

## **Guidelines for Calculating and Reporting Emissions from Tank Trucks and Rail Tank Cars Bulk Loading Operations**

Revised December 2024

The purpose of this document is to provide operators with guidelines in estimating emissions from loading of volatile organic liquid materials in bulk into tank trucks or rail tank cars. Loading losses are the primary source of evaporative emissions that 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.

In addition to emissions from evaporative losses (VOC and toxic air contaminants), other emissions from controlling emissions by means of thermal destruction are also expected (NOx, SOx, CO, PM, and toxic air contaminants).

South Coast AQMD provides the following guidelines in assisting facilities in calculating emissions from bulk loading operations for the Annual Emissions Reporting program. The methodologies assume certain default parameters. Rule 301 requires <u>Site-specific information should be used, if it is available</u>. There are three emission scenarios for bulk loading operations:

- 1. Simple Operation (No Control)
- 2. Equipped with a Vapor Collection and Recovery System
- 3. Equipped with a Vapor Collection with Balance and Vapor Destruction Systems

### CASE 1) SIMPLE OPERATION (NO VAPOR CONTROL)

$$E_1 = Q * L_L$$

Eq. 1

Where,

 $E_1$  = VOC Emission (un-captured vapor) from Loading Losses

- Q = Throughput in 1,000 gallons loaded (Mgal)
- $L_L$  = Loading Loss Factor (lb/1,000 Gallon Loaded or lb/Mgal) can be found in the Default Emission Factor tables or determined using information defined in US EPA AP-42 (Eq-1), Section 5.2 as follows:

$$L_L = \frac{12.46 \times S \times P \times M}{T}$$

Where,

- S = Saturation Factor (see AP-42, Table 5.2-1)
- P = True Vapor Pressure, psia (see AP42, Chapter 7.1 "Organic Liquid Storage Tank")

**Bulk Loading Guidelines** 

Revised December 2024

*M* = Vapor Molecular Weight, lb/lb-mole (see AP42, Chapter 7.1 "Organic Liquid Storage Tank")

T = Temperature of the Liquid being Loaded, °R (°F + 460)

# CASE 2) OPERATIONS EQUIPPED WITH VAPOR COLLECTION AND RECOVERY SYSTEMS

Loading emissions from this configuration consist of two parts: 1) uncollected vapor during loading; and 2) collected vapor that was further recovered by the system before exiting the recovery stack.

 $E_2 = E_{\text{uncollected}} + E_{\text{stack}} = E_{\text{uncollected}} + E_{\text{collected}} * (1 - Eff_{VR})$  $E_2 = O * L_L * (1 - Eff_{VC}) + O * L_L * Eff_{VC} * (1 - Eff_{VR})$ 

 $E_2 = Q * L_L - Q * L_L * Eff_{VC} * Eff_{VR}$ 

Eq. 2

Where,

 $E_2$  = VOC Emission from Loading Losses

 $Eff_{VC}$  = Vapor Collection Efficiency (fraction) as defined in US EPA AP-42, Section 5.2 as follows:

 $Eff_{VC} = 0.992$  for tanker trucks passing MACT-level annual leak test; or

 $Eff_{VC} = 0.987$  for tanker trucks passing the NSPS-level annual leak test; or

 $Eff_{VC} = 0.70$  for tanker trucks not passing either of the above leak tests.

 $Eff_{VR}$  = Vapor Recovery Efficiency (fraction) as defined in US EPA AP-42, Section 5.2 range from 90 to over 99 percent. In absence of site-specific tests, permit or rule limits, Vapor Recovery Efficiency (Eff<sub>VR</sub>) is assumed to be 0.95 (average of the range above) and equation 2 becomes:

 $E_2 = Q * L_L * (1 - 0.95 * Eff_{VC})$ 

Eq. 3

# CASE 3) OPERATIONS EQUIPPED WITH A VAPOR BALANCE AND DESTRUCTION SYSTEM

Loading emissions from this configuration consisted of two parts: 1) uncollected vapor during loading; and 2) collected vapor that was further recovered by the system before exiting the recovery stack.

$$E_{3} = E_{uncollected} + E_{stack} = E_{uncollected} + E_{collected} * (1 - Eff_{VB}) * (1 - Eff_{VD})$$
$$E_{3} = Q * L_{L} * (1 - Eff_{VC}) + Q * L_{L} * Eff_{VC} * (1 - Eff_{VB}) * (1 - Eff_{VD})$$

$$E_3 = Q * L_L * [1 - Eff_{VC} (Eff_{VB} + Eff_{VD} - (Eff_{VB} * Eff_{VD}))] \qquad Eq. 4$$

