenzene	Acute LC50 17.1 mg/l	Fish - Leuciscus idus melanotus	96 hours	-
	Chronic EL10 5.3 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
	Acute EC50 4.4 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
cumene	Acute EC50 2.7 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute LC50 7.8 mg/l	Fish - Oryzias latipes	96 hours	-
	Chronic NOEC 1.9 mg/l	Algae - Pseudokirchneriella subcapitata	72 hours	-
	Acute EC50 2.01 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
	Acute EC50 2.14 mg/l	Daphnia - Daphnia magna	48 hours	-
	Acute EL50 >2000 mg/l	Micro-organism	3 hours	-
	Acute LC50 4.8 mg/l	Fish - Oncorhynchus mykiss	96 hours	-
	Chronic EC10 1.35 mg/l	Algae - Desmodesmus subspicatus	72 hours	-
	Chronic NOEC 0.35 mg/l	Daphnia - Daphnia magna	21 days	QSAR result.
	Chronic NOEC 0.38 mg/l	Fish - D. rerio and P. promelas	28 days	QSAR result.

Conclusion/Summary : Toxic to aquatic life with long lasting effects.

Persistence and degradability

Product/ingredient name	Test	Result	Remarks
mesitylene	-	42 % - Not readily - 28 days	-
2-ethylhexanol	OECD 301C Ready Biodegradability - Modified MITI Test (I)	100 % - Readily - 14 days	-
1,2,3-trimethylbenzene	-	42 % - Not readily - 28 days	Based on data for a similar substance.
cumene	-	70 % - Readily - 20 days	-

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Solvent naphtha (petroleum), light arom.	-	10 to 2500	high
1,2,4-trimethylbenzene	3.63	243	low
mesitylene	3.42	161	low
2-ethylhexanol	2.9	25.33	low
1,2,3-trimethylbenzene	3.66	194.98	low
cumene	3.55	35.48	low

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	NA1993	Combustible liquid, n.o.s. (Solvent naphtha , Trimethylbenzenes)	Combustible liquid.	III		
TDG Classification	UN1993	FLAMMABLE LIQUID, N.O. S.(Solvent naphtha , Trimethylbenzenes). Marine pollutant	3	III	 	
IMDG Class	UN1993	FLAMMABLE LIQUID, N.O. S.(Solvent naphtha , Trimethylbenzenes). Marine pollutant	3	III	 	Remarks Marine pollutant
IATA-DGR Class	UN1993	FLAMMABLE LIQUID, N.O. S.(Solvent naphtha , Trimethylbenzenes)	3	III	 	-

Notice to reader

The above transport information is provided to assist in the proper classification of this product and may not be suitable for all shipping conditions.

Section 15. Regulatory information

U.S. Federal regulations :

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
o-cresol	≤0.001	Yes.	1000 / 10000	-	100	-
furan	≤0.001	Yes.	500	64.1	100	12.8
propylene oxide	≤0.0001	Yes.	10000	1444.3	100	14.4
phenol	≤0.00001	Yes.	500 / 10000	-	1000	-

SARA 311/312

Section 15. Regulatory information

Classification : FLAMMABLE LIQUIDS - Category 3
 SKIN IRRITATION - Category 2
 CARCINOGENICITY - Category 2
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
 ASPIRATION HAZARD - Category 1

Composition/information on ingredients

Name	%	Classification
Solvent naphtha (petroleum), light aromatic	≥35 - ≤45	FLAMMABLE LIQUIDS - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 ASPIRATION HAZARD - Category 1 HNOC - Static-accumulating flammable liquid SKIN IRRITATION - Category 2
Polyolefin alkyl phenol alkyl amine	≥25 - ≤35	
1,2,4-trimethylbenzene	≥10 - ≤15	FLAMMABLE LIQUIDS - Category 3 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
mesitylene	≥5 - ≤10	FLAMMABLE LIQUIDS - Category 3 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 ASPIRATION HAZARD - Category 1
2-ethylhexan-1-ol	≥1 - ≤3	FLAMMABLE LIQUIDS - Category 4 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
1,2,3-trimethylbenzene	≥1 - ≤3	FLAMMABLE LIQUIDS - Category 3 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
cumene	≥0.5 - <1	FLAMMABLE LIQUIDS - Category 3 CARCINOGENICITY - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 ASPIRATION HAZARD - Category 1

