

§ 1065.601

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greater than 105% of reference torque, but both are not greater than these values.

Subpart G—Data Analysis and Calculations

§ 1065.601 Overview.

This subpart describes how to use the responses on the analyzers and other meters to calculate final gram per kilowatt-hour emission rates.

NOTE: Volume and density values used in these calculations are generally corrected to standard conditions of 20°C and 101.3 kPa.)

§ 1065.605 Required records.

Retain the following information for each test:

- (a) Test number.
(b) System or device tested (brief description).
(c) Date and time of day for each part of the test schedule.
(d) Test results.
(e) Operator's name.
(f) Engine: ID number, manufacturer, model year, emission standards, engine family, basic engine description, fuel system, engine code, and idle speed, as applicable.
(g) Dynamometer: Dynamometer identification, records to verify compliance with the duty cycle requirements of the test.
(h) Gas analyzers: Analyzer bench identification, analyzer ranges, recordings of analyzer output during zero, span, and sample readings.
(i) Recorder charts: Test number, date, identification, operator's name, and identification of the measurements recorded.
(j) Test cell barometric pressure, ambient temperature, and humidity as required.
(k) Temperatures: Records to verify compliance with the ambient temperature requirements throughout the test procedure.
(l) CFV-CVS: Total dilute exhaust volume (Vmix) for each phase of the exhaust test.
(m) PDP-CVS: Test measurements for calculating the total dilute exhaust

volume (Vmix), and the Vmix for each phase of the exhaust test.

(n) The humidity of the dilution air.

NOTE: If you do not use conditioning columns, this measurement is not necessary. If you use conditioning columns and take the dilution air from the test cell, you may use the ambient humidity for this measurement.

§ 1065.610 Bag sample analysis.

- (a) Zero the analyzers and obtain a stable zero reading. Recheck after tests.
(b) Introduce span gases and set instrument gains. To avoid errors, span and calibrate at the same flow rates used to analyze the test sample. Span gases should have concentrations equal to 75 to 100 percent of full scale. If gain has shifted significantly on the analyzers, check the calibrations. Show actual concentrations on the chart.
(c) Check zeroes; if necessary, repeat the procedure in paragraphs (a) and (b) of this section.
(d) Check flow rates and pressures.
(e) Measure HC, CO, CO2, and NOx concentrations of samples.
(f) Check zero and span points. If the difference is greater than 2 percent of full scale, repeat the procedure in paragraphs (a) through (e) of this section.

§ 1065.615 Bag sample calculations.

(a) Calculate the dilution factor. The dilution factor is the ratio of the total volume of the raw exhaust to the total volume of the diluted exhaust. It is calculated as 134,000 divided by the sum of the diluted ppmC concentrations of carbon-containing compounds in the exhaust, as follows:

DF = 134,000 / (CO\_2sample + THC\_sample + CO\_sample),

Where:

CO\_2sample and CO\_sample are expressed as ppm, and THC\_sample is expressed as ppmC.

(b) Calculate mass emission rates (g/test) for the transient segment using the general equation in paragraph (b)(1) of this section:

(1) The general equation is:

Emission rate = (total dilute exhaust flow volume)(ppm)(density factor)/10^6

M\_x = (V\_mix)(C\_i)(f\_di)/10^6

Where:

M\_x = Mass emission rate in g/test segment.