
40 C.F.R. § 1065.341

CVS and PFD flow verification (propane check).

This section describes two optional methods, using propane as a tracer gas, to verify CVS and PFD flow streams. You may use good engineering judgment and safe practices to use other tracer gases, such as CO₂ or CO. The first method, described in paragraphs (a) through (e) of this section, applies for the CVS diluted exhaust flow measurement system. The first method may also apply for other single-flow measurement systems as described in Table 2 of § 1065.307. Paragraph (g) of this section describes a second method you may use to verify flow measurements in a PFD for determining the PFD dilution ratio.

- (a) A propane check uses either a reference mass or a reference flow rate of C₃H₈ as a tracer gas in a CVS. Note that if you use a reference flow rate, account for any non-ideal gas behavior of C₃H₈ in the reference flow meter. Refer to §§ 1065.640 and 1065.642, which describe how to calibrate and use certain flow meters. Do not use any ideal gas assumptions in §§ 1065.640 and 1065.642. The propane check compares the calculated mass of injected C₃H₈ using HC measurements and CVS flow rate measurements with the reference value.
- (b) Prepare for the propane check as follows:
- (1) If you use a reference mass of C₃H₈ instead of a reference flow rate, obtain a cylinder charged with C₃H₈. Determine the reference cylinder's mass of C₃H₈ within ±0.5% of the amount of C₃H₈ that you expect to use. You may substitute a C₃H₈ analytical gas mixture (i.e., a prediluted tracer gas) for pure C₃H₈. This would be most appropriate for lower flow rates. The analytical gas mixture must meet the specifications in § 1065.750(a)(3).
 - (2) Select appropriate flow rates for the CVS and C₃H₈.
 - (3) Select a C₃H₈ injection port in the CVS. Select the port location to be as close as practical to the location where you introduce engine exhaust into the CVS, or at some point in the laboratory exhaust tubing upstream of this location. Connect the C₃H₈ cylinder to the injection system.

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