

Method OIV-MA-VI-02 : R2000

Type II method

Determination of the fixed acidity content in vinegars

(OENO 53/2000)

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

- $0.6 V$.

7.2. 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)

COMPENDIUM OF INTERNATIONAL METHODS OF ANALYSIS FOR VINEGARS

Determination of the fixed acidity content (Type II)

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

1. Anonymous, 1993, *Métodos Oficiales de Análisis*, Tomo II, Ministerio de Agricultura, Pesca y Alimentación, Madrid, Spain.
2. AOAC, 1984, *Official Methods of the Ass. Offic. Agric. Chem.*, 14th edit., Arlington USA.
3. 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*.
4. Llaguno C. et Polo M.G., 1991. *El Vinagre de Vino*, Consejo Superior de Investigaciones Científicas, Madrid, Spain.