

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

**CALCULATION METHODS**

$E_a = U_a \times EF$  (lbs/mmft<sup>3</sup>)

$E_h = U_h$  (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 digester gas combustion. The HCl factor has been estimated using chlorine content of raw gas.
- 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.

| POLLUTANT            | District Emission Factor                  | EPA REFERENCE                          | EPA    | (UNITS)    | COMMENTS   |
|----------------------|---|--|--------|------------|--|
|                      | (lbs/million ft <sup>3</sup> fuel burned) | DOCUMENT                               | FACTOR |            |  |
| 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.                     |
| 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.                     |
| CHLOROFORM           |   |  |        |            |  |
| CHLOROFLUOROCARBONS  |   |  |        |            |  |
| 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         | 0.2042                                    | EPA VOC Speciation Profile # 1001 1/90 | 0.81%  | lbs/lb TOC |  |
| 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 #<br>1001 1/90 | 0.04% | lbs/lb<br>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                | 0.0045 |   |       |               | Based on Pt Loma raw gas content with a 98% DRE. |

Last Updated on 8/23/99  
By A. dela Cruz