

## **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  $\text{Cu}(\text{NO}_3)_2 \cdot 3\text{H}_2\text{O}$  in a solution of  $\text{HNO}_3$  0.5M, adjust at 1 l with  $\text{HNO}_3$  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

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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.