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	1,2,4-trimethylbenzene	95-63-6	≥10 - ≤15
Supplier notification	1,2,4-trimethylbenzene	95-63-6	≥10 - ≤15

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

Section 15. Regulatory information

RQ (Reportable quantity)	: CERCLA: Hazardous substances.: o-cresol: 100 lbs. (45.4 kg); phenol: 1000 lbs. (454 kg); xylene: 100 lbs. (45.4 kg); cumene: 5000 lbs. (2270 kg); benzene: 10 lbs. (4.54 kg); naphthalene: 100 lbs. (45.4 kg); 1-methylnaphthalene: No RQ is being assigned to the generic or broad class.; 2-methylnaphthalene: No RQ is being assigned to the generic or broad class.; acetaldehyde: 1000 lbs. (454 kg); furan: 100 lbs. (45.4 kg); propylene oxide: 100 lbs. (45.4 kg); ethylbenzene: 1000 lbs. (454 kg); potassium hydroxide: 1000 lbs. (454 kg);
EPA Significant New Use Rule (SNUR)	: Polyalkenylalkylphenol generic United States - TSCA 5(a)2 - Final significant new use rules
EPA Consent Order	: Formaldehyde, reaction product with an alkylated phenol and an aliphatic amine (PROVISIONAL) United States - TSCA 5(e) - Substances consent order

United States - TSCA 12(b) - Chemical export notification

List name	Status	Name on list	Ref. number
United States - TSCA 12(b) - Chemical export notification	One time notification	Formaldehyde, reaction product with an alkylated phenol and an aliphatic amine PROVISIONAL	P-01-0629

State - California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

Ingredient name	%	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Cumene	≥0.5 - <1	Yes.	No.	-	-
Benzene	<0.1	Yes.	Yes.	Yes.	Yes.
Naphthalene	<0.1	Yes.	No.	Yes.	-
acetaldehyde	≤0.0001	Yes.	No.	-	-
Furan	≤0.001	Yes.	No.	-	-
Propylene oxide	≤0.0001	Yes.	No.	-	-
Ethylbenzene	≤0.01	Yes.	No.	Yes.	-

Canadian regulations

Canadian NPRI : The following components are listed: Trimethylbenzene; 1,2,4-Trimethylbenzene; Light aromatic solvent naphtha; Trimethylbenzene

CEPA Toxic substances : None of the components are listed.

International Inventory Status

Australia	: All components are listed or exempted.
Canada	: All components are listed or exempted.
China	: All components are listed or exempted.
Japan	: All components are listed or exempted.
Republic of Korea	: All components are listed or exempted.
New Zealand	: All components are listed or exempted.
Philippines	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
United States	: All components are listed or exempted.
Europe	: For information on compliance with regulation (EC) No. 1907/2006 (REACH) and amendments please contact your Afton representative.

Section 16. Other information

History

Date of issue/Date of revision : 9/23/2019

Prepared by : EHS Department (Tel: +1 804 788 5800)

Section 16. Other information

Key to abbreviations

- : ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- UN = United Nations
- WOE = Weight of Evidence

▀ Indicates information that has changed from previously issued version.

Notice to reader

This information and these recommendations are offered in good faith and believed to be correct as of the date hereof. Information and recommendations are supplied upon the condition that the recipients will make their own decision as to safety and suitability for their purposes. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose, or of any other nature, are made with respect to the product or the information and recommendations. Afton makes no representation as to completeness or accuracy. In no event will Afton be responsible for damages of any nature whatsoever resulting from the use or reliance upon the information and recommendations.

