OIV-MA-AS322-08 Zinc

Type IV method

1. Principle

After removal of alcohol, zinc is determined directly in the wine by atomic absorption spectrophotometry.

2. Apparatus

2.1. Rotary evaporator and thermostatically controlled water bath.

2.2. Atomic absorption spectrophotometer equipped with an air□acetylene burner.

2.3. Zinc hollow cathode lamp.

3. Reagents

The water used must be double distilled in borosilicate glass apparatus or of an equivalent degree of purity.

3.1. Standard solution containing zinc, 1 g/L

Use of a commercial standard zinc solution is preferred. Alternatively this solution may be prepared by dissolving 4.3975 g of zinc sulfate, $ZnSO_4.7H_2O$, in water and making up the volume to one liter.

3.2. Dilute standard solution containing 100 mg of zinc per liter.

4. Procedure

4.1. Preparation of sample

Remove the alcohol from 100 mL of wine by reducing the volume of the sample to half its original value using a rotary evaporator (50 to 60 □C). Make up to the original volume of 100 ml, with double distilled water.

4.2. Calibration

Place 0.5, 1, 1.5 and 2 ml, of the solution containing 100 mg zinc per liter into each one of four 100 mL volumetric flasks and make up to the mark with double distilled water. The solutions prepared in this way contain 0.5, 1, 1.5 and 2 mg of zinc per liter respectively.

4.3. Determination

Set the absorbance wavelength to 213.9 nm. Zero the absorbance scale using double distilled water. Aspirate the wine directly into the burner of the spectrophotometer, followed in succession by the four standard solutions. Record the absorbance and repeat each measurement.

5. Expression of results

5.1. Method of calculation

Plot a graph giving the variation in absorbance as a function of zinc concentration in the standard solutions. Record the mean value of the absorbance obtained with the diluted wine sample on this graph and determine its zinc concentration to one decimal place.