

HG SERIES

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MERCURY in Aluminum

Issued: August 2008

Method: Cold Vapor Atomic Absorption

【Outline】

Mercuric compounds in sample are broken down and oxidized to mercuric ions by strong acids and oxidant in pretreatment. Mercury is reduced to Hg(0) state by stannous chloride and aerated, then pass through the absorption cell to be measured at 253.7nm absorbance based on AAS.

【Configurations】

HG-400-5D (5mL testing size, Dispenser D-401 equipped)

【Reagents】

- ◆for Pretreatment
 - Nitric acid (conc.)
 - Phosphoric acid
- ◆for Calibration curve
 - Hg standard solution 100ngHg/mL
(prepare 0, 5, 10ngHg/mL standard solutions by changing dilution rate.)
- ◆for Measurement
 - Stannous chloride, Sulfuric acid (1+1)



【Sample Pretreatment】

1. Introduce approximately 0.5g of powdered sample into a 200mL conical beaker and accurately weight it. (Sample size : 0.5912 g)
2. Add 30mL of distilled water.
3. Add 10m of phosphoric acid by portions so that the chemical reaction moderately proceeds.
4. Add 5mL of conc. nitric acid.
5. Transfer the solution into a 200mL volumetric flask. Wash the beaker with distilled water and add the rinsed water to the volumetric flask.
6. Add distilled water to make a total volume of 200mL.

~Solution for Reagent blank

7. Prepare another flask and add the same amount of the reagents and carry out the same process as described above.

【Calibration curve】

Proceed Hg standard solutions (0, 5, 10ngHg/mL) to construct a calibration curve.

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【Reagent Blank Measurement】

1. Transfer 5mL of the solution for Reagent blank to a reaction vessel and attach it to the bubbler. (BLK2)
2. Touch **START** key. 0.5mL of sulfuric acid (1+1) and 0.5mL of stannous chloride solution are automatically added and bubbling starts.
3. The amount of Hg in the reagent blank is determined and used to correct the absorbance value of the sample.

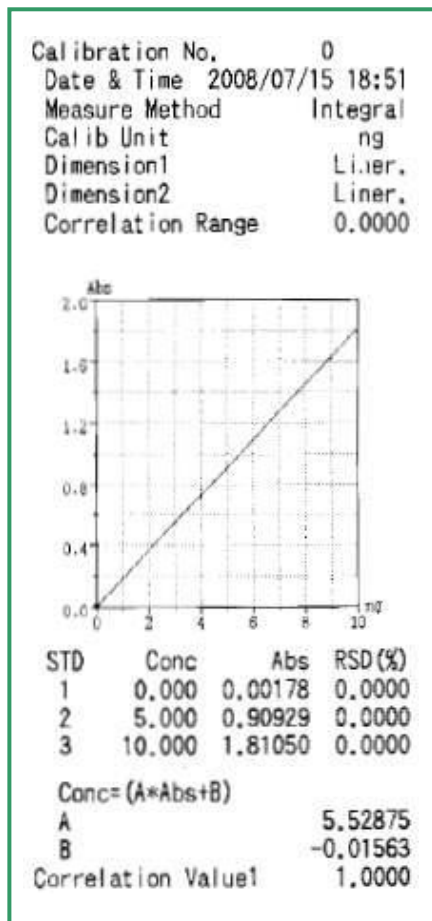
【Sample Measurement】

1. Transfer 5mL of the sample solution to a reaction vessel and attach it to the bubbler.
2. Touch **START** key. 0.5mL of stannous chloride solution is automatically added and bubbling starts. Concentration of mercury is obtained by absorbance at 253.7nm corresponding to the calibration curve.

【Example results】

| Testing size (mL) | Sample No. | Mercury (ng) | Mercury Conc. (ppb) | Statistics | |
|-------------------|------------|--------------|---------------------|------------|-------|
| 5 | 1 | 0.44 | 34.1105 | MEAN (ppb) | 34.4 |
| | 2 | 0.45 | 34.5388 | SD (ppb) | 0.287 |
| | 3 | 0.45 | 34.6562 | CV (%) | 0.83 |

【Calibration Curve】



【Abs. Curve】