Safety Data Sheet



Oronite

SECTION 1 IDENTIFICATION

OGA 72050

Recommended Use: Gasoline Additive

Restrictions on Use: Consult supplier when used other than those specified.

Other means of identification: Not applicable

Company Identification

Chevron Oronite Company LLC
3901 Briarpark Dr.
Houston, TX 77042
United States of America

Transportation Emergency Response

Asia: Chevron Emergency Information Centre +(1) 510-231-0623

Australia: 1 800 009 010

China: (+86) 4001-204937

Europe: Oronite SA - Gonfreville Plant +33 2 35 25 55 00

North America: CHEMTREC (800) 424-9300 or (703) 527-3887

South America: Chevron Oronite Brasil Ltda (24 hours) 55 11 4478-1200

Health Emergency

USA: International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information

SDS Requests: (+1) 877-512-7200

Technical Information: (+1) 877-512-7200

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SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION:

- Flammable liquid: Category 3.
- Aspiration toxicant: Category 1.
- Serious eye damage: Category 1.
- Skin irritation: Category 2.
- Skin Sensitizer: Category 1.
- Target organ toxicant (central nervous system): Category 3.
- Acute aquatic toxicant: Category 2.
- Chronic aquatic toxicant: Category 2.



Signal Word: Danger

Physical Hazards:

- Flammable liquid and vapour.

Health Hazards:

- May be fatal if swallowed and enters airways.
- Causes skin irritation.
- May cause an allergic skin reaction.
- Causes serious eye damage.
- May cause drowsiness or dizziness.

Environmental Hazards:

- Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:**Prevention:**

- Keep away from heat, sparks, open flames, and hot surfaces. - No smoking.
- Keep cool.
- Ground and bond container and receiving equipment.
- Use explosion-proof electrical, ventilating, lighting, and equipment.
- Use only non-sparking tools.
- Take precautionary measures against static discharge.
- Avoid breathing fume, gas, mist, vapours, or spray.
- Wash thoroughly after handling.
- Use only outdoors or in a well-ventilated area.
- Contaminated work clothing must not be allowed out of the workplace.
- Avoid release to the environment.
- Wear protective gloves, protective clothing, eye protection, and face protection.

Response:

- IF SWALLOWED: Immediately call a POISON CENTER, doctor, or physician.
- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- Immediately call a POISON CENTER, doctor, or physician.
- Specific treatment (see Notes to Physician on this label).
- Do NOT induce vomiting.
- If skin irritation or rash occurs: Get medical advice or attention.
- Take off contaminated clothing and wash it before reuse.
- In case of fire: Use media specified in the SDS to extinguish.
- Collect spillage.

Storage:

- Store in a well-ventilated place. Keep container tightly closed.
- Store locked up.

Disposal:

- Dispose of contents and container in accordance with applicable local, regional, national, and international regulations.

HAZARDS NOT OTHERWISE CLASSIFIED: Not Applicable

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS**Hazardous Substance(s) or Complex Substance(s) required for disclosure**

COMPONENTS	CAS NUMBER	AMOUNT
01154100-5179P	Trade secret	40 - 45 %weight

Solvent naphtha (petroleum), light aromatic	64742-95-6	30 - 35 %weight
Alkoxy amines	Trade secret	15 - 20 %weight
01154100-5323P	Trade Secret	5 - 10 %weight
01154100-5325P	Trade Secret	0.1 - < 1 %weight
01154100-5326P	Trade Secret	0.1 - < 1 %weight

Hazardous Constituent(s) Contained in Complex Substance(s) required for disclosure

COMPONENTS	CAS NUMBER	AMOUNT
Trimethylbenzene (3 isomers: 1,2,3-; 1,2,4-; 1,3,5-isomer)	25551-13-7	10 - 15 %weight
01154100-5343P	Trade secret	5 - 10 %weight
Xylene	1330-20-7	0.1 - < 1 %weight
Cumene	98-82-8	0.1 - < 1 %weight

Note that the chemical identity of some or all of the above components is considered confidential business information and is being withheld as permitted by 29 CFR 1910.1200 and various State Right-To-Know Laws.

