

**F04 - FLARE, LANDFILL GAS FIRED, ENCLOSED**

**CALCULATION METHODS**

$E_a = U_a \times EF \text{ (lbs/mmft}^3\text{)}$

$E_h = U_h \text{ (scfm)} \times (60/1000000) \times EF \text{ (lbs/mmft}^3\text{)}$

**NOTES:**

- Control efficiencies must be included in emission factors since the calculation procedure will not refer to this data.
- No particulate speciation table exists for landfill gas combustion. The HCl factor was estimated using the chlorine content of raw gas (AP-42).
- Emission factors for NOx and CO are based District testing of enclosed landfill gas fired flares (1994).
- The TOG factor is based on an average 40% methane content in the raw gas and an assumed 99.9% DRE.
- The ROG factor is based on the EPA AP-42 assumption of 595 ppmv NMHC as hexane in the raw gas and a 98% DRE.
- Individual pollutant factors are estimated using AP-42 raw gas speciation (9/97) and an assumed 98% destruction efficiency.

POLLUTANT	District Emission Factor	EPA REFERENCE	EPA	(UNITS)	COMMENTS
	(lbs/million ft3 fuel burned)	DOCUMENT	FACTOR		
NOX	40.00				Based on District flare testing data; NOx = 0.08 lbs/mmBTU.
CO	1.50				Based on District flare testing data; CO = 0.003 lbs/mmBTU.
SOX	7.34				Based on AP-42 raw gas sulfur content and a 98% conversion to SOx.
TOG	16.66				Assumes 40% methane and 99.9% DRE.
ROG	2.66	AP-42 Section 2.4, 9/97, Table 2.4-1			Assumes 595 ppmv as hexane and a 98% DRE.
TSP	10.00				Based on District flare testing data; TSP = 0.020 lbs/mmBTU.
PM10	10.00		100.00%	lbs/lb TSP	Assumes PM10 = TSP.
ACETONE	0.0212	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
ACRYLONITRILE	0.0174	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
BENZENE	0.0078	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
1,3-BUTADIENE					
CARBON DISULFIDE	0.0023	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
CARBONYL SULFIDE	0.0015	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
CHLOROBENZENE	0.0015	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
CHLOROFORM	0.0002	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
CHLOROFUOROCARBONS	0.0074	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
DIMETHYL SULFIDE	0.0252	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
ETHYL BENZENE	0.0254	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
ETHYLENE DIBROMIDE					
ETHYLENE DICHLORIDE	0.0021	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
FORMALDEHYDE	0.1350	EPA VOC Speciation Profile # 1001 1/90	0.81%	lbs/lb TOC	
HEXANE	0.0294	AP-42, Sect.2.4, 9/97, Table 2.4-1			

HYDROGEN CHLORIDE	7.4300	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
HYDROGEN SULFIDE	0.0628	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
ISOPROPANOL					
METHANOL					
METHYLENE CHLORIDE	0.0631	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
METHYL ISOBUTYL KETONE	0.0097	AP-42, Sect.2.4, 9/97, Table 2.4-1			
METHYL ETHYL KETONE	0.0266	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
PERCHLOROETHYLENE	0.0321	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
PROPYLENE					
TOLUENE	0.1881	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
1,1,1-TRICHLOROETHANE	0.0033	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
TRICHLOROETHYLENE	0.0192	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
VINYL CHLORIDE	0.0238	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.
VINYLDENE CHLORIDE	0.0010	AP-42, Sect.2.4, 9/97, Table 2.4-1			
XYLENES	0.0667	AP-42, Sect.2.4, 9/97, Table 2.4-1			Based on AP-42 raw landfill gas content with a 98% DRE.

Last Updated on 8/23/99  
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