

TABLE 7E-5.—MANUFACTURER STABILITY TEST

Test description	Analyzer model test frequency			Acceptance criteria
	Annual (or 1st quarter)	Quarterly or not to exceed 50 production units	Each analyzer	
Thermal Stability .....	X	.....	.....	Temperature range when drift does not exceed 3% of analyzer range over a 2-hour run when measured with NO <sub>x</sub> present @ ≥80% of range.
Fault Conditions .....	X	.....	.....	Note 1.
Alarm Conditions .....	X	.....	.....	Note 2.
Interference Gas Test .....	X	X	.....	1. $I_{(annual)} \leq 2.5\%$ of range.
Insensitivity to Supply Voltage Variations.	X	X	.....	2. $I_{(quarterly)} \leq I_{(annual)}$ .
Analyzer Calibration Error .....	X	X	X	1. Both ±10% of nominal voltage (or the manufacturer specified range) must produce no more than 2% of range drift at either 0 or with No <sub>x</sub> present >80% of range.
Analyzer Response Time .....	X	X	X	2. $Drift_{(quarterly)} \leq Drift_{(annual)}$ .
Intrinsic Source Gas Analyzer Settings/Adjustments.	X	X	.....	For a low, medium, and span gas, the difference between manufacturer certified value and analyzer response in direct calibration mode, no more than 2% of manufacturer certified value.
Primary 4 Interference Gas Test	.....	X	X	$RT_{(individual)} \& RT_{(quarterly)} \leq RT_{(annual)}$ .
				1. Identify (annually).
				2. $Settings_{(quarter)} \leq setting_{(annual)}$ .
				1. $I_{(annual4)} \leq 2.5\%$ of range.
				2. Each analyzer measured response must be ≤ the response obtained from the annual analyzer test for each of the 4 gases.

Note 1: Identify conditions which, when they occur, are deemed by the manufacturer to result in performance which is not in compliance with this performance specification. These are to be indicated both audibly or visually and electrically. The annual test must document that these indicators correlate with the intended fault condition.

Note 2: Identify conditions which, when they occur, the manufacturer recommends review and/or corrective action by trained service personnel to prevent further deterioration of analyzer performance that could result in performance which is not in compliance with this performance specification. These are to be indicated both audibly or visually and electrically. The annual test must document that these alarms correlate with the intended alarm condition.

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#### Method 10—Determination of Carbon Monoxide Emissions From Stationary Sources (Instrumental Analyzer Procedure)

##### 1.0 Scope and Application

###### What Is Method 10?

Method 10 is a procedure for measuring carbon monoxide (CO) in stationary source emissions using a continuous instrumental analyzer. Quality assurance and quality control requirements are included to assure

that you, the tester, collect data of known quality. You must document your adherence to these specific requirements for equipment, supplies, sample collection and analysis, calculations, and data analysis. This method does not completely describe all equipment, supplies, and sampling and analytical procedures you will need but refers to other methods for some of the details. Therefore, to obtain reliable results, you should also have a thorough knowledge of these additional test methods:

(a) Method 1—Sample and Velocity Traverses for Stationary Sources.

(b) Method 4—Determination of Moisture Content in Stack Gases.

(c) Method 7E—Determination of Nitrogen Oxides Emissions From Stationary Sources (Instrumental Analyzer Procedure).

All methods in this list appear in 40 CFR part 60, appendix A.

1.1 Analytes. *What does this method determine?*

Analyte	CAS No.	Sensitivity
CO .....	630-08-0	See discussion in section 1.3.

1.2 Applicability. *When is this method required?* Method 10 is required in specific New Source Performance Standards and State Implementation Plans and permits where measuring CO concentrations in stationary source emissions is required. Other regulations may also require its use.

1.3 Data Quality Objectives. Refer to section 1.3 of Method 7E.

##### 2.0 Summary of Method

In this method, you continuously or intermittently sample the emission gas and convey the sample to a nondispersive infrared analyzer (NDIR) that measures the concentration of CO. You must adhere to the

performance requirements of this method to validate your data.

##### 3.0 Definitions

3.1 The Analyzer Calibration Error, Calibration Curve, Direct Calibration, System Calibration, Calibration Gas, Data Recorder, Gas Analyzer, Interference Check, Measurement System, Range, Response Time, Sampling System Bias, and Span are the same as in sections 3.0 of Method 7E.

##### 4.0 Interferences

Any substance having a strong absorption of infrared energy will interfere to some extent. The following table gives examples. The table shows how the interference ratio

can be higher when the measuring device has a low range (0–100 ppm). You can eliminate major interference problems by using silica gel and ascarite traps. If you use ascarite traps, correct the measured gas volume for the CO<sub>2</sub> removed in the trap. Instrument correction is also an acceptable means of compensating for interference.

Device range (ppm)	Interference ratio
1500–3000 .....	3.5% H <sub>2</sub> O per 7 ppm CO.
1500–3000 .....	10% CO <sub>2</sub> per 10 ppm CO.
0–100 .....	3.5% H <sub>2</sub> O per 25 ppm CO.