

## **OIV-MA-VI-01 Determination of total acidity content**

Type II method

### **1. Definition**

The total acidity refers to a vinegar whose acidity can be titrated in the presence of phenolphthalein in an alcoholic solution, used as indicator.

### **2. Principle**

Neutralization of acids in sample by alkali solution.

### **3. Reagents**

3.1. Solution of sodium hydroxide 0.5 M

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

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

### **4. Equipment and utensils**

Standard laboratory equipment.

### **5. Preparation of sample**

Thoroughly mix the sample by stirring and filter if necessary.

### **6. Technique <sup>[1]</sup>**

In a 250-mL conical flask, add 10 mL of vinegar. Add water, free of carbon dioxide, so that the solution is barely coloured. Add a few drops of the indicator (3.2) and titrate with the sodium hydroxide solution (3.1) until a persistent pink colour is obtained.

Note: Titration may also be monitored by potentiometry, taking into consideration the respective equivalence point.

## **7. RESULTS**

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### 7.1. Calculation

Considering:

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

The total acidity content expressed in grams of acetic acid per l of sample will be given by

$$3V.$$

### 7.2. Presentation

Round off the results in grams of acetic acid per liter to the nearest decimal.

## 8. Interlaboratory validation (hitos et al., 2000)

Units: % (m/V)

Sample	r	S <sub>r</sub>	RSD <sub>r</sub>	R	S <sub>R</sub>	RSD <sub>R</sub>	RSD <sub>R</sub> (Horwitz)	Horrat Index
1 - 0.17% (m/v)	0.0628	0.022	0.27	0.1570	0.560	0.67	2.90	0.23
2 - 0.17% (m/v)	0.0742	0.026	0.23	0.2127	0.076	0.67	2.78	0.24
3 - 0.08% (m/v)	0.0617	0.022	0.20	0.2197	0.078	0.70	2.78	0.25
4 - 0.07% (m/v)	0.0559	0.020	0.17	0.1543	0.055	0.46	2.75	0.17
5 - 0.08% (m/v)	0.0738	0.026	0.23	0.3544	0.0127	1.13	2.78	0.41

## 9. Bibliography

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- AOF/WHO - Commission of Codex Alimentarius, *Methods of analyzing the European regional standard for vinegar*, Alinorm 83/19 and 85/19.
- 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*.

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<sup>[1]</sup> CPIV has described a method, using the potentiometric titration