§ 1065.245 Sample flow meter for batch sampling.

(a) Application. Use a sample flow meter to determine sample flow rates or total flow sampled into a batch sampling system over a test interval. You may use the difference between a diluted exhaust sample flow meter and a dilution air meter to calculate raw exhaust flow rates or total raw exhaust flow over a test interval.

(b) Component requirements. We recommend that you use a sample flow meter that meets the specifications in Table 1 of §1065.205. This may involve a laminar flow element, an ultrasonic flow meter, a subsonic venturi, a critical-flow venturi or multiple critical-flow venturis arranged in parallel, a positive-displacement meter, a thermal-mass meter, an averaging Pitot tube, or a hot-wire anemometer.

(c) Flow conditioning. For any type of diluted exhaust flow meter, condition the flow as needed to prevent wakes, eddies, circulating flows, or flow pulsations from affecting the accuracy or repeatability of the meter. For some meters, you may accomplish this by using a sufficient length of straight tubing (such as a length equal to at least 10 pipe diameters) or by using specially designed tubing bends, orifice plates or straightening fins to establish a predictable velocity profile upstream of the meter.

(d) Exhaust cooling. You may cool diluted exhaust upstream of a dilute-exhaust flow meter, as long as you observe all the following provisions:
   (1) Do not sample PM downstream of the cooling.
   (2) If cooling causes exhaust temperatures above 202 °C to decrease to below 180 °C, do not sample NMHC downstream of the cooling for compression-ignition engines, 2-stroke spark-ignition engines, and 4-stroke spark-ignition engines below 19 kW.
   (3) If cooling causes aqueous condensation, do not sample NOX downstream of the cooling unless the cooler meets the performance verification in §1065.376.
   (4) If cooling causes aqueous condensation before the flow reaches a flow meter, measure dewpoint, \( T_{dew} \) and pressure, \( P_{total} \) at the flow meter inlet. Use these values in emission calculations according to §1065.650.

[70 FR 40516, July 13, 2005, as amended at 75 FR 23035, Apr. 30, 2010]

§ 1065.248 Gas divider.

(a) Application. You may use a gas divider to blend calibration gases.

(b) Component requirements. Use a gas divider that blends gases to the specifications of §1065.750 and to the flow-weighted concentrations expected during testing. You may use critical-flow gas dividers, capillary-tube gas dividers, or thermal-mass-meter gas dividers. Note that your overall gas-divider system must meet the linearity verification in §1065.307.