Where,

 $E_3 = \text{VOC Emission from Loading Losses}$ 

 $Eff_{VC}$  = Vapor Collection Efficiency (fraction) as defined in US EPA AP-42, Section 5.2 and as explained in CASE 2 above

 $Eff_{VB}$  = Vapor Balance Efficiency (fraction)

*EffvD* = Vapor Destruction Efficiency (fraction)

A typical system is operating with vapor balance efficiency (Eff<sub>VB</sub>) ranging from 93 to 100% per US EPA AP-42, Section 5.2. If this parameter is not available from the facility permit, source test results, or manufacturer guarantee, the minimum of the range above can be used.

For Vapor Destruction Efficiency (EffvD) site specific tests results, permit, or rule limit should be used.

#### THERMAL OXIDATION

If the operation is equipped with a VOC destruction system by means of thermal oxidation, other contaminants (NOx, SOx, CO, PM, and toxic air contaminants) from burning off organic vapor are expected. **South Coast AQMD encourages operators to use test results to calculate and report these emissions**. In absence of test results, following liquid equivalent method should be used. Since the organic vapor evaporates from loading of liquid organic materials, the captured for control vapor must be converted back into liquid form for consistency with available emission factors. The South Coast AQMD uses an equivalent method to determine the throughput of vapors directed to a thermal oxidizer (TO) as equivalent 1000 of gallons of liquid (Mgal).

$$TO_{Throughput} = \frac{E_{collected}}{1,000 * d_l} * (1 - Eff_{VB}) \qquad Eq.5$$

Where:

 $d_l$  = the liquid density.

*TO*<sub>Throughput</sub>= liquid equivalent of product vapors destructed (Mgal)

$$TO_{Throughput} = \frac{Q * L_L * Eff_{VC}}{1,000 * d_l} * (1 - Eff_{VB}) \qquad Eq.6$$

Default combustion emission factors in *AER Program Help & Support* can be used then to estimate the criteria pollutant emissions from destruction of the vapor. Please note that VOC emissions have been already captured by Eq. 4; therefore, do not need to be calculated using default emission factors here.

Please also note that the emissions from natural gas combustion at the thermal oxidizer need to be captured separately using default emission factors when test results are not available for each of criteria pollutant and toxic emissions from combustion.

#### TAC Emissions

**South Coast AQMD encourages operator to use the test results in calculating and reporting toxic missions.** In absence of this information and when thermal destruction is not used to control emissions, the toxic vapor speciation of the VOC emitted should be calculated using the methodology provided in AP42, Chapter 7.1 "Organic Liquid Storage Tank" from liquid speciation of the petroleum product loaded to determine and report the toxic break down of the VOC emitted. Liquid speciation of the products loaded can be obtained from their safety datasheet or the default values in *South Coast AQMD AER Supplemental Instructions for Liquid Organic Storage Tanks*.

Facilities should also report toxic emissions from destruction of the VOC in a thermal oxidizer. In absence of test results, the following emission factors for non-catalyst (portable and stationary) internal combustion engines (https://www.aqmd.gov/docs/default-source/planning/annual-emission-reporting/ combustion-default-emission-factors-2024.pdf), in pounds/1000 gallons of equivalent gasoline burned can be used to determine the toxic emissions generated from loading.

### EXAMPLES

The following examples will demonstrate how emissions are calculated for a typical bulk loading operation in all three cases. The examples also included images of screens for how to report emissions under the new reporting system.

### CASE 1 - SIMPLE OPERATION (NO VAPOR CONTROL)

Company XYZ splash loaded 120,000 gallons of gasoline RVP 10 at the following conditions:

S = 1.45 (Saturation Factor from AP-42)

 $T = 70^{\circ}F = 530^{\circ}R$  (Temperature of Gasoline)

P = 6.2 psia (True Vapor Pressure)

M = 66 lb/lb-mole (Vapor Molecular Weight)

$$L_{L} = \frac{12.46 \times S \times P \times M}{T} = \frac{12.46 \times 1.45 \times 6.2 \times 66}{530} = 13.95 \ lb \ VOC/Mgal$$

