COEI-2-FER Determination of iron by atomic absorption spectrometry

1. Principle

The iron is determined by atomic absorption spectrophotometry by flame.

2. Apparatus

2.1. Instrumental parameters: (given as an example)

- atomic absorption spectrophotometry
- flame: oxidant air-acetylene
- hollow-cathode lamp (iron)
- wave length: 248.3 nm
- width of slit: 0.2 nm
- intensity of the lamp: 5 mA
- no correction of non specific absorption.

3. Reagents

3.1. Pure demineralised water for analysis

3.2. iron solution at 1 g/l, commercial or prepared as follows: dissolve 7.2336 g of $Fe(NO_3)_2,9H_2O$ in a solution HNO3 0.5 M adjust at 1 l avec HNO_3 0.5 M.

3.3. iron solution at 100 mg/l

Place 10 ml of the reference iron solution in a 100 ml graduated flask, complete with demineralised water pure for analysis

3.4. set of calibration solution: 2, 4, 6, 8 mg/l of iron

place successively 1.0, 2.0, 3.0 and 4.0 ml of the solution at 100 mg/l of iron in 4, 50 ml graduated flasks; complete to volume with pure demineralised water for analysis

Perform a blank without iron in the same conditions.

4. Preparation of samples

4.1. Case of liquid or solution oenological products

Each sample is diluted with demineralised water in order to have a concentration of iron between 0 and 8 mg/l.

4.2. Case of solid oenological products

Proceed with mineralisation by dry process.

Put in each solution of the set of calibration the same quantity of acid used for putting of cinders in solution; each sample is diluted with demineralised water in order to have a concentration of iron between 0 and 8 mg/l.

5. Procedure

Pass successively the calibration solutions and the blank which will be demineralised water or a water-acid solution with concentrations used for samples of solid oenological products mineralised by dry process and perhaps diluted.