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye: Flush eyes with water immediately while holding the eyelids open. Remove contact lenses, if worn, after initial flushing, and continue flushing for at least 15 minutes. Get immediate medical attention.

Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, apply a waterless hand cleaner, mineral oil, or petroleum jelly. Then wash with soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: If swallowed, get immediate medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.

Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue or if any other symptoms develop.

Most important symptoms and effects, both acute and delayed

IMMEDIATE HEALTH EFFECTS

Eye: Contact with the eyes causes permanent damage, including blindness. Symptoms may include pain, tearing, reddening, swelling and impaired vision.

Skin: Contact with the skin causes irritation. Contact with the skin may cause an allergic skin reaction. Skin contact may cause drying or defatting of the skin. Symptoms may include pain, itching, discoloration, swelling, and blistering.

Ingestion: Highly toxic; may be fatal if swallowed. Because of its low viscosity, this material can directly enter the lungs, if swallowed, or if subsequently vomited. Once in the lungs it is very difficult to remove and can cause severe injury or death.

Inhalation: Excessive or prolonged breathing of this material may cause central nervous system effects. Central nervous system effects may include headache, dizziness, nausea, vomiting, weakness, loss of coordination, blurred vision, drowsiness, confusion, or disorientation. At extreme exposures, central nervous system effects may include respiratory depression, tremors or convulsions, loss of consciousness, coma or death.

DELAYED OR OTHER HEALTH EFFECTS: Not classified

Indication of any immediate medical attention and special treatment needed

Note to Physicians: Ingestion of this product or subsequent vomiting may result in aspiration of light

hydrocarbon liquid, which may cause pneumonitis.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

UNSUITABLE EXTINGUISHING MEDIA: No data available

Unusual Fire Hazards: See Section 7 for proper handling and storage.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion. Combustion may form oxides of: Nitrogen.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures: Observe all relevant local and international regulations. Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator. Keep out unnecessary and unprotected personnel. Persons entering the contaminated area to correct the problem or to determine whether it is safe to resume normal activities must comply with all instructions and wear appropriate personal protective equipment as indicated in Section 8.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: The maximum handling temperature is 66°C. Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Precautionary Measures: This material presents a fire hazard. Liquid quickly evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above -10°C (15°F). Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Do not breathe vapor or fumes. Wash thoroughly after handling.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

General Storage Information: The maximum storage temperature is 45°C. DO NOT USE OR STORE near heat, sparks, flames, or hot surfaces . USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the workplace when designing engineering controls and selecting personal protective equipment (PPE). If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, refer to PPE information below.

Factors that affect PPE include, but are not limited to: properties of the chemical, other chemicals which may contact the same PPE, physical requirements (fit & sizing, cut/puncture protection, dexterity, thermal protection, etc.), and potential allergic reactions to the PPE material. It is the responsibility of the user to read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances. Refer to appropriate CEN standards.

ENGINEERING CONTROLS:

Use general ventilation, local exhaust ventilation, or a combination of both.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: Wear protective equipment to prevent eye contact. Selection of protective equipment may include: indirect vented goggles, non-vented (closed) goggles, and a combination of chemical goggles with face shield, depending upon the work operations conducted.

Skin Protection: Wear chemical personal protective equipment (PPE) to prevent skin contact. Selection of chemical protective clothing should be performed by an Occupational Hygienist or Safety Professional and be based upon applicable standards (ASTM F739 or EN 374). Using chemical PPE depends upon operations conducted and may include chemical gloves, boots, chemical apron, chemical suit, and complete facial protection. **Refer to PPE manufacturers to obtain breakthrough time information to determine how long PPE can be used before it needs to be replaced.** Unless specific glove manufacturer data indicates otherwise, the below table is based upon available industry data to assist in the glove selection process and is intended to be used as reference only.

