INTERNATIONAL STANDARD

ISO 1269

Third edition
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Plastics — Homopolymer and copolymer resins of vinyl chloride — Determination of volatile matter (including water)

Plastiques — Résines d'homopolymères et de copolymères de chlorure de vinyle — Détermination des matières volatiles (y compris l'eau)

Reference number
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Foreword

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ISO 1269 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 9, *Thermoplastic materials*.

This third edition cancels and replaces the second edition (ISO 1269:1980), which has been technically revised.

The revision includes an additional method, method B, that uses an automatic thermobalance to determine the volatile-matter content.

Plastics — Homopolymer and copolymer resins of vinyl chloride — Determination of volatile matter (including water)

1 Scope

This International Standard specifies two methods for determining the volatile matter (including water) in homopolymer and copolymer resins of vinyl chloride.

2 Principle

A test portion of resin, spread out in a weighing dish of specified dimensions, is heated at an appropriate temperature to constant mass.

3 Apparatus

3.1 Method A (using an oven and balance)

3.1.1 Oven, capable of being controlled at 110 °C ± 2 °C, with slight natural draught or equipped with a low-speed circulation fan.

3.1.2 Weighing dish, shallow, about 80 mm in diameter and more than 5 mm in height, made of glass, aluminium or, preferably, stainless steel, with a lid.

3.1.3 Balance, capable of weighing to 0,001 g.

3.1.4 Desiccator, containing a suitable desiccant.

3.2 Method B (using an automatic thermobalance)

3.2.1 Oven, capable of being controlled at 110 °C ± 2 °C.

3.2.2 Automatic thermobalance, consisting of a precision balance and an IR or halogen oven. The thermobalance automatically evaporates the volatile matter to constant mass by checking the mass readings.

3.2.3 Weighing dish, about 100 mm in diameter and more than 5 mm in height, made of aluminium.

3.2.4 Balance, capable of weighing to 0,001 g.

3.2.5 Desiccator, containing a suitable desiccant.

4 Procedure

4.1 Method A

Bring the oven (3.1.1) to 110 °C ± 2 °C. Heat the dish (3.1.2), with its lid, in the oven for about 1 h. Remove and allow to cool in the desiccator (3.1.4) to room temperature. Weigh the dish and lid to the nearest 0,005 g.

Spread about 5 g of the test sample evenly over the bottom of the dish. Replace the lid and weigh to the nearest 0,005 g.

Place the assembly in the oven at 110 °C ± 2 °C. Remove the lid — but leave it in the oven — and continue heating for about 1 h.

Remove the assembly from the oven. Replace the lid on the dish. Allow to cool in the desiccator and weigh to the nearest 0,005 g.

Following the same procedure, heat in the oven for further periods of 30 min until the difference between two successive weighings does not exceed 0,005 g.

NOTE Prolonged heating at 110 °C ± 2 °C may result in the thermal degradation of some resins. In such circumstances, it is recommended that the evaporation procedure be conducted at 105 °C ± 2 °C.

Carry out two determinations on each test sample.

4.2 Method B

Bring the oven (3.2.1) to 110 °C ± 2 °C. Heat the aluminium dish (3.2.3) for about 1 h. Remove and allow to cool in the desiccator (3.2.5) to room temperature.

Place the dish in the automatic thermobalance (3.2.2) and tare it.

Spread 5 g to 15 g, depending on the type of resin, of the test sample evenly over the bottom of the dish and weigh it to the nearest 0,005 g.

Set the thermobalance test temperature to the value appropriate to the resin.

Switch on the thermobalance heating system and heat until the mass loss per second over a period of 2 min is less than 0,02 mg.

NOTE These operating conditions have been selected to minimize the effect of thermal degradation.

Carry out two determinations on each test sample.

5 Expression of results

5.1 Method A

For each determination, calculate the percentage of volatile matter (including water) to two decimal places from the formula:

$$\frac{m_2 - m_3}{m_2 - m_1} \times 100$$

where

m_1 is the mass, in grams, of the empty dish and lid (after heating and cooling);

m_2 is the mass, in grams, of the dish, lid and test portion before heating;

m_3 is the mass, in grams, of the dish, lid and test portion after heating.

If the values of the percentage volatile matter obtained in the two determinations on the test sample differ by less than 0,10 % (absolute), use these values to calculate the mean percentage volatile matter of the test sample, expressing the mean to the nearest 0,01 % (absolute).