International Standard 5277

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Aromatic hydrocarbons — Determination of residue on evaporation of products having boiling points up to 150 °C

Hydrocarbures aromatiques — Détermination du résidu à l'évaporation des produits dont le point final de distillation est inférieur ou égal à 150 °C

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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 5277 was developed by Technical Committee ISO/TC 78, *Aromatic hydrocarbons*, and was circulated to the member bodies in July 1980.

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

Australia	Germany, F. R.	Philippines
Austria	Hungary	Poland
Brazil	India	Romania
Czechoslovakia	Italy	South Africa, Rep. of
Egypt, Arab Rep. of	Korea, Rep. of	USSR
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The member body of the following country expressed disapproval of the document on technical grounds :

United Kingdom

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Aromatic hydrocarbons — Determination of residue on evaporation of products having boiling points up to 150 °C

1 Scope and field of application

This International Standard specifies a method for the determination of the residue on evaporation of aromatic hydrocarbons.

The method is applicable to aromatic hydrocarbons having boiling points lower than or equal to 150 °C. The lower limit of detection is 1 mg/100 ml.

NOTE — In view of the toxicity of the products handled, the procedure given in this International Standard deviates from that specified in ISO 759, *Volatile organic liquids for industrial use — Determination of dry residue after evaporation on a water bath — General method.*

2 Reference

ISO 1995, *Aromatic hydrocarbons — Sampling.*

3 Principle

Evaporation of a test portion in a weighed dish, and determination of the increase in mass of the latter, which represents the residue on evaporation.

4 Reagents

During the analysis, use only reagents of recognized analytical grade.

4.1 Acetone.

4.2 Source of air or nitrogen, free of oil and dust particles.

5 Apparatus

Ordinary laboratory apparatus and

5.1 Dishes, of aluminium, flat-bottomed (with or without lip), of internal diameter 80 to 100 mm, height 25 to 30 mm, and mass approximately 2 g.

5.2 Oven, capable of being maintained at 105 ± 2 °C.

5.3 Receiver, graduated, of capacity 100 ml.

5.4 Evaporation hood, of glass or other transparent material, with an air (nitrogen) inlet, and of such dimensions that it can easily cover the dish (see the figure). The outlet of the hood shall be connected to a safe area, for example a cooled absorption vessel in which the vapour will condense, or a ventilating device with an absorbent filter.

6 Sampling

Take a representative sample of not less than 1 000 ml from the bulk of the material in accordance with ISO 1995.

7 Procedure

NOTE — Before commencing the determination, the sample should be examined visually and, if turbidity or the presence of suspended solids is observed, it should be filtered. In such case, it should be stated in the test report that the result excludes suspended solids.

Clean a dish (5.1), before use, by washing it with the acetone (4.1) and drying it with a lint-free cloth or tissue paper. Transfer the cleaned dish using metal tongs, to the oven (5.2), maintained at 105 ± 2 °C, leave it for 20 min, and then allow it to cool in an enclosed vessel for 15 to 20 min.

Weigh the dish to the nearest 0,1 mg.

Put the dish on a clean surface, and, by means of the receiver (5.3), measure 100 ml of the sample into the dish. Place the evaporation hood (5.4) over the dish and connect the outlet of the hood to a safe area (see 5.4).

Evaporate the test portion by passing a gentle stream of clean air or nitrogen (4.2) over the dish until it is visually dry. Continue to pass the air or nitrogen for a further 30 min.

NOTE — If desired, evaporation may be facilitated by heating the dish and its contents by any suitable means, provided that the temperature does not exceed 105 °C. For products boiling below 105 °C, the temperature for evaporation should be 5 to 10 K below the boiling point of the aromatic hydrocarbon under test.

Transfer the dish to the oven (5.2), maintained at 105 ± 2 °C, for 20 min, and then allow it to cool in an enclosed vessel for 15 to 20 min.

Reweigh the dish to the nearest 0,1 mg.

8 Expression of results

Calculate the residue on evaporation from the formula

$$m_2 = m_1 - m_0$$

where

m_0 is the mass, in milligrams, of the dish;

m_1 is the mass, in milligrams, of the dish plus residue;

m_2 is the residue on evaporation, expressed in milligrams per 100 ml.

9 Precision

The precision of the test method, as obtained by statistical examination of interlaboratory results, is as follows.

9.1 Repeatability (r)

The value below which the absolute difference between two single test results, on identical test material, obtained by one operator in one laboratory using the same equipment within a short interval of time, applying the standardized test method, may be expected to lie with a 95 % probability, is 0,4 mg/100 ml.

9.2 Reproducibility (R)

The value below which the absolute difference between two single test results, on identical test material, obtained by operators in different laboratories, applying the standardized test method, may be expected to lie with a 95 % probability, is 0,6 mg/100 ml.

10 Test report

The test report shall include at least the following information :

a) the type and identification of the product tested;

b) a reference to this International Standard;

c) the result of the test;

d) any deviation, by agreement or otherwise, from the procedure specified;

e) the date of the test.

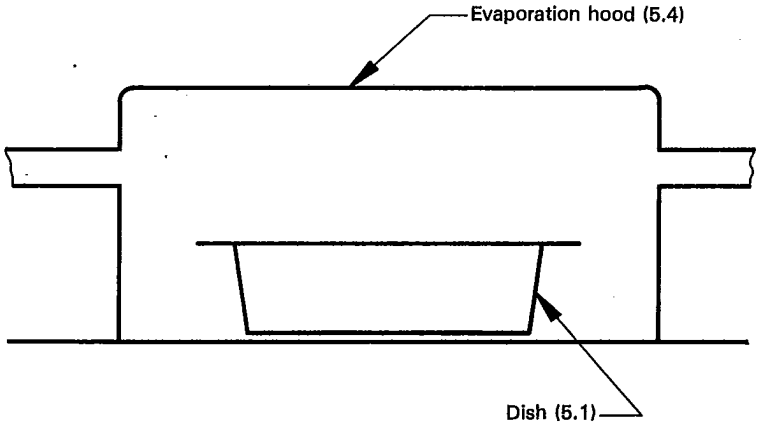

Figure — Evaporation hood and dish