

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 62

PLASTICS
DETERMINATION OF WATER ABSORPTION

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 62, *Plastics - Determination of Water Absorption*, was prepared by Technical Committee ISO/TC 61, *Plastics*, the Secretariat of which is held by the American Standards Association, Incorporated (ASA).

This question was among the first subjects to be considered by the Technical Committee, which decided, at its first meeting, held in New York, in September 1951, to assign the development thereof to its Working Group No. 5, *Physical Chemical Properties*, under the leadership of the United Kingdom.

At the second meeting of ISO/TC 61, held in Turin, in October 1952, the Working Group reached tentative agreement on all the points involved and a draft was worked out, which was distributed by the Secretariat, in June 1953, to the members of the Technical Committee, as a first draft proposal of an ISO Recommendation.

Having taken into account the observations made, the Secretariat prepared a second draft proposal, which was adopted as a Draft ISO Recommendation, subject to some amendments, at the fourth meeting of the Technical Committee, held at Brighton, in October 1954.

On 31 December 1955, the Draft ISO Recommendation was circulated to all ISO Member Bodies and, some amendments having been taken into consideration, it was approved by the following 27 Member Bodies (out of a total of 37):

Australia	India	Portugal
Belgium	Ireland	Spain
Bulgaria	Israel	Sweden
Chile	Italy	Turkey
Czechoslovakia	Mexico	Union of South Africa
*Denmark	Netherlands	United Kingdom
Finland	New Zealand	U.S.A.
Germany	Pakistan	U.S.S.R.
*Greece	Poland	Yugoslavia

No Member Body opposed approval of the Draft.

The Draft ISO Recommendation was then submitted, by correspondence, to the ISO Council, which decided, in April 1958, to accept it as an ISO RECOMMENDATION.

* These Member Bodies stated that they had no objection to the Draft being approved.

**AMENDMENT 1 - JUNE 1965
TO ISO RECOMMENDATION R 62 1958**

**Amendment 1
to ISO Recommendation R 62 - 1958**

**PLASTICS
DETERMINATION OF WATER ABSORPTION**

(1) *paragraph 1.1 is replaced by the following new paragraphs 1.1, 1.2 and 1.3:*

- 1.1 This method of test describes the conventional procedure for determining the weight of water absorbed by a moulded test specimen or one machined to shape from sheet, rod or tube, as a result of immersion in water for a specified time and at a specified temperature.
- 1.2 The water absorption values of different plastics materials may give an indication of their comparative behaviours in moist conditions but do not represent the maximum amounts of water that can be absorbed. The absorption of water can affect the dimensions and the electrical and the mechanical properties of materials.
- 1.3 The presence in a material of water-soluble matter will, if no allowance is made, give rise to an incorrect value of water absorption and hence may give a misleading indication of the behaviour of the material under moist conditions. For this reason a modified method (Procedure B) is included describing the procedure to be adopted when a significant amount of water-soluble matter is known to be present.

(2) *paragraph 1.2 becomes paragraph 1.4.*

BRIEF HISTORY

At the plenary meeting held by Technical Committee ISO/TC 61 in Turin in 1961, Working Group WG 5 suggested the modification of Section 1—Purpose, of ISO Recommendation R 62 along lines indicated in the above Amendment. Although this is purely and simply an editorial modification, it was felt best that it should be made, in order to explain more fully the limitations of the test if no consideration is given to the presence of water-soluble matter in a material, as well as to provide a fuller explanation of the reasons why Procedure B should be used where significant amounts of water-soluble matter are known to be present. The Members of the Technical Committee unanimously adopted these editorial modifications, which became the subject-matter of the Draft ISO Recommendation (No. 828).

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in June 1965, to accept it as an Amendment 1 to ISO Recommendation R 62.

PLASTICS

DETERMINATION OF WATER ABSORPTION

1. SCOPE

- 1.1 This method of test describes the conventional procedure for determining the weight of water absorbed by a moulded test specimen or one machined to shape from sheet, rod or tube, as a result of immersion in water for a specified time and at a specified temperature. A modification is included which prescribes the method to be adopted, when it is considered desirable to make allowance for the presence of water soluble matter.
- 1.2 The method applies to all types of plastics, including cast materials, compression and injection moulding materials, extrusion compounds, both flexible and rigid, sheet and rod and tube materials.

2. APPARATUS

- 2.1 The apparatus consists of the following:
 - (a) balance to weigh to 1 mg;
 - (b) oven to give a temperature of $50^{\circ}\text{C} \pm 2^{\circ}\text{C}$;
 - (c) vessel containing distilled water maintained at $23^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$;
 - (d) desiccator.

3. TEST SPECIMENS

- 3.1 **Moulding material.** The test specimen is $50\text{ mm} \pm 1\text{ mm}$ in diameter and $3\text{ mm} \pm 0.2\text{ mm}$ thick and is moulded to shape under the conditions recommended by the manufacturer of the material (or under the conditions given in the relevant specification for the material).
- 3.2 **Extrusion compound.** The test specimen is $50\text{ mm} \pm 1\text{ mm}$ in diameter and $3\text{ mm} \pm 0.2\text{ mm}$ thick and is cut from moulded sheet of this thickness, prepared under the conditions recommended by the manufacturer of the material (or under the conditions given in the relevant specification for the material). Cut surfaces should be smooth.
- 3.3 **Sheet.** The specimen is $50\text{ mm} \pm 1\text{ mm}$ square and is machined from the sheet under test. The thickness of the test specimen is the thickness of the sheet under test. Cut surfaces should be smooth and should not