OIV-MA-VI-02 Determination of the fixed acidity content

Type II method

1. Definition

The fixed acidity of a vinegar refers to all the fixed (non-volatile) acids titled in the presence of phenolphthalein in an alcoholic solution, used as indicator.

2. Principle

Elimination of volatile substances from the vinegar by evaporation. Neutralization of the (non-volatile) acids of the residue in an aqueous solution using an alkali solution.

3. Reagents

3.1. Sodium hydroxide solution 0.1 M

3.2. Indicator - alcoholic solution of phenolphthalein at 1 g per 100 ml.

In a calibrated 100 ml flask, dissolve 1 g of phenolphthalein with a sufficient quality of ethanol at 95% (v/v) and bring up to the line.

4. Equipment and utensils

Standard laboratory equipment including:

4.1. Water bath at 100 °C

4.2. 200 ml capacity porcelain capsules.

5. Preparation of sample

Homogenize the sample by stirring and filter if necessary.

6. Technique

In a 200 ml porcelain capsule, add 10 ml of vinegar. In a water bath at 100 °C, evaporate until dry. Add 5 to 10 ml of water. Evaporate again until dry. Repeat this step five times, add approximately 180 ml of recently boiled and cooled water, add a few drops of indicator (3.2) and title with the sodium hydroxide solution (3.1) until a persistent pink color is obtained.

7. Results

7.1. Calculation

Considering:

- V to be the volume in ml of the sodium hydroxide solution using in titling.

The fixed acidity content expressed in grams of acetic acid per l of sample is given by

- 0.6 V.

2. Presentation

Round off the results expressed in grams of acetic acid by L, to the nearest decimal.

8. Interlaboratory validation (Hitos *et al.*, 2000)

Units: % (m/V)

Sample	r	S_r	RSD_r	R	S_R	RSD_R	RSD_R (Horwitz)	Horrat Index
1 – 0.17% (m/v)	1.0125	0.004	2.69	0.0428	0.015	9.18	5.22	1.76
2 – 0.17% (m/v)	0.0103	0.004	2.19	0.0431	0.015	9.15	5.22	1.75
3 – 0.08% (m/v)	0.0103	0.004	4.88	0.0201	0.007	9.57	5.85	1.64
4 – 0.07% (m/v)	0.0083	0.003	4.20	0.0246	0.009	12.38	5.97	2.07
5 – 0.08% (m/v)	0.0077	0.003	3.26	0.0285	0.010	12.11	5.85	2.07

9. Bibliography

- Anonymous, 1993, *Métodos Oficiales de Análisis*, Tomo II, Ministério de Agricultura, Pesca y Alimentación, Madrid, Spain.
- AOAC, 1984, *Official Methods of the Ass. Offic. Agric. Chem.*, 14th edit., Arlington USA.
- Hitos P., Pons A., Martin de la Hinojosa, I, Gomez R., Hernandez A. and Muñoz J., 2000. Validation of analysis methods for total, fixed and volatile acidity of non-volatile reducing substances, copper and zinc in wine vinegars, *Green Sheet of OIV No. 115*.
- Llaguno C. et Polo M.G., 1991. *El Vinagre de Vino*, Consejo Superior de

Investigaciones Cientificas, Madrid, Spain.