**Section 215.438 Standards for Control Devices**

Control devices used to comply with Section 215.437(c) shall comply with following:

a) If the control device is a vapor recovery system (for example, condensers and adsorbers) it shall be designed and operated to recover the volatile organic material emissions vented to it with an efficiency of 95 percent or greater.

b) If the control device is an enclosed combustion device, it shall be designed and operated to reduce the volatile organic material emissions vented to it with an efficiency of 95 percent or greater, or to provide a minimum residence time of 0.75 seconds at a minimum temperature of 816° C.

c) If the control device is a flare, it shall:

1) Be designed for and operated with no visible emissions as determined by USEPA Reference Method 22, 40 CFR 60, Appendix A, 1986, incorporated by reference in Section 215.105, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

2) Be operated with a pilot flame present at all times and shall be monitored with a thermocouple or any other equivalent device to detect the presence of the pilot flame.

3) Be steam-assisted, air assisted, or nonassisted.

4) Be used only with the net heating value of the gas being combusted being 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted being 7.45 MJ/scm or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be calculated using the following equation:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Hr | = | K | n | Ci Hi |
| Σ |
| i=1 |

|  |
| --- |
| Where: |
| Hr | = | Net heating value of the sample in MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25° C and 760 mm Hg, but the standard temperature for determining the value corresponding to one mole is 20° C. |

|  |  |  |
| --- | --- | --- |
| K | = | Constant, |

|  |  |  |  |
| --- | --- | --- | --- |
| 1.740 | x | 10-7 | (1/ppm) (gmole/scm) (MJ/Kcal) |

|  |
| --- |
| where |
| standard temperature for (gmole/scm) is 20° C. |
| Ci | = | Concentration of sample component i, in ppm, as measured by USEPA Reference Method 18, 40 CFR 60, Appendix A (1986), and ASTM D 2504-83, both incorporated by reference in Section 215.105. |
| Hi | = | Net heat of combustion of sample component i, kcal/gmole. The heats of combustion may be determined using ASTM D 2382-83, incorporated by reference in Section 215.105, if published values are not available or cannot be calculated. |

5) Steam-assisted and nonassisted flares shall be designed and operated with an exit velocity, as determined by dividing the volumetric flowrate (in units of standard temperature and pressure), as determined by USEPA Reference Method 2 or 2A, 40 CFR 60, Appendix A (1986) incorporated by reference in Section 215.105, as appropriate; by the unobstructed (free) cross sectional area of the flare tip, less than 18 m/sec (60 ft/sec.).

6) Air-assisted flares shall be designed and operated with an exit velocity less than the maximum permitted velocity, Vmax, as determined by the following equation:

|  |  |  |
| --- | --- | --- |
| Vmax | = | Maximum permitted velocity, m/sec. |
| 8.706 | = | Constant. |
| 0.7084 | = | Constant. |
| Hr | = | The net heating value as determined in subsection (c)(4) of this section. |

d) If the control device is a closed container, it shall be designed and operated to reduce the volatile organic material emissions, vented from purged process fluid after transfer, to no detectable volatile organic material emissions as determined by USEPA Reference Method 21 as specified at 40 CFR 60, Appendix A (1986), incorporated by reference in Section 215.105. For purposes of this Section, the phrase "after transfer" shall refer to the time at which the entire amount of purged process fluid resulting from a flushing or cleaning of the sample line enters the closed container or containers including the final container(s) prior to disposal.

e) The owner or operator of a control device shall monitor the control device to ensure that it is operated and maintained in conformance with the manufacturer's specifications, modified to the particular process design.

f) The control device shall be operated at all times when emissions may be vented to it.

(Source: Former Section 215.438 renumbered to Section 215.439, new Section 215.438 adopted at 13 Ill. Reg. 10893, effective June 27, 1989)