

Method Guide - As in Potable waters

Key Words

- Arsenic
- Atomic Absorption
- Hydride generation
- HGAAS
- Potable water

Principle:

The sample is pre-reduced using a mixture of potassium iodide and L-ascorbic acid. Arsenic is determined by Hydride Generation Atomic Absorption Spectrometry (HGAAS) using the VP100 Continuous Flow Vapour System.

Reagents:

Hydrochloric acid (AnalaR grade, 50 %v/v)

Sodium borohydride solution (AnalaR grade, 0.5 % m/v in 0.5 % m/v sodium hydroxide)

Pre-reducing solution (AnalaR grade, 10 % m/v potassium iodide + 10 % m/v L-ascorbic acid)

Arsenic master standard (1000 mg/L)

Arsenic sub-stock standard solution (200 µg/L)

Transfer 0.2 mL of arsenic master standard solution to a 1 L volumetric flask and add 10 mL of pre-reducing solution, then dilute to volume with deionised water.

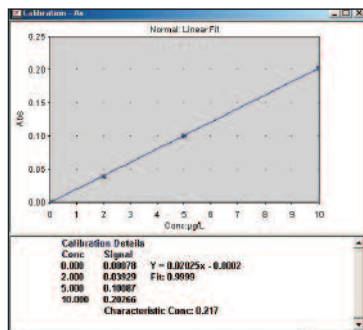
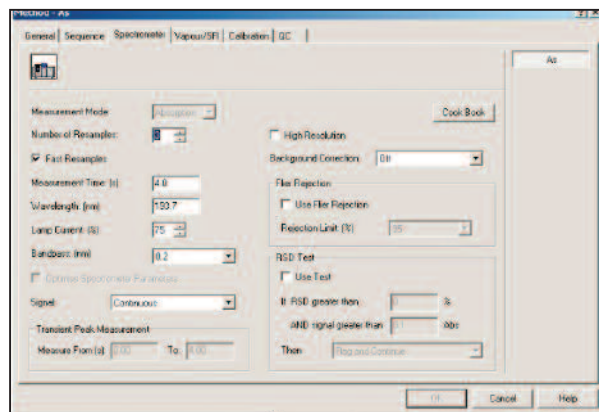
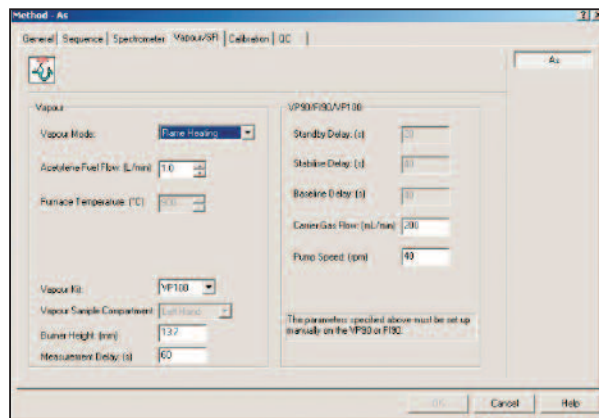
Working standards

Transfer 0, 1.0, 2.5 and 5.0 mL of the arsenic sub-stock standard solution into a series of 100 mL volumetric flasks. Add 10mL of deionised water and 10 mL of hydrochloric acid to each flask and dilute to volume with deionised water. The working standards will contain 0, 2, 5 and 10 µg/L of arsenic.

Sample Preparation:

Into a test tube, add 16.0 mL of drinking water sample, 2.0 mL of concentrated hydrochloric acid and 2.0 mL of the pre-reducing solution and mix thoroughly. Allow the mixture to stand for 1-2 hours at room temperature. The sample will then be ready for analysis. Tap water samples were spiked with 0.25, 0.5, 1.0 and 2.0 µg/L of As and the spike recovery was calculated.

Instrument Parameters:



Results:

The calibration is perfectly linear and the characteristic concentration is 0.217 µg/L. The unspiked tap water sample = 0.61 ± 0.02 µg/L and the average spike recovery (see table 1.) for As was 103.2 ± 2.6 %

| SAMPLE | SPIKE RECOVERED |
|--------------------------|-----------------|
| Tap Water + 0.25 µg/L As | 0.27 µg/L |
| Tap Water + 0.50 µg/L As | 0.48 µg/L |
| Tap Water + 1.00 µg/L As | 1.03 µg/L |
| Tap Water + 2.00 µg/L As | 2.13 µg/L |

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