Chemical Glove Material	Thickness (mm)	Typical Breakthrough Time (minutes)
Polyvinyl Chloride (PVC)	1.1	13
Viton Butyl	0.3	60
Butyl	Not recommended for use	
Neoprene	Not recommended for use	
Nitrile	Not recommended for use	

Respiratory Protection: A site-specific risk assessment should be conducted by an Occupational Hygienist or a Safety Professional to determine the type and use of respiratory protective equipment. When a site-specific risk assessment determines that respiratory protection is required, use an approved

respirator such as:

Air purifying respirator -

If airborne concentration limits exceed the applicable occupational exposure limit, but are below the maximum use concentration.

Vapors only: organic vapor cartridge (filter type A3 per EN 529:2005).

Vapors and particulates (including generated mists): both an organic vapor cartridge & particulate filter (AP3 filter per EN 529:2005).

Refer to respirator manufacturers to obtain service life of cartridge / filter.

Positive pressure air-supplying respirator -

If airborne concentration limits exceed the maximum use concentration offered from an air purifying respirator.

Refer to EN 529:2005, USA OSHA 1910.134, and/or other applicable local/regional/national/international standards for regulatory requirements.

Occupational Exposure Limits:

Component	Agency	Form	TWA	STEL	Ceiling	Notation
Trimethylbenzene (3 isomers: 1,2,3-; 1,2,4-; 1,3,5- isomer)	ACGIH	--	10 ppm	--	--	--
01154100-5343P	ACGIH	--	10 ppm	--	--	--
Xylene	ACGIH	--	20 ppm	--	--	--
Xylene	OSHA Z-1	--	435 mg/m3	--	--	--
Cumene	ACGIH	--	5 ppm	--	--	--
Cumene	OSHA Z-1	--	245 mg/m3	--	--	Skin

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Amber

Physical State: Liquid

Odor: Petroleum odor

Odor Threshold: No data available

pH: Not Applicable

Vapor Pressure: No data available

Relative Vapor Density: No data available

Initial Boiling Point: No data available

Solubility: Insoluble in water.

Freezing Point: No data available

Melting Point: No data available

Particle Characteristics: Not applicable

Density: 0.9130 kg/l @ 15°C (59°F)

Kinematic Viscosity: 10.93 cSt @ 40°C (104°F)

Coefficient of Therm. Expansion / °F: 0.00042

Evaporation Rate: No data available

Decomposition temperature: No data available

Partition coefficient n-octanol/water (logarithmic value): No data available

FLAMMABLE PROPERTIES:

Flammability (solid, gas): Not Applicable

Flashpoint: (Pensky-Martens Closed Cup) 33 °C (91 °F) (Minimum)

Autoignition: No data available

Flammability (Explosive) Limits (% by volume in air): Lower: No data available Upper: No data available

SECTION 10 STABILITY AND REACTIVITY

Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Conditions to Avoid: Do not heat above flash point.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur. May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Incompatibility With Other Materials: Not applicable

Hazardous Decomposition Products: None known (None expected)

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Serious Eye Damage/Irritation: This material causes serious eye damage. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Skin Corrosion/Irritation: This material causes skin irritation. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Skin Sensitization: The material may cause an allergic skin reaction. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Acute Dermal Toxicity: The material is not considered a dermal toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Acute Oral Toxicity: The material is not considered an oral toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Acute Inhalation Toxicity: The material is not considered an inhalation toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The material is not considered a mutagen. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Carcinogenicity: The material is not considered a carcinogen. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Reproductive Toxicity: The material is not considered a reproductive toxicant. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Specific Target Organ Toxicity - Single Exposure: This material may cause drowsiness or dizziness. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Specific Target Organ Toxicity - Repeated Exposure: The material is not considered a target organ toxicant (repeated exposure). The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Aspiration Hazard: This material is considered an aspiration hazard based on the kinematic viscosity of the material.

