

Category

Mercury Analyzer HG series

## Environment

## Hg in Wastewater

by Cold vapor atomic absorption method

Referenced methods

[EPA 245.1~2](#)*Key words;* Hg, water, wastewater, AAS,

## 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.

## Reagents

## ◆for Measurement

Stannous chloride  
Sulfuric acid (1+1)

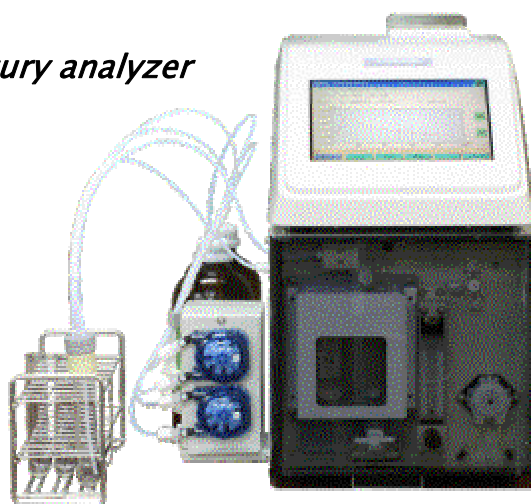
## ◆for Pretreatment

Sulfuric acid (1+1), Nitric acid (conc.)  
Potassium permanganate (50g/L)  
Potassium peroxodisulfate (50g/L)  
Hydroxylammonium chloride (80g/L)

## ◆for Calibration curve

Hg standard solution: 100ngHg/mL  
(prepare 0, 5, 10ngHg/mL standard solutions by changing dilution rate.)

## Instruments

*HG-400-5D Mercury analyzer*

## Sample Pretreatment

1. Introduce 150mL of sample water for this measurement into a 300mL Erlenmeyer flask.
  2. Add 20mL of sulfuric acid (1+1), 5mL of conc. nitric acid and 20mL of potassium permanganate solution (50g/L) and mix thoroughly, and then allow to stand at least 15 minutes.
  3. When the color of permanganate disappears, add more potassium permanganate solution (50g/L) until the red color retained.
  4. Add 10mL of potassium peroxodisulfate solution (50g/L) and heat the flask for 2 hours in a water bath maintained at 95°C.
  5. Cool and add 10mL of hydroxylammonium chloride (80g/L) to reduce the excess permanganate.
  6. Transfer the solution to a volumetric flask and add distilled water to make a total volume of 250mL.
- ~Solution for Reagent blank
7. Introduce the distilled water as much as the sample into a 300mL flask and add the same amount of the reagents as above steps 2 to 4 and carry out the process as described in step 5-6.

## Calibration curve

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

## Measurements

### 【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 stannous chloride solution is 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.

For more information, please feel free to contact:

### Hiranuma Sangyo Co., Ltd.

1739 Motoyoshida-cho, Mito, Ibaraki 310-0836 JAPAN

Phone: +81-29-247-7343 / Fax: +81-29-247-0381

URL <http://www.hiranuma.com> E-mail [info@hiranuma.com](mailto:info@hiranuma.com)



ISO 9001  
ISO 13485 Certified



ER-00129



ISO 14001 Certified