COEI-2-CUIVRE Determination of copper by atomic absorption spectrometry

1. Principle

The copper is determined by atomic absorption spectrometry by flame by using the method of measured additions.

2. Apparatus

Instrumental parameters: (given as an example)

- Atomic absorption spectrophotometer
- flame: oxidant air-acetylene
- wave length: 324.7 nm
- hollow-cathode lamp (copper)
- width of slit: 0.5 nm
- intensity of the lamp: 3.5 mA
- no correction of non specific absorption.

3. Reagents

3.1. pure demineralised water for analysis

3.2. pure nitric acid for analysis at 65%

3.3. reference solution copper at 1 g/l, commercial or prepared as follows: dissolve 3.8023 g of $Cu(NO_3)_2.3H_2O$ in a solution of HNO_3 0.5M, adjust at 1 l with HNO_3 0.5M.

3.4. copper solution at 10 mg/l: place 2 ml of the reference copper solution in a 200 ml graduated flask, add 2 ml of nitric acid at 65% and complete to volume with demineralised water.

Adjust apparatus using a calibration solution at 0.4 mg/l (2 ml of the copper solution at 10 mg/l in a 50 ml graduated flask, complete to volume with pure demineralised water for analysis).

4. Preparation of samples (Method of measured additions)

Addition of 02 mg/l of copper:

- place 5 ml of liquid oenological product or mineralisate of oenological product

obtained by dry process in a flask and add 100 µl of the copper solution at 10 mg/l

Addition of 0.4 mg/l of copper:

- place 5 ml of liquid oenological product or mineralisate in a flask and add 200 µl of the copper solution at 10 mg/l

Dilution of the sample

Dilution of the sample: the dilution is only necessary if the copper content is more than 0.5 mg/l of copper.

5. Procedure

For each sample, pass in order:

- blank solution (demineralised water)
- sample with 0.2 mg/l of copper
- sample with 0.4 mg/l of copper
- sample without addition
- the results are obtained automatically or by manual graph.