ADDITIONAL TOXICOLOGY INFORMATION:

COMPONENT: Light Aromatic Solvent Naphtha (CAS 64742-95-6, also described as High-Flash Aromatic Naphtha, Type I, as defined by ASTM D-3734). **GENETIC TOXICITY:** No evidence of genetic toxicity was observed in the following tests: Salmonella typhimurium reverse mutation assay (Ames test), in vitro Chinese Hamster Ovary (CHO) cell HGPRT mutation assay, in vitro Chinese Hamster Ovary (CHO) cell chromosomal aberration assay, in vitro Chinese Hamster Ovary (CHO) cell sister chromatid exchange assay, and in vivo rat bone marrow chromosome aberration assay. **SUBCHRONIC TOXICITY:** In a 13-week rat inhalation study using dose levels of 0, 100, 500, and 1500 ppm for 6 hours/day, 5 days/week, no target organ toxicity including neurotoxicity was observed at any dose level. Slight general systemic toxicity (decreased body weight gain) was observed at 1500 ppm.

DEVELOPMENTAL TOXICITY: In a mouse inhalation study using dose levels of 0, 100, 500, and 1500 ppm for 6 hours/day on gestation days 6-15, no signs of maternal toxicity or developmental toxicity were observed at 100 ppm. At 500 ppm, maternal toxicity (decreased body weight gain) and developmental toxicity (decreased fetal body weight) were observed. Severe maternal toxicity (44% mortality, decreased body weight gain, clinical signs of toxicity) and developmental toxicity (decreased number of live fetuses per litter, increased post-implantation losses per dam, decreased fetal body weights, delayed ossification, cleft palate) were observed at 1500 ppm. In a rat inhalation study using dose levels of 600, 1000, and 2000 mg/m³ for 24 hours/day on gestation days 7-15, signs of maternal toxicity (decreased body weight gain) were observed at all dose levels. At 600 mg/m³, no signs of fetal or developmental toxicity were observed. Signs of fetal toxicity (decreased male fetal body weight) and developmental toxicity (delayed ossification) were observed at 1000 and 2000 mg/m³. **REPRODUCTIVE TOXICITY:** In a rat 3-generation inhalation study using dose levels of 0, 100, 500, and 1500 ppm for 6 hours/day, 5 days/week, no signs of general systemic or reproductive toxicity were observed at 100 ppm. At 500 ppm, slight parental toxicity (decreased body weight gain) and postnatal toxicity (decreased pup body weight) were observed, but reproductive parameters were not affected. Severe parental toxicity (mortality, decreased body weight gain, clinical signs of toxicity) and postnatal toxicity (decreased pup body weight) were observed at 1500 ppm, but reproductive parameters were not affected.

This material contains cumene.

SUBCHRONIC TOXICITY: Two subchronic inhalation studies, in which rats of each sex were exposed for six hours/day, five days/week for thirteen weeks to 0, 50, 100, 500 or 1200 ppm cumene vapor, found that rats exposed to 500 and 1200 ppm had increases in weights of liver, kidneys and adrenals, and microscopic changes in the kidneys. Decreased motor activity in male rats exposed to 500 and 1200 ppm was observed in the first study, but was not duplicated in the second study. Cataracts in the lenses of the eyes, which occurred in both treated and untreated rats in the first study, were not statistically higher in treated animals in the second study, indicating that cumene did not cause cataracts. There were no exposure-related changes in hearing (auditory brainstem response), spermatogenesis or responses in the functional observation battery. **DEVELOPMENTAL TOXICITY:** In inhalation developmental toxicity studies, there was no evidence of developmental effects either in rabbits exposed to levels up to 2300 ppm on days 6-8 of gestation or in rats exposed to levels up to 1200 ppm on days 6-15 of gestation. **GENETIC TOXICITY:** Cumene was not genotoxic in several in vitro assays including the Ames test, and unscheduled DNA synthesis assay and the Chinese hamster ovary cell chromosome aberration assay. **CARCINOGENICITY:** IARC has classified cumene as "possibly carcinogenic to humans" (Group 2B). Key findings from lifetime inhalation studies in laboratory rodents were as follows: An increased incidence of kidney tumors was observed in male rats only. These tumors are consistent with alpha-2u-globulin-mediated nephropathy, an effect specific to male rats and is considered irrelevant to humans. An increased incidence of liver tumors was observed in female mice only, and an increased incidence of lung tumors was observed in both male and female mice. The relevance of these cumene-induced liver and lung tumors to humans has not been established. Based on a weight-of-evidence approach, this material is not classified as a carcinogen.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

This material is expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

The product has not been tested. The statement has been derived from the properties of the individual components.