Equation 1 yields the VOC emissions as follows:

$$E_1 = 120 Mgals * 13.95 \frac{lbs VOC}{Mgal} = 1,674 lb VOC$$

F	Edit Emission	Process	s - Other	Proce	esses						×		
A	ER Device ID	Permit D	evice ID	A/N	Process ID	Rule	#		Activity	1			
	ES37				P1	462		Petroleum : Bulk F	Plants and	MarineTerminals			
	AER Device ID		ES37	AER Device Name									
	NON-PERMITT	ED		Per	mit Device ID								
	Process ID		P1	Pro	cess Name								
	Process Comm	ent	Case 1 -	e 1 - Simple Operation no Control									
	Activity Code *	Sector: Petrole Industry Bulk P Operati Loadir Process Gasoli	eum : lants and on: ng - Rail Ta s: ne	Marin ank C	eTerminals ars					•			
	Rule #	462		•	Add Rule								
									Save	Cancel			

Edit Throughpu	t Information - Other	r Proce	esses		×				
AER Device ID	Permit Device ID	ID A/N Process ID		Rule #	Activity				
ES37			P1	462	Petroleum : Bulk Plants and MarineTerminals				
			Annual Th	roughput					
			120.0	M gal					
Annual Throughp	120	120.0 * M gal *							
Throughput Type	linp	Input 💌 *							
Throughput Com	ment								
					Save Cancel				

Open Criteria Em	nission Info	rmation -	Other	Processes			×	
AER Device ID	Permit De	vice ID	A/N	Process ID	Rule #	Activity		
ES37				P1	462	Petroleum : Bulk Plants and MarineTerminals		
				Annual Th	roughput			
				120.0	M gal			
Pollutant		VOC - V	olatile	Organic Comp	ounds			
Emission Factor (E	13.9500		*	lbs/M gal				
		Controlled EF value (mark checkbox if EF listed represents EF determined after control)						
Overall Control Eff	iciency	0.00000						
Emission Factor Co	omment	Splash L	oaded	with No Contr	ols	▲ ▼		
Emission Factor Da	ata Source	AP-42				*		
Emissions		1,674.00	) Ibs					
						Click here to <u>delete</u> this Emission		
						Save Cancel		

Open Toxic (TAC/ODC) Em	ssion Information - Other	Processes		×					
AER Device ID Permit De	vice ID A/N Process II	O Rule #	Activity						
ES37	P1 Appual	462	Petroleum : Bulk Plants and MarineTerminals						
	120	I.O M gal							
TAC/ODC Toxic Pollutants / Oz	one Depleting Compounds								
TAC Group	2 - Benzene								
CAS # (Pollutant)	71432 - Benzene								
Emission Factor (EF)	1.39500e-1	* lbs/M gal							
	<ul> <li>Controlled EF value (mark checkbox if EF listed represents EF determined after control)</li> </ul>								
Overall Control Efficiency									
Emission Factor Comment	Bezene is 1% of Total VOC								
Emission Factor Data Source	Back-calculation		*						
Emissions	1.674e+1 lbs								
			Click here to delete this Emission	-					
			Save Cancel						

# CASE 2 - OPERATIONS EQUIPPED WITH VAPOR COLLECTION AND RECOVERY SYSTEMS

Company ABC operates a loading terminal with vapor balance service with submerged bottom filling technology into tanker trucks that have passed the MACT level leak test. The vapor vent line is connected to a refrigeration unit that recovers 95% of the vapor and returns it back as liquid to storage tank. ABC transferred 1,000,000 gallons of RVP 10 gasoline over the year at the following conditions:

- S = 1.0 (Saturation Factor from AP-42)
- T =  $70^{\circ}$ F =  $530^{\circ}$ R (Temperature of Gasoline)
- P = 6.2 psia (True Vapor Pressure)

M = 66 lb/lb-mole (Vapor Molecular Weight)

 $Eff_{VR} = 0.95$  (Vapor Recovery Efficiency)

 $Eff_{VC} = 0.992$  (Vapor Collection Efficiency)

$$L_{L} = \frac{12.46 \times S \times P \times M}{T} = \frac{12.46 \times 1 \times 6.2 \times 66}{530} = 9.62 \ lb \ VOC/Mgal$$

Equation 2 yields the VOC emissions as follows:

$$E_2 = 1,000 Mgals * 9.62 \frac{lb VOC}{Mgal} * (1 - 0.95 * 0.992) = 554 lb VOC$$

