

**International Standard****753/2**

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**Acetic acid for industrial use — Methods of test —  
Part 2 : Determination of acetic acid content —  
Titrimetric method***Acide acétique à usage industriel — Méthodes d'essai — Partie 2 : Dosage de l'acide acétique — Méthode titrimétrique***First edition — 1981-10-15****UDC 661.731 : 543****Ref. No. ISO 753/2-1981 (E)****Descriptors :** industrial products, acetic acid, tests, determination of content, titration.

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## Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 753/2 was developed by Technical Committee ISO/TC 47, *Chemistry*, and was circulated to the member bodies in March 1980.

It has been approved by the member bodies of the following countries :

Australia	France	Poland
Austria	Germany, F. R.	Romania
Belgium	Hungary	South Africa, Rep. of
Brazil	India	Switzerland
China	Italy	Thailand
Czechoslovakia	Korea, Rep. of	United Kingdom
Egypt, Arab Rep. of	Netherlands	USSR

No member body expressed disapproval of the document.

This International Standard has also been approved by the International Union of Pure and Applied Chemistry (IUPAC).

International Standards ISO 753/1 to ISO 753/11 cancel and replace ISO Recommendation R 753-1968, of which they constitute a technical revision.

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# Acetic acid for industrial use — Methods of test — Part 2 : Determination of acetic acid content — Titrimetric method

## 1 Scope and field of application

This part of ISO 753 specifies a titrimetric method for the determination of the acetic acid content (assay) of acetic acid for industrial use.

This document should be read in conjunction with ISO 753/1 (see the annex).

## 2 Reference

ISO/R 385, *Burettes*.

## 3 Principle

Titration of a test portion with standard volumetric sodium hydroxide solution, using phenolphthalein as indicator. Calculation of the acid content, making allowance for any formic acid present, determined separately (see ISO 753/3).

## 4 Reagents

During the analysis, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

**4.1 Sodium hydroxide**, standard volumetric solution,  $c(\text{NaOH}) = 1 \text{ mol/l}$ .

**4.2 Phenolphthalein**, 5 g/l ethanolic solution.

Dissolve 0,5 g of phenolphthalein in 100 ml of 95 % (V/V) ethanol and make faintly pink by the addition of 4 g/l sodium hydroxide solution.

## 5 Apparatus

Ordinary laboratory apparatus and

**5.1 Weighing pipette**, of capacity 10 ml.

**5.2 Burette**, of capacity 50 ml, complying with the requirements of ISO/R 385, class A.

## 6 Procedure

### 6.1 Test portion

Using the weighing pipette (5.1), weigh, to the nearest 0,000 1 g, a mass of the laboratory sample containing 2 to 3 g of glacial acetic acid. Suitable masses are given in the table.

Nominal acetic acid content of laboratory sample	Mass of test portion
% (m/m)	g
98 to 100	2,5
80	3,0
60	4,0
40	6,0

Transfer the test portion to a 250 ml conical flask containing 50 ml of water which has been boiled and cooled in a carbon dioxide-free atmosphere.

### 6.2 Determination

Add 0,5 ml of the phenolphthalein solution (4.2) to the conical flask containing the test portion (6.1) and titrate with the sodium hydroxide solution (4.1) from the burette (5.2) until a pink colour, which persists for about 5 s, is obtained.

## 7 Expression of results

The acetic acid (CH<sub>3</sub>COOH) content, expressed as a percentage by mass, is given by the formula

$$\frac{0,060 \times V \times 100}{m} - 1,3A$$

$$= \frac{6 \times V}{m} - 1,3A$$

where

$V$  is the volume, in millilitres, of the standard volumetric sodium hydroxide solution (4.1) used for the determination;

$m$  is the mass, in grams, of the test portion (6.1);

$A$  is the formic acid content, expressed as a percentage by mass, determined according to the method specified in ISO 753/3;

1,3 is the factor for the conversion of formic acid to acetic acid;

0,060 is the mass, in grams, of acetic acid corresponding to 1 ml of sodium hydroxide solution,  $c(\text{NaOH}) = 1,00 \text{ mol/l}$ .

NOTE — If the concentration of the standard volumetric solution used is not exactly as specified in the list of reagents, an appropriate correction should be made.

## Annex

### ISO publications relating to acetic acid for industrial use

ISO 753/1 — General.

ISO 753/2 — Determination of acetic acid content — Titrimetric method.

ISO 753/3 — Determination of low formic acid contents — Gravimetric method.

ISO 753/4 — Determination of acetaldehyde monomer content — Titrimetric method.

ISO 753/5 — Determination of total acetaldehyde content — Titrimetric method.

ISO 753/6 — Determination of permanganate index.

ISO 753/7 — Determination of dichromate index.

ISO 753/8 — Visual limit test for inorganic chlorides.

ISO 753/9 — Visual limit test for inorganic sulphates.

ISO 753/10 — Visual limit test for heavy metals (including iron).

ISO 753/11 — Determination of iron content — 1,10-Phenanthroline photometric method.