

GASMET™ in Emissions Monitoring Applications

Stack testing according to USEPA methods

There are three USEPA stack testing methods specifying FTIR.

Method 318 is a FTIR source specific method for measuring Formaldehyde and other organic compounds from mineral wool processing plants.

Method 320 is a FTIR method for measuring a wide range of organic and inorganic pollutants from all sources.

Method 321 is a source specific version for measuring HCl at Portland cement plants.

These methods define a QA/QC process to verify the accuracy of the results.

GASMET™ analyzers and CALCMET™ software are designed taking the requirements of the performance specification into account.

The setup designed especially for stack testing applications includes:

Gasmet DX4000N, Gasmet or AQA portable sampling unit, portable probe, heated lines and a laptop PC.



Typical Analytical Procedure To Complete Method 318 / 320 / 321 Test

From paper by Maxwell Lee and John B. Koogler: Gas Emissions Testing By EPA Methods 320: Procedures And Results, Florida Section of the Air and Waste Management Association on Sept. 7-9, 2003.

PRE-TEST

- 1) Background spectrum
 - *Evaluate diagnostics of the instrumentation*
- 2) Baseline (cylinder UHP-N₂) (i.e. zero check)
 - *Determine the level of background noise*
 - *Observe spectrum for baseline tilt*
 - *Measure Sample Flow Rate*
- 3) Calibration Transfer Standard (CTS) (cylinder 100-ppm ethylene, i.e. span check)
 - *Determine level of response to inert gas (e.g., C₄H₁₀) to evaluate the spectral response and stability of the instrument*
- 4) Direct analyte measure (e.g. cylinder 50-ppm HCl)
 - *Determine system bias and Upscale Response Time (can be used as CTS)*
- 5) Baseline
 - *Determine system bias and Downscale Response Time*
 - *Note baseline flush/clean out FTIR sample cell*
- 6) Spectra of stack gas (minimum 3 x Response Time)
 - *Determine stack gas analyte concentration*
- 7) Field Reference Spike gas and makeup of UHP-N₂ (minimum 3 x Response Time)
 - *Optional*
 - *Create field Reference Spectrum of analyte at approx. stack gas concentration*
 - *Requires Dual Mass Flow Controllers for nominal 10:1 Dilution*
- 8) Spectra of Stack Gas and QA-spike gas
 - *Ensure acceptable analyte recovery*

TEST Runs 1, 2, and 3

- 1) Baseline
 - (Background if > ± 0.025 abs offset)
- 2) 5 sequential spectra of stack gas
 - Exclude 3 x response time
- 3) 3 Spectra of QA-spiked stack gas
 - ±30 percent expected recovery
- 4) 5 sequential spectra of stack gas
 - (Source < 5% deviation from step 2)

POST-TEST

- 1) Baseline
 - (Background if > ± 0.025 abs offset)
- 2) Calibration Transfer Standard (i.e span check)
 - < 5% deviation
- 3) Field Reference or Direct analyte measure
 - (Background if > ± 0.025 abs offset)
- 4) Baseline