AER Device ID ES37	Permit Device ID	A/N	Dresses							
ES37		~ 1	ID	Rule #	Activity					
			P1	462	Petroleum : Bulk Plants and MarineTerminals : Loading - Tank Trucks : Gasoline					
AER Device	AER Device ID NON-PERMITTED		AER De	vice Nan	ne					
NON-PERM			Permit [	Device ID						
Process ID		P1	Process	Bulk Loading						
Process Co	mment	Case 2	se 2 - Vapor Collection and Recovery Systems							
Activity Cod	Activity Code * Sector: Petrole									
Ĩ			eum 🔽							
	Industry:	ry:								
	Bulk P	Bulk Plants and MarineTerminals								
	Operatio	ition:								
	Loadin	ing - Tank Trucks								
	Process	ess:								
	Gasolir	ne			•					
Rule #	462		▼ * <u>Ac</u>	ld Rule						
					Save Cancel					

Edit Throug	ghput Informatio	n - O	ther Proce	sses	x	¢
AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Activity	
ES37			P1	462	Petroleum : Bulk Plants and MarineTerminals : Loading - Tank Trucks : Gasoline	
				Ann	nual Throughput	
					120.0 M gal	
Annual Thro	oughput		1000		* M gal 💌 *	
Throughput	Туре		Input 💌	*		
Throughput	Comment					
					Save Cancel	

Open Criter	ia Emission Info	rmati	on - Other	Proces	ses ×			
AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Activity			
ES37		P1 462 Petr Gas		462	Petroleum : Bulk Plants and MarineTerminals : Loading - Tank Trucks : Gasoline			
				Ann	ual Throughput			
					1,000.0 M gal			
Pollutant		VOC	- Volatile C	)rganic	Compounds			
Emission Fa	ctor (EF)	9.62	9.6200 * lbs/M gal					
			Controlled E	F value	sted represents EF determined after control)			
Overall Cont	trol Efficiency	0.94	240					
Emission Fa	ctor Comment	Vap 95%	or Collection Effective	n Syster	n 99.2% Effective and Vapor Recovery System is			
Emission Fa	ctor Data Source	AP-	-42		*			
Emissions		554.	11 lbs					
					Click here to <u>delete</u> this Emission.			
					Save Cancel			

Open Toxic	(TAC/ODC) Em	issior	Informatio	on - Oth	ner Processes	×					
AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Activity						
ES37			P1	462	Petroleum : Bulk Plants and MarineTerminals : Loading - Tank Trucks : Gasoline						
				Ann	ual Throughput						
					1,000.0 M gal						
TAC/ODC T	oxic Pollutants / Ozo	one De	pleting Comp	ounds							
TAC Group		2 - E	Benzene								
CAS # (Pollu	utant)	7143	32 - Benzen	е							
Emission Factor (EF) 5.54000e-3 * Ibs/M gal											
	Controlled EF value (mark checkbox if EF listed represents EF determined after control)										
Overall Cont	trol Efficiency										
Emission Fa	ctor Comment	Bez	ene is 1% o	of Total \	VOC Emissions						
Emission Fa	ctor Data Source	Bac	k-calculatio	n	*						
Emissions		5.54	0e+0 lbs								
					Click here to <u>delete</u> this Emission.						
					Save Cancel						

# CASE 3 - OPERATIONS EQUIPPED WITH A VAPOR BALANCE AND DESTRUCTION SYSTEM

Over the year, company RST operates a loading terminal with submerged bottom filling 125,000,000 gallons of gasoline RVP 10 into tanker trucks that have passed the MACT level leak test at the same conditions as Case 2. The vapor vent line is connected to a system of vapor balance and then to an afterburner (thermal oxidizer). The system of vapor balance achieves an overall efficiency of 49%. The oxidizer operates at 99.4% destruction efficiency.

