COEI-2-ZINC Determination of zinc by atomic absorption spectrometry

1. Principle

The zinc is determined directly by atomic absorption spectrometry by flame.

2. Apparatus

Instrumental parameters: (given as an example)

- atomic absorption spectrometer
- oxidant air-acetylene flame
- wave length: 213.9 nm
- hollow-cathode lamp (zinc)
- width of slit: 0.5 nm
- intensity of the lamp: 3.5 mA
- correction of the non specific absorption with a deuterium lamp.

3. Reagents

3.1. Pure demineralised water for analysis

3.2. Pure nitric acid for analysis at 65%

3.3. Zinc reference solution at 1 g/l commercial or prepared as follows: dissolve 4.5497 g of $Zn(NO_3)_2$. $6H_2O$ in a solution of HNO3 0.5 M, adjust at 1 l with HNO_3 0.5 M.

3.4. Zinc solution at 10 mg/l:

- place 1 ml of the zinc reference solution in a 100 ml graduated flask, 1 ml of nitric acid (3.2) and complete to volume with pure demineralised water for analysis.

5. Set of calibration solution: 0.2; 0.4; 0.6; 0.8; 1.0 mg/l: place successively 1, 2, 3, 4, 5 ml of the zinc solution at 10 mg/l in 5, 50 ml graduated flasks, complete to volume with pure demineralised water for analysis.

4. Preparation of samples

The liquid or solution samples must have concentrations between 0 and 1 mg/l of zinc.

The solid samples are mineralised by dry process.

The blank solution is made up of pure water for analysis containing 1% of nitric acid at 65%.

5. Procedure

Pass successively the blank, the calibration solutions and the samples of oenological products.

The absorbency readings are performed for 10 seconds and the measurements are duplicated.

The concentrations of zinc in the samples are obtained from absorbency values.