

SUMMARY SHEET 25A
Total Gaseous Nonmethane Organic Emissions as Carbon

Method (circle) 25A 25B

Run #1 Run #2 Run #3 Avg)

Client/Plant Name FDS 25A
 Job No. FDS 25A
 Sampling Location FDS 25A
 Run ID # FDS 25A

Test Date FDS 25A
 Run Start Time FDS 25A
 Run Finish Time FDS 25A

Calibration Gas FDS 25A
 Carbon Equivalent Correction Factor K SS 25A
 K = 2 for ethane
 K = 3 for propane
 K = 4 for butane
 K = appropriate response factor for
 other organic calibration gases

Measured Organic Concentration, ppm C_{meas} FDS 25A
 Organic Concentration, ppm C C_c SS 25A

$$C_c = K C_{meas}$$

FIELD PROCEDURE 25A
Total Gaseous Organics
(Flame Ionization Analyzer)

Note: This procedure also applies to the determination of total gaseous organics by non-dispersive infrared analyzers (Method 25B).

The forms in this section contain the information required by the test method; we are aware that some of the technology specified in the test method is obsolete. In these cases, the user should modify the forms to make them consistent with the technology used.

A. Preparations

1. Obtain Protocol 1 calibration gases and manufacturer's recommended shelf life (time in which certified value changes by $\pm 2\%$). For non-Protocol 1 gases, such as those obtained from dilution systems, obtain prior approval from the EPA Administrator.
2. Use the following calibration gases (propane standards in air). The span value is normally specified in the applicable regulation. If no span value is provided, use a span value equivalent to 1.5 to 2.5 times the expected concentration. For convenience, the span value should correspond to 100% of the recorder scale.
 - a. Zero Air. <0.1 ppm propane or $<0.1\%$ of span value, whichever is greater.
 - b. Low-Level. 25 to 35% of span value.
 - c. Mid-Level. 45 to 55% of span value.
 - d. High-Level. 80 to 90% of span value.
3. Prepare and calibrate the measurement system following the manufacturer's written instructions.

B. Calibration Error

Conduct this test immediately before (within 2 hr) the test series.

1. Introduce zero gas and high-level calibration gas at the calibration valve assembly (see Figure F25A-1). Adjust the analyzer output to the appropriate levels, if necessary.
2. Determine the predicted response for the low- and mid-level gases based on a linear response line between the zero and high-level responses.
3. Then introduce low-level and mid-level calibration gases successively to the analyzer. Determine the differences between the measured system responses and the predicted responses (must be $< \pm 5\%$ of the respective calibration gas value). If multiple electronic ranges are used, check each additional range with a mid-level calibration gas to verify the multiplication factor.
4. Do not make any adjustments to the

measurement system until a drift check is made (section E). If adjustments are necessary before the completion of the test series, perform the drift checks first, then make required adjustments and repeat the calibration.

C. Response Time Test

Conduct this test in triplicate and average the results.

1. Introduce zero gas into the measurement system at the calibration valve assembly. When the system output has stabilized, switch quickly to the high-level calibration gas.
2. Determine the time from the concentration change to the measurement system response equivalent to 95% of the step change.

D. Sampling

1. Select sampling site according to the applicable regulation or purpose of the test; i.e., exhaust stack, inlet line, etc. Locate the sample port ≥ 1.5 meters or 2 equivalent diameters upstream of the gas discharge.
2. Centrally locate the sample probe in the stack, pipe, or duct and seal port opening.
3. Measure the organic concentrations. Record information in FDS 25A and other necessary information. Note on the recording chart periods of process interruption or cyclic operation.

E. Drift Determination

Conduct this determination immediately following the completion of the test period and hourly during the test period or before any system adjustments are made. Make no adjustments to the measurement system until after both the zero and calibration drift checks are made.

1. Introduce the zero and mid-level calibration gases, one at a time, to the measurement system at the calibration valve assembly.

2. Determine the amount of drift (must be $<3\%$ of span value) for zero and mid-level gases.
3. If drift is $\geq 3\%$, invalidate the test results preceding the check and repeat the test following corrections to the measurement system. Alternatively, recalibrate the test measurement system as in step B, and report the results using both sets (before and after the test period) of calibration data.

F. Alternatives

1. Calibration Gases. Non-propane standards may be used, provided that appropriate corrections are made for response factors.
2. FIA Modifications. For high concentrations of organics ($> 1.0\%$ as propane) modifications to most commonly available FIA's are necessary, such as using a smaller diameter sample capillary to decrease the size of the sample to the FIA.

G. Notes

A 40% H₂/60% He or 40% H₂/60% N₂ fuel gas mixture is recommended to avoid an O₂ synergism effect that reportedly occurs when O₂ varies significantly from a mean value.

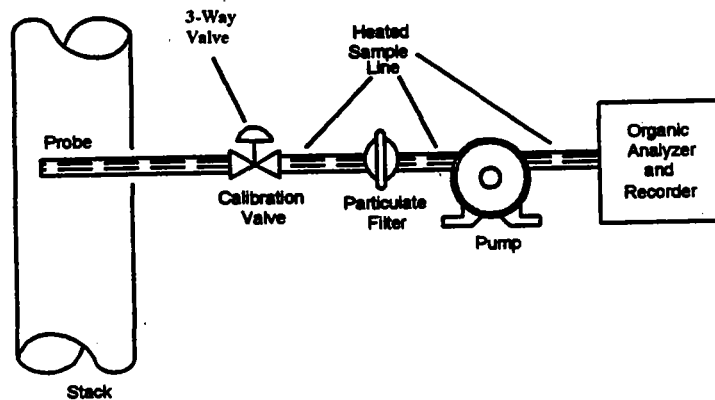


Figure F25A-1. Organic Concentration Measurement System.

FIELD DATA SHEET 25A
Total Gaseous Organics

Client/Plant Name _____ Job # _____

City/State _____ Date _____

Test Location _____ Personnel _____

Analyzer ID# _____ Span value _____ ppm

Determine Calibration Error before (within 2 hr) the first test run:

		Calibration Gas		Analyzer Response (ppm or %)	Cal Error Result (% of span)
		Cylinder ID #	Gas Value (ppm or %)		
Organic Analyzer	Zero				
	Low-level				
	Mid-level				
	High-level				

_____ % Cal Err $\leq \pm 5\%$ of cal gas?

$$\% \text{ Cal Error} = \frac{\text{Analyzer Response} - \text{Gas Value}}{\text{Gas Value}} \times 100$$

Note: If multiple electronic ranges are used, check each additional range with a mid-level calibration gas to verify the multiplication factor.

Determine Response Time:

Run No.	Organic Analyzer Upscale (sec.)
1	
2	
3	
Average	

Sampling

Sample Pt	Start Time	Stop Time	Response	Organic Conc. (ppm)

Upscale time is 95% of the step change.

Average Conc., C_{avg}

Determine %Drift after every test run:

Run #	Condition	Cylinder Value	Analyzer Response		Difference (Initial - Final)	% Drift
			Initial	Final		
1	Zero					
	Mid-level					
2	Zero					
	Mid-level					
3	Zero					
	Mid-level					

$$\% \text{ Drift} = \frac{|\text{Difference}|}{\text{Span Value}} \times 100 \quad \% \text{ Drift} \leq \pm 3\% \text{ of span value}$$

QA/QC Check

Completeness _____ Legibility _____ Accuracy _____ Specifications _____ Reasonableness _____

Checked by: _____
Personnel (Signature/Date)

Team Leader (Signature/Date)