 $L_L = 9.62 \ lb \ VOC/Mgal$  (see Case 2 studies for loading loss factor calculation)

Q = 125,000 Mgal

 $Eff_{VC} = 0.992$  (Vapor Collection Efficiency)

 $Eff_{VB} = 0.49$  (Vapor Balance Efficiency)

 $Eff_{VD} = 0.994$  (Vapor Destruction Efficiency)

Equation 4 yields the VOC emissions as follows:

$$E_3 = 125,000 Mgals * 9.62 \frac{lb VOC}{Mgal} * \left[1 - 0.992 * \left(0.49 + 0.994 - (0.49 * 0.994)\right)\right] = 13,276 lb VOC$$

#### **COMBUSTION EMISSIONS FROM THERMAL OXIDIZER (TO)**

All thermal oxidizers used at bulk loading facilities are required to have a CARB Certification Test. In some cases, NOx, SOx, CO, and PM emission rates are tested and determined in terms of lb of pollutant/Mgal material loaded. South Coast AQMD encourages operator to use the test results in calculating and reporting emissions.

In this example, other contaminants were not tested for the TO. Emissions for other air contaminants are calculated using the best available default factors published in *AER Program Help & Support*. Throughput for the TO is determined using Equation 6 as follows for gasoline RVP 10 with liquid density of 5.6 lb/gallon:

 $TO_{Throughput} = \frac{125,000 * 9.62 * 0.992}{1,000 * 5.6} * (1 - 0.49) = 108.64 Mgal of gasoline$ 

E	Edit Emiss	ion Proce	ss - Othe	er Process	es			×				
A	ER Device ID	Permit Device	A/N	Process ID	Rule #	Activity						
	ES37			P1	462	Petroleum : Bulk Plants and MarineTer Fank Trucks : Gasoline	um : Bulk Plants and MarineTerminals : Loading - rucks : Gasoline					
	AER Devic	e ID	ES37	ES37 AER Device Name								
	NON-PERM	<b>IITTED</b>		Permit [								
	Process ID		P1	Process	Bulk Loading							
	Process Co	omment	Case	3 - Vapor Balance and Destruction System								
	Activity Code * Sector:		or:									
	-	Petr	oleum	▼								
		Indus	try:									
		Bulk	Plants ar	nd MarineTe	erminals		<b>•</b>					
		Opera	ation:									
		Load	ding - Tan	ing - Tank Trucks								
		Proce	ess:									
		Gas	Gasoline									
	Rule #	462		▼ * <u>Ac</u>	ld Rule							
						Save	e Cancel					

Edit Throug	hput Informatio	n - 0	ther Proce	sses	×
AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Activity
ES37			P1	462	Petroleum : Bulk Plants and MarineTerminals : Loading - Tank Trucks : Gasoline
				Ann	iual Throughput
					1,000.0 M gal
Annual Thro	oughput		125000		* M gal 💌 *
Throughput	Туре		Input 💌	*	
Throughput	Comment				
					Save Cancel

Open Criter	ia Emission Info	rmati	on - Other	Proces	sses X				
AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Activity				
ES37		P1 462 Petr Gas		462	Petroleum : Bulk Plants and MarineTerminals : Loading - Tank Trucks : Gasoline				
				Ann	ual Throughput				
				12	25,000.0 M gal				
Pollutant		VOC	- Volatile C	)rganic	Compounds				
Emission Fa	Emission Factor (EF)			9.6200 * lbs/M gal					
			Controlled E	F value	sted represents EF determined after control)				
Overall Cont	trol Efficiency	0.98896							
Emission Fa	ctor Comment	Vap and	or Collectior the Destruc	n is 99.2 tion Eff	2% Effective, Vapor Balance Efficiency is 49.0%, iciciency is 99.4%				
Emission Fa	ctor Data Source	Sou	irce Test		*				
Emissions		13,275.60 lbs							
					Click here to <u>delete</u> this Emission.				
					Save Cancel				

AER Device	Permit Device ID	A/N	Process ID	Rule #	Activity					
ES37			P1	462	Petroleum : Bulk Plants and MarineTerminals : Loading - Tank Trucks : Gasoline					
				Ann	ual Throughput					
				1:	25,000.0 M gal					
TAC/ODC T	oxic Pollutants / Ozo	one De	pleting Comp	ounds						
TAC Group		2 - E	Benzene							
CAS # (Pollu	utant)	7143	32 - Benzen	е						
Emission Fa	ctor (EF)	1.06	1.06200e-3 * lbs/M gal							
			Controlled E	F value	isted represents EF determined after control)					
Overall Cont	trol Efficiency									
Emission Fa	ctor Comment	Bez	ene is 1% o	f Total \	/OC Emissions					
Emission Fa	ctor Data Source	Bac	k-calculatio	n	*					
Emissions		1.32	8e+2 lbs							
					Click here to delete this Emission					
					Save Cancel					

