
EMISSION MEASUREMENT TECHNICAL INFORMATION DOCUMENT
INFORMATION DOCUMENT

EVACUATED CYLINDER PROCEDURE

INTRODUCTION

This procedure is to be used when gas cylinders are used in lieu of Tedlar bags in Method 10B.

PROCEDURE

1. **Sample Cylinder Leak Check.** Evacuate the cylinder to 10 mm Hg absolute pressure or less. Isolate the cylinder from the pump and allow the tank to sit for 10 min. The cylinder is acceptable if no change in vacuum is noted.
2. **Cylinder and Sample Lines Purge.** Purge the cylinder 3 times before taking a sample. Evacuate the cylinder to 10 mm Hg absolute pressure or less. Disconnect the cylinder from the pump. Sample with nitrogen or clean air until equilibrium is reached. If ambient air is used for the purge, pull the air through a cartridge of Hopcalite to convert any background CO to CO₂. Repeat. Purge the sample lines with sample before taking a cylinder sample. The purge may be performed by attaching a T-valve (purge valve) and a sample pump to the sample line (similar to Method 25, Section 4.1.5 and Figure 25-1).
3. **Sampling.** Evacuate the tank to about 10 mm Hg absolute pressure or less and record the manometer reading. Sample until equilibrium is reached and record the manometer reading. Pressurize the sample to about 770 mm Hg absolute pressure with nitrogen and record the final manometer read.
4. **Calculation.**

$$C_{CO \text{ stack}} = C_{CO \text{ NDIR}} [P_F / (P_f - P_i)]$$

Where:

- $C_{CO \text{ stack}}$ = Concentration of CO in stack, ppm by volume (dry basis).
- $C_{CO \text{ NDIR}}$ = Concentration of CO measured by NDIR analyzer, ppm by volume (dry basis).
- P_F = Absolute pressure of the cylinder after it was pressurized
- P_f = Absolute pressure of cylinder immediately after the sample taken.
- P_i = Absolute pressure of the cylinder immediately after evacuation.