

**F02 - FLARES, DIGESTER GAS FIRED, ENCLOSED**

|                            |  |
|----------------------------|--|
| <b>CALCULATION METHODS</b> | <b>Annual Emissions:</b> $E_a = U_a \times EF$ (lbs/mmft <sup>3</sup> )                  |
|                            | <b>Hourly Emissions:</b> $E_h = U_h$ (scfm) x (60/1000000) x EF (lbs/mmft <sup>3</sup> ) |

**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 on District flare testing., The TOG factor is based on an average CH4 content of 60.5% and a DRE of 99.9%.
- ☐ The ROG factor is based on the speciation table which assumes the TOG content in the exhaust gas is composed of 52% CH4.
- ☐ Individual pollutant factors are estimated using the Pt Loma raw gas speciation (1996) and an assumed 98% destruction efficiency.

| <b>POLLUTANT</b>     | <b>DISTRICT EMISSION FACTORS (lbs/ million ft<sup>3</sup> fuel burned)</b> | <b>EPA REFERENCE DOCUMENT</b>          | <b>EPA-FACTOR</b> | <b>(UNITS)</b> | <b>COMMENTS</b>  |
|----------------------|--|--|-------------------|----------------|--|
| NOX                  | 48.00  |  |                   |                | Based on District flare testing data; NOx = 0.08 lbs/mmBTU.          |
| CO                   | 1.80   |  |                   |                | Based on District flare testing data; CO = 0.003 lbs/mmBTU.          |
| SOX                  | 2.00   |  |                   |                | Based on Pt Loma raw gas sulfur content and a 98% conversion to SOx. |
| TOG                  | 25.21  |  |                   |                | Assumes 60.5% methane and 99.9% DRE.                                 |
| ROG                  | 12.10  | EPA VOC Speciation Profile # 0003 1/90 | 48.00%            | lbs/lb TOC     | No ROG data in AP-42 for this equipment / fuel.                      |
| TSP                  | 12.00  |  |                   |                | Based on District flare testing data; TSP = 0.020 lbs/mmBTU.         |
| PM10                 | 12.00  |  |                   |                | Assumes PM10 = TSP   |
| ACETONE              | 0.0007   |  |                   |                | Based on Pt Loma raw gas content with a 98% DRE.                     |
| AMMONIA              | 0.0048   |  |                   |                | Based on Pt Loma raw gas content with a 98% DRE.                     |
| ARSENIC              |  | District's Approved Emission Factors   |                   | lb/MMscf       | Landfills Operations, Sec 3.3.1                                      |
| BENZENE              | 0.0277   | EPA VOC Speciation Profile # 1001 1/90 | 0.11%             | lbs/lb TOC     |  |
| 1,3-BUTADIENE        |  |  |                   |                |  |
| CARBON TETRACHLORIDE |  |  |                   |                |  |
| CHLORINE             |  |  |                   |                |  |
| CHLOROBENZENE        | 0.0002   |  |                   |                | Based on Pt Loma raw gas content with a 98% DRE.                     |

| POLLUTANT                             | DISTRICT EMISSION FACTORS (lbs/ million ft <sup>3</sup> fuel burned) | EPA REFERENCE DOCUMENT                  | EPA-FACTOR | (UNITS)    | COMMENTS  |
|---------------------------------------|--|---|------------|------------|---|
| CHLOROFORM                            |  |   |            |            |   |
| CHLOROFLUORO- CARBONS                 |  |   |            |            |   |
| DICHLOROBENZENE                       | 0.0018   |   |            |            | Based on Pt Loma raw gas content with a 98% DRE.  |
| ETHYL BENZENE                         | 0.0010   |   |            |            | Based on Pt Loma raw gas content with a 98% DRE.  |
| ETHYLENE DIBROMIDE                    |  |   |            |            |   |
| ETHYLENE DICHLORIDE                   | 0.0014   |   |            |            | Based on Pt Loma raw gas content with a 98% DRE.  |
| FORMALDEHYDE                          | 0.135*   | EPA VOC Speciation Profile # 1001 1/90. | 0.81%      | lbs/lb TOC | * When available, District's Approved Emission Factors will be used, Ref: Landfills Operations, Sec 3.3.2 |
| HEXANE                                | 0.0101   | EPA VOC Speciation Profile # 1001 1/90  | 0.04%      | lbs/lb TOC |   |
| HYDROGEN CHLORIDE                     | 0.6455   |   |            |            | Based on Pt Loma raw gas content with a 98% DRE.  |
| HYDROGEN SULFIDE                      | 0.0215   |   |            |            | Based on Pt Loma raw gas content with a 98% DRE.  |
| ISOPROPANOL                           |  |   |            |            |   |
| METHANOL                              |  |   |            |            |   |
| METHYLENE CHLORIDE                    | 0.0001   |   |            |            | Based on Pt Loma raw gas content with a 98% DRE.  |
| METHYL ISOBUTYL KETONE                |  |   |            |            |   |
| METHYL ETHYL KETONE                   | 0.0001   |   |            |            | Based on Pt Loma raw gas content with a 98% DRE.  |
| PERCHLOROETHYLENE                     | 0.0005   |   |            |            | Based on Pt Loma raw gas content with a 98% DRE.  |
| PROPYLENE                             |  |   |            |            |   |
| TOLUENE                               | 0.0101   | EPA VOC Speciation Profile # 1001 1/90  | 0.04%      | lbs/lb TOC |   |
| 1,1,1-TRICHLOROETHANE                 | 0.0001   |   |            |            | Based on Pt Loma raw gas content with a 98% DRE.  |
| TRICHLOROETHYLENE                     | 0.0003   |   |            |            | Based on Pt Loma raw gas content with a 98% DRE.  |
| VINYL CHLORIDE                        |  |   |            |            |   |
| VINYLDENE CHLORIDE                    |  |   |            |            |   |
| 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.   |
| Average landfill gas BTU content (Cp) |  |   |            |            | 450 - 550 BTU/ft3   |
| Average destruction efficiency (e)    |  |   |            |            | 98% (ROG)   |
| Average destruction efficiency (e)    |  |   |            |            | 99.98% (TOG)  |