OIV-MA-AS322-07 Magnesium

Type II method

1. Principle

Magnesium is determined directly on diluted wine by atomic absorption spectrophotometry.

2. Apparatus

2.1. Atomic absorption spectrophotometer fitted with an air□acetylene burner.

2.2. Magnesium hollow cathode lamp.

3. Reagents

3.1. Concentrated magnesium standard solution containing 1 g/L

Use of a standard commercial magnesium solution (1 g/L) is preferred.

Alternatively, this solution may be prepared by dissolving 8.3646 g of magnesium chloride, $MgCl_2.6H_2O$, in distilled water and making up to 1 liter.

3.2. Dilute magnesium standard solution, 5 mg/L.

Note: Keep the standard magnesium solutions in polyethylene bottles.

4. Procedure

4.1. Preparation of sample

The wine is diluted 1/100 with distilled water.

4.2. Calibration

Place 5, 10, 15 and 20 mL of the dilute standard magnesium solution into each one of a set of four 100 ml. volumetric flasks and make up to 100 mL with distilled water. The standard solutions prepared in this way contain 0.25, 0.50, 0.75 and 1.0 mg of magnesium per liter respectively. These solutions should be kept in polyethylene bottles.

4.3. Determination

Set the absorption wavelength to 285 nm. Zero the absorbance scale using distilled water. Aspirate the diluted wine directly into the spectrophotometer, followed in succession by the standard solutions (4.2).

Record the absorbance of each solution and repeat each measurement.

5. Expression of results

5.1. Method of calculation

Plot a graph showing the variation in absorbance as a function of the magnesium concentration in the standard solutions.

Record the mean value of absorbance with the diluted sample of wine on this graph and read off the magnesium concentration C in milligrams per liter. The magnesium concentration in milligrams per liter of the wine to the nearest whole number is given by:

$$100 \times C$$

5.2. *Repeatability (r):*

- $r = 3$ mg/L.

3. *Reproducibility (R):*

- $R = 8$ mg/L.