§ 1065.115 Exhaust gas sampling system; compression-ignition engines.

Use one of the following systems and procedures to measure emissions from compression-ignition engines:

(a) Full-flow dilution sampling as specified in 40 CFR 86.1310.

(b) Raw-gas sampling during steady-state tests as specified in 40 CFR 89.412 through 89.418.

(c) Partial-flow sampling for measuring gaseous emission constituents during steady-state tests as specified in 40 CFR 89.112(c).

[69 FR 39260, June 29, 2004]

EFFECTIVE DATE NOTE: At 69 FR 39260, June 29, 2004, text is added to §1065.115, effective Aug. 30, 2004.

§ 1065.120 Raw sampling. [Reserved]

§ 1065.125 Analyzers (overview/general response characteristics).

(a) *General.* The following sections and subparts describe the specifications for analyzers and analytical equipment:

(1) The analyzers for measuring hydrocarbon, NO_X, CO, and CO_2 emission concentrations are specified in §1065.130 through §1065.140.

(2) The analytical equipment for measuring particulate emissions is specified in Subpart H of this part.

(3) The analytical equipment for measuring emissions of oxygenated compounds (for example, methanol) is specified in Subpart I of this part.

(4) The analytical equipment for measuring in-use emissions is specified in Subpart J of this part.

(b) *Response time.* Analyzers must have the following response characteristics:

(1) For steady-state testing and transient testing with bag sample analysis, the analyzer must reach at least 90 percent of its final response within 5.0 seconds after any step change to the input concentration at or above 80 percent of full scale.

(2) For transient testing with continuous measurement, the analyzer must reach at least 90 percent of its final response within 1.0 second after any step change to the input concentration at or above 80 percent of full scale.

(c) *Precision and noise.* Analyzers must meet the following characteristics for precision and noise:

(1) Precision must be no worse than ±1 percent of full-scale concentration for each range used above 155 ppm (or ppmC), or ±2 percent for each range used below 155 ppm (or ppmC). For this paragraph (c)(1), we define precision as 2.5 times the standard deviation of 10 repetitive responses to a given calibration or span gas.

(2) Peak-to-peak response to zero and calibration or span gases over any 10-second period must be no more than 2 percent of full-scale chart deflection on all ranges used.

(d) *Drift.* Analyzers must meet specifications for zero-response and span drift.

(1) The zero-response drift during one hour must be less than 2 percent of full-scale chart deflection on the lowest range used. Zero-response is the mean response, including noise, to a zero-gas during a 30-second interval.

(2) The span drift during one hour must be less than 2 percent of full-scale chart deflection on the lowest range used. Span is the difference between the span-response and the zero-response. Span-response is the mean response, including noise, to a span gas during a 30-second interval.

(e) *Calibration.* See subpart D of this part for specifications to calibrate analyzers.

§ 1065.130 Hydrocarbon analyzers.

This section describes the requirements for flame ionization detectors (FIDs) used to measure hydrocarbons.

(a) Fuel the FID with a mixture of hydrogen in helium and calibrate it using propane.

(b) If you use a heated FID (required only for diesels and two-stroke, spark-ignition engines), keep the temperature 191 ±11° C).

(c) Use an overflow sampling system for heated continuous FIDs. (In an overflow system excess zero gas or span gas spills out of the probe when you are doing zero or span checks.)

(d) Do not premix the FID fuel and burner air.

(e) Make sure the FID meets accuracy and precision specifications in