Report natural gas combustion in the thermal oxidizer as below when no test results for combustion pollutants are available:

	Edit Emissio	n Process	- Extern	al Co	mbustion					×
A	ER Device ID	Permit D	evice ID	A/N	Process ID	Rule	#	Equipment		Fuel
	ES39				P1	480	Afterbur	ner 10-100 MMB	TU/HR	Natural Gas
	AER Device II	D	ES39	AEF	R Device Name					
	NON-PERMIT	TED		Per	mit Device ID					
	Process ID		P1	Pro	cess Name		Loading Ra	ack Afterburne	r	
	Process Com	ment								
	Fuel	Natural G	as		*					
	Rule #	480	-	* <u>A</u>	dd Rule					
	Equipment	Afterburn	er 10-100	MME	BTU/HR					-
								Sav	/e	Cancel

Edit Throughput	t Information - Exter	nal Co	mbustion				×
AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Equ	uipment	Fuel
ES39			P1	480	Afterburner 1	IO-100 MMBTU/HR	Natural Gas
Annual Th	roughput		Criteria/To)	cic Through	nput	GHG Thr	oughput
Fuel Usage (Annu Throughput Type Fuel Usage Comm	ual Throughput) nent	4	1.2		* mmscf	¥ *	
						Save	Cancel

Crite	ria Emissions	s (lbs)				
	Pollutant	EF	Unit	EF Data Source	Overall CE	Emissions
<u>Open</u>	VOC	7.00	lbs / mmscf	AQMD default		29.40
<u>Open</u>	NOx	130.00	lbs / mmscf	AQMD default		546.00
<u>Open</u>	SOx	0.60	lbs / mmscf	AQMD default		2.52
<u>Open</u>	CO	35.00	lbs / mmscf	AQMD default		147.00
<u>Open</u>	PM	7.50	lbs / mmscf	AQMD default		31.50

### Toxic (TAC/ODC) Emissions (lbs)

	TAC/ODC Group	CAS #	EF	Unit	EF Data Source	Overall CE	Emissions
<u>Open</u>	Benzene	71432	5.80000e-3	lbs / mmscf	AQMD default		2.436e-2
<u>Open</u>	Formaldehyde	50000	1.23000e-2	lbs / mmscf	AQMD default		5.166e-2
<u>Open</u>	PAHs [PAH, POM]	1151	1.00000e-4	lbs / mmscf	AQMD default		4.200e-4
<u>Open</u>	PAHs [PAH, POM]	91203	3.00000e-4	lbs / mmscf	AQMD default		1.260e-3
<u>Open</u>	Acetaldehyde	75070	3.10000e-3	lbs / mmscf	AQMD default		1.302e-2
<u>Open</u>	Acrolein	107028	2.70000e-3	lbs / mmscf	AQMD default		1.134e-2
<u>Open</u>	Ammonia	7664417	1.80000e+1	lbs / mmscf	AQMD default		7.560e+1
<u>Open</u>	Ethyl benzene	100414	6.90000e-3	lbs / mmscf	AQMD default		2.898e-2
<u>Open</u>	Hexane	110543	4.60000e-3	lbs / mmscf	AQMD default		1.932e-2
<u>Open</u>	Toluene	108883	2.65000e-2	lbs / mmscf	AQMD default		1.113e-1
Open	Xylenes	1330207	1.97000e-2	lbs / mmscf	AQMD default		8.274e-2
Add	New						

Report criteria pollutant and toxic compounds from destruction of VOC as below:

