

International Standard



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Volatile organic liquids for industrial use — Determination of dry residue after evaporation on a water bath — General method

Liquides organiques volatils à usage industriel — Détermination du résidu sec après évaporation sur bain d'eau — Méthode générale

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Descriptors : liquids, organic compounds, chemical analysis, determination of content, gravimetric analysis, evaporation analysis, residues.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

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 759 was developed by Technical Committee ISO/TC 47, *Chemistry*, and was circulated to the member bodies in December 1979.

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

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

No member body expressed disapproval of the document.

This International Standard cancels and replaces ISO Recommendation R 759-1968, of which it constitutes a technical revision.

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

Volatile organic liquids for industrial use — Determination of dry residue after evaporation on a water bath — General method

WARNING — Attention is drawn to the potential hazards associated with the volatility, flammability, reactivity or toxicity of many of the products to which this test can be applied. It is, therefore, essential that, before using the method, careful consideration is given to the precautions necessary to eliminate the potential hazards.

Furthermore, all operations shall be carried out in a well-ventilated fume cupboard.

1 Scope and field of application

This International Standard specifies a general method for the determination of the dry residue, after evaporation on a water bath, of volatile organic liquids for industrial use.

The method is applicable to products having dry residues after evaporation greater than or equal to 10 mg/kg [0,001 % (*m/m*)].

NOTES

- 1 For the determination of the non-volatile residue of fluorinated hydrocarbons for industrial use, see ISO 5789.
- 2 For the determination of the residue on evaporation of aromatic hydrocarbons, or other toxic volatile materials, having residues on evaporation of not less than 1 mg/100 ml, see ISO 5277.

2 References

ISO 758, *Liquid chemical products for industrial use — Determination of density at 20 °C*.

ISO 5277, *Aromatic hydrocarbons — Determination of residue on evaporation*.¹⁾

ISO 5789, *Fluorinated hydrocarbons for industrial use — Determination of non-volatile residue*.

3 Principle

Evaporation of a test portion on a water bath, and drying of the residue, if any, in an oven at 110 ± 2 °C to constant mass.

1) At present at the stage of draft.

2) The sampling of liquid chemical products for industrial use will form the subject of a future International Standard.

4 Apparatus

Ordinary laboratory apparatus, and

4.1 Dish, of platinum, silica or borosilicate glass, of capacity about 150 ml.

4.2 Water bath, maintained at a temperature appropriate to the boiling point of the product under examination.

WARNING — The heating system shall be designed so as to avoid all possibility of a fire hazard.

4.3 Electric oven, capable of being maintained at 110 ± 2 °C.

5 Sampling²⁾

Procedures for sampling and sample preparation which are specific to a particular product being examined will be specified in the appropriate product standard.

Store the laboratory sample in a clean, dry, ground glass stoppered glass container of such capacity that it will be almost entirely filled by the sample. If it is necessary to seal the container, take care to avoid any risk of contamination of the laboratory sample.

6 Procedure

6.1 Test portion

Take $100 \pm 0,1$ ml of the test sample.

6.2 Determination

Introduce the test portion (6.1) into the dish (4.1) previously heated for 2 h in the oven (4.3) at 110 ± 2 °C, cooled in a desiccator and weighed to the nearest 0,000 1 g.

Place the dish and its contents on the water bath (4.2) maintained at the appropriate temperature and, operating in a well-ventilated fume cupboard, evaporate to dryness.

Remove the dish from the water bath, wipe the outside with a tissue and continue heating in the oven (4.3), maintained at 110 ± 2 °C, for about 2 h. Remove the dish from the oven, allow it to cool to ambient temperature in a desiccator and weigh to the nearest 0,000 1 g. Repeat the operations of heating, cooling and weighing until constant mass is attained, i.e. until the difference between two consecutive weighings does not exceed 0,000 2 g.

If the mass of the residue is less than 0,001 g, add a further $100 \pm 0,1$ ml of the test sample to the same dish and repeat the determination, taking this into account in the calculation of results.

7 Expression of results

The dry residue obtained from the aliquot portion taken for the determination, expressed in grams, is given by the formula

$$m_1 - m_0$$

where

m_0 is the mass, in grams, of the empty dish (4.1);

m_1 is the mass, in grams, of the dish plus residue.

The results, in terms of dry residue content, may be expressed in one of the following ways :

- in milligrams per litre (mg/l), or
- in milligrams per kilogram (mg/kg), or
- as a percentage by mass [% (*m/m*)], or
- in milligrams per 100 ml (mg/100ml).

If the product under examination is covered by an International Standard, the method of expression specified in the International Standard shall be adopted. In other cases, the method of expression shall be agreed between the interested parties.

The value of density used to calculate the results in milligrams per kilogram or as a percentage by mass shall be that determined by the method specified in ISO 758.

8 Test report

The test report shall include the following particulars :

- a) an identification of the sample;
- b) the reference of the method used;
- c) the results and the method of expression used;
- d) any unusual features noted during the determination;
- e) any operation not included in this International Standard or in the International Standards to which reference is made, or regarded as optional.