OIV-MA-AS322-02B Potassium

Type III method

1. Principle

Potassium is determined directly in diluted wine by flame photometry.

Note: The gravimetric determination of potassium tetraphenylborate precipitated from the solution of the ash of wine is a precise method for the determination of potassium and is described in the annex.

2. Method

2.1. *Apparatus*

2.1.1. Flame photometer supplied with an air□butane mixture.

2.2. *Reagents*

2.2.1. Reference solution containing 100 mg potassium per liter

- Absolute alcohol 10 mL
- Citric acid $C_6H_8O_{7,}H_2O$ 700 mg
- Sucrose 300 mg
- Glycerol 1000 mg
- Sodium chloride, NaCl 50.8 mg
- Anhydrous calcium chloride, CaCl_2 10 mg
- Anhydrous potassium hydrogen tartrate 481.3 mg
- water to 1000 mL

Dissolve the potassium hydrogen tartrate in 500 mL of very hot distilled water, mix this solution with 400 mL of distilled water in which the other chemicals have already been dissolved, and make up to one liter.

2.2.2. Dilution solution

- Absolute alcohol 10 mL
- Citric acid anhydrous 700 mg
- Sucrose 300 mg
- Glycerol 1000 mg

- Sodium chloride, NaCl 50.8 mg
- Anhydrous calcium chloride, $CaCl_2$ 10 mg
- Anhydrous magnesium chloride, $MgCl_2$ 10 mg
- Tartaric acid 383 mg
- Water to 1000 mL

Preserve the solutions in polyethylene bottles by adding two drops of allyl isothiocyanate (3-isothiocyanato-1-propene; CH_2=$CHCH_2NCS$).

2.3. *Procedure*

2.3.1. Calibration

Place 25, 50, 75 and 100 mL of the reference solution into a set of four 100 mL volumetric flasks and make up to 100 mL with the dilution solution to give solutions containing 25, 50, 75 and 100 mg of potassium per liter respectively.

2.3.2. Determination

Make measurements at 766 nm. and adjust the 100% transmission using distilled water. Successively aspirate the standard solutions directly into the burner of the photometer, followed by wine diluted 1/10 with distilled water and note the readings.

If necessary, the wine already diluted $^1/_{10}$ may be further diluted with the dilution solution (2.2.2).

2.4. *Expression of results*

2.4.1. Method of calculation

Plot a graph of the variation in percentage transmission as a function of the potassium concentration in the standard solutions. Record the transmission obtained for the sample of diluted wine on this graph and determine the corresponding potassium concentration C.

The potassium concentration in mg potassium per liter to the nearest whole number will be:

- F x C

where F is the dilution factor.

2.4.2. Repeatability *(r):*

- r = 17 mg/L.

3. Reproducibility (R)

- R = 66 mg/L.

4. Other ways of expressing results:

In milliequivalents per liter: 0.0256 x F x C.
In mg potassium hydrogen tartrate per liter 4.813 x F x C.