	Permit	Device ID	A/N	Process ID	Rule #	Equipment	Fue
ES37				P2	480	Other process equipment	Gasolin
		ES37		wise Name			
AER Device ID		2007	AER De	evice Name			
NON-PERMITTED	D		Permit [	Device ID			
Process ID		P2	Process	s Name	Loading	Rack Afterburner	
Process Commen	nt	Emissions	from B	urning Gasolii	ne Vapor		
Ga	asoline		*				
ruei loa			* • • • • •				
Rule # 480	J	•	^ Add H	<u>Rule</u>			_
Equipment Oth	her proc	ess equipr	nent			-	
dit Throughput In	nformatio	on - Externa	l Combi	ustion			
	Permit	Device ID	Δ/Ν	Process ID	Rule #	Equipment	Fuel
ES37	I erinit	Device iD		P2	480	Other process equipment	Gasoline
Annual Thro	ughput			Criteria/Toxic Th	roughput	GHG Throug	ghput
108.64 M	l gal			108.64 M g	al	108,640.0	gal
Fuel Usage (Annual	Throughpu	ıt)	108.6	64	* M	gal 💌 *	
Throughput Type			Inpu	t 💌 *			
Fuel Usage Commen	nt						
Fuel Usage Commen	nt						
Fuel Usage Commen	nt					Save	Cancel
Fuel Usage Commen	nt					Save	Cancel
Fuel Usage Commen	nt	ormation - F	xternal	Combustion		Save	Cancel
Fuel Usage Commen	nt ssion Info	ormation - E	External	Combustion	Pule #	Save	Cancel
Fuel Usage Commen	ssion Infe Permit	ormation - E	External A/N	Combustion Process ID P2	<b>Rule</b> # 480	Save Equipment Other process equipment	Cancel Fue Gasoline
Fuel Usage Commen pen Criteria Emis AER Device ID ES37 Annual Thro	ssion Infe Permit	ormation - E Device ID	External	Combustion Process ID P2 Criteria/Toxic Th	Rule # 480 roughput	Save Equipment Other process equipment GHG Throu	Cancel Fue Gasoline ghput
Fuel Usage Commen pen Criteria Emis AER Device ID ES37 Annual Thro 108.64 M	ssion Info Permit ughput I gal	ormation - E Device ID	External	Combustion Process ID P2 Criteria/Toxic Th 108.64 M g	Rule # 480 roughput gal	Save Equipment Other process equipment GHG Throu 108,640.0	Cancel Fue Gasoline ghput ) gal
Fuel Usage Commen pen Criteria Emis AER Device ID ES37 Annual Thro 108.64 M Throughput used to	nt ssion Info Permit ughput i gal calculate e	ormation - E	External A/N 64M gal	Combustion Process ID P2 Criteria/Toxic Th 108.64 M (	Rule # 480 roughput jal	Save Equipment Other process equipment GHG Throu 108,640.0	Cancel Fue Gasoline ghput
Fuel Usage Commen pen Criteria Emis AER Device ID ES37 Annual Throughput used to Pollutant	ssion Infe Permit ughput I gal calculate e	emissions: 108	External A/N .64M gal atile Org	Combustion Process ID P2 Criteria/Toxic Th 108.64 M g anic Compounds	Rule # 480 roughput gal	Save Equipment Other process equipment GHG Throu 108,640.0	Cancel Fue Gasoline ghput ) gal
Fuel Usage Commen	ssion Info Permit ughput i gal calculate e	missions: 108 VOC - Vola	A/N 64M gal atile Org	Combustion Process ID P2 Criteria/Toxic Th 108.64 M g anic Compounds	Rule # 480 roughput gal	Equipment Other process equipment GHG Throu 108,640.0	Cancel Fue Gasoline ghput gal
Fuel Usage Commen pen Criteria Emis AER Device ID ES37 Annual Throughput used to Pollutant Emission Factor (EF) Emission Factor Com	ssion Info Permit ughput i gal calculate e	emissions: 108 VOC - Vola 0.00 Emissions	External A/N .64M gal atile Org	Combustion Process ID P2 Criteria/Toxic Th 108.64 M g anic Compound: * Ibs//k r Included in Pro	Rule # 480 roughput gal s 1 gal cess ID P1	Save Equipment Other process equipment GHG Throu 108,640.0	Cancel Fue Gasoline ghput gal
Fuel Usage Commen pen Criteria Emis AER Device ID ES37 Annual Throu 108.64 M Throughput used to Pollutant Emission Factor (EF) Emission Factor Con	ssion Infe Permit I gal calculate e	emissions: 108 VOC - Vola 0.00 Emissions	A/N 64M gal atile Org Already	Combustion P2 Criteria/Toxic Th 108.64 M g anic Compound * Ibs/M r Included in Pro	Rule # 480 roughput gal	Save Equipment Other process equipment GHG Throu 108,640.0	Cancel Fue Gasoline ghput gal
Fuel Usage Commen pen Criteria Emis AER Device ID ES37 Annual Throughout used to Pollutant Emission Factor (EF) Emission Factor Com	ssion Info Permit Igal calculate e	missions: 108 VOC - Vola 0.00 Emissions	External A/N 64M gal atile Org Already	Combustion Process ID P2 Criteria/Toxic Th 108.64 M ( anic Compounds * Ibs/M r Included in Pro	Rule # 480 roughput jal S 1 gal cess ID P1	Equipment Other process equipment GHG Throu 108,640.0	Cancel Fue Gasoline ghput ) gal
Fuel Usage Commen pen Criteria Emis AER Device ID ES37 Annual Throughput used to Pollutant Emission Factor (EF) Emission Factor Com Emission Factor Data	ssion Infe Permit ughput gal calculate e ) nment a Source	emissions: 108 VOC - Vola 0.00 Emissions Other	External A/N .64M gal atile Org Already	Combustion Process ID P2 Criteria/Toxic Th 108.64 M g anic Compounds * Ibs/M r Included in Pro	Rule # 480 roughput gal	Equipment Other process equipment GHG Throu 108,640.0	Cancel Fue Gasoline ghput ) gal
Fuel Usage Commen pen Criteria Emis AER Device ID ES37 Annual Throughput used to Pollutant Emission Factor Com Emission Factor Data Emissions	ssion Info Permit I gal calculate e ) nment a Source	missions: 108 VOC - Vola 0.00 Emissions Other 0.00 lbs	A/N 64M gal atile Org Already	Combustion Process ID P2 Criteria/Toxic Th 108.64 M g anic Compound * Ibs/M r Included in Pro	Rule # 480 roughput gal	Equipment Other process equipment GHG Throu 108,640.0	Cancel Fue Gasoline ghput ) gal

AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Equipment	Fue
ES37			P2	480	Other process equipment	Gasolin
Annual Throug	hput		Criteria/Toxic Th	roughput	GHG Throug	Jhput
108.64 M ga	al		108.64 M (	gal	108,640.0	gal
Throughput used to cal	culate emissions: 108	.64M gal				
Pollutant	NOx - Nitro	ogen Oxi	des			
Emission Factor (EF)	22.87		* lbs/N	1 gal		
		AIM				
Emission Factor Comm	ent				A	
Emission Factor Data S	ource Source Te	est				▼ *
Emissions	2,484.60	)S				

AER Device ID Pe	rmit Device ID	A/N	Process ID	Rule #	Equipment	Fue		
ES37			P2	480	Other process equipment	Gasoline		
Annual Throughp	ıt		Criteria/Toxic Th	roughput	GHG Throug	Ihput		
108.64 M gal			108.64 M g	jal	108,640.0	gal		
Throughput used to calcul	ate emissions: 108.	64M gal						
Pollutant	SOx - Sulf	ur Oxides	5					
Emission Factor (EF)	0.13		* Ibs/N	l gal				
Emission Factor Comment	SOx Propo	SOx Proporational to Sulfur Content						
					-			
Emission Factor Data Soui	ce Manufactu	irer Spe	cification			*		
Emissions	14.12 lbs							
Emissions	14.12 lbs							

Open Criteria Em	ission Info	rmation -	External	Combustion				×
AER Device ID	Permit	Device ID	A/N	Process ID	Rule #		Equipment	Fuel
ES37				P2	480	Other	process equipment	Gasoline
Annual Thre	oughput			Criteria/Toxic Th	roughput		GHG Throug	hput
108.64 N	∕l gal			108.64 M g	jal		108,640.0 (	gal
Throughput used to	calculate e	missions: 108	8.64M gal					
Pollutant		CO - Carl	bon Mond	oxide				
Emission Factor (Ef	=)	2.53		* lbs/N	l gal			-
Emission Factor Co	mment						×	1
Emission Factor Da	ta Source	Source T	est					*
Emissions		274.86 lbs	S					
							Save	Cancel

AER Device ID Perm	it Device ID	A/N	Process ID	Rule #	Equipment	Fue
ES37			P2	480	Other process equipment	Gasoline
Annual Throughput			Criteria/Toxic Th	roughput	GHG Throug	ghput
108.64 M gal			108.64 M g	gal	108,640.0	gal
Throughput used to calculate	emissions: 108.	64M gal				
Pollutant	PM - Partic	ulate Ma	atter			
Emission Factor (EF)	1.14		* lbs/N	1 gal		
Emission Factor Comment	Assumed the (diesel), us	he avera	age point betwee endix A default	en light fuel (p factors from	ropane) and heavy fuel AP-42)	•
Emission Factor Data Source	Other					*
Emission Factor Data Source Emissions	Other 123.85 lbs					*