Environmental Protection Agency

§ 1065.270  Chemicals in exhaust gases

(a) Application. You may use a methane cutter for raw or diluted exhaust for batch or continuous sampling.

(b) System performance. Determine methane-cutter performance as described in § 1065.263 and use the results to calculate CH₄ or NMHC emissions in § 1065.660.

(c) Configuration. Configure the methane cutter with a bypass line if it is needed for the verification described in § 1065.365.

(d) Optimization. You may optimize a methane cutter to maximize the penetration of CH₄ and the oxidation of all other hydrocarbons. You may humidify a sample and you may dilute a sample with purified air or oxygen (O₂) upstream of the methane cutter to optimize its performance. You must account for any sample humidification and dilution in emission calculations.


§ 1065.267  Gas chromatograph with a flame ionization detector.

(a) Application. You may use a gas chromatograph with a flame ionization detector (GC–FID) to measure CH₄ concentrations of diluted exhaust for batch sampling. While you may also use a methane cutter to measure CH₄, as described in § 1065.265, use a reference procedure based on a gas chromatograph for comparison with any proposed alternate measurement procedure under § 1065.10.

(b) Component requirements. We recommend that you use a GC–FID that meets the specifications in Table 1 of § 1065.205. Note that your GC–FID-based system must meet the quench verification in § 1065.370 and it must also meet the linearity verification in § 1065.307. You may use a heated or unheated GC–FID, and you may use a GC–FID that operates at atmospheric pressure or under a vacuum. You may use a GC–FID that has compensation algorithms that are functions of other gaseous measurements and the engine’s known or assumed fuel properties. The target value for any compensation algorithm is 0% (that is, no bias high and no bias low), regardless of the uncompensated signal’s bias.

(c) NO₂-to-NO converter. Place upstream of the GC–FID an internal or external NO₂-to-NO converter that meets the verification in § 1065.378. Configure the converter with a bypass line if it is needed to facilitate this verification.

(d) Humidity effects. You must maintain all GC–FID temperatures to prevent aqueous condensation. If you remove humidity from a sample upstream of a GC–FID, use one of the following configurations:

(1) Connect a GC–FID downstream of any dryer or chiller that is downstream of an NO₂-to-NO converter that meets the verification in § 1065.378.

(2) Connect a GC–FID downstream of any dryer or thermal chiller that meets the verification in § 1065.376.

(e) Response time. You may use a heated GC–FID to improve GC–FID response time.