MOBILITY

No data available.

PERSISTENCE AND DEGRADABILITY

This material is not expected to be readily biodegradable. The product has not been tested. The statement has been derived from the properties of the individual components.

POTENTIAL TO BIOACCUMULATE

Bioconcentration Factor: No data available.

Partition coefficient n-octanol/water (logarithmic value): No data available

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by international, country, or local laws and regulations.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: UN1993,

FLAMMABLE LIQUID, N.O.S. (PETROLEUM LIGHT AROMATIC SOLVENT NAPHTHA), 3, III, RQ (XYLENE), MARINE POLLUTANT (PETROLEUM LIGHT AROMATIC SOLVENT NAPHTHA, ALKOXY AMINES)

IMO/IMDG Shipping Description: UN1993,

FLAMMABLE LIQUID, N.O.S. (PETROLEUM LIGHT AROMATIC SOLVENT NAPHTHA), 53 °C c.c., MARINE POLLUTANT, (PETROLEUM LIGHT AROMATIC SOLVENT NAPHTHA, ALKOXY AMINES)

ICAO/IATA Shipping Description: UN1993, FLAMMABLE LIQUID, N.O.S. (PETROLEUM LIGHT AROMATIC SOLVENT NAPHTHA), 3, III

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:

Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES:

Aspiration Hazard

Flammable (gases, aerosols, liquids, or solids)

Respiratory or Skin Sensitization

Serious eye damage or eye irritation

Skin Corrosion or Irritation
Specific target organ toxicity (single or repeated exposure)

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	05=MA RTK
01-2A=IARC Group 2A	06=NJ RTK
01-2B=IARC Group 2B	07=PA RTK
02=NTP Carcinogen	08-1=TSCA 5(e)
03=EPCRA 313	08-2=TSCA 12(b)
04=CA Proposition 65	

The following components of this material are found on the regulatory lists indicated.

Trimethylbenzene (3 isomers: 05, 06, 07 1,2,3-; 1,2,4-; 1,3,5- isomer)	
01154100-5343P	03, 05, 06, 07
Cumene	01-2B, 02, 03, 04, 05

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AIIIC (Australia), DSL (Canada), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (United States).

One or more components has been notified but may not be listed in the following chemical inventories: IECSC (China). Separate notification may be required.

Please contact Oronite at SDS_REACH@chevron.com for more information concerning EU-REACH.

One or more components does not comply with the following chemical inventory requirements: ENCS (Japan).

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 3 Flammability: 2 Reactivity: 0

HMIS RATINGS: Health: 3 Flammability: 2 Reactivity: 0

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:

SECTION 01 - Product Identifier information was modified.

SECTION 02 - Precautionary Statements information was modified.

SECTION 06 - Personal Precautions, Protective Equipment and Emergency Procedures information was modified.

SECTION 07 - General Handling Information information was added.

SECTION 07 - General Storage Information information was added.

SECTION 09 - Physical/Chemical Properties information was added.

SECTION 09 - Physical/Chemical Properties information was deleted.

SECTION 09 - Physical/Chemical Properties information was modified.

SECTION 15 - Chemical Inventories information was modified.

SECTION 15 - Regulatory Information information was deleted.

Revision Date: January 02, 2025

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
GHS - Globally Harmonized System	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
HMIS - Hazardous Materials Information System	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration
NCEL - New Chemical Exposure Limit	EPA - Environmental Protection Agency
SCBA - Self-Contained Breathing Apparatus	PNOS - Particles Not Otherwise Specified

Prepared according to the 29 CFR 1910.1200 (2024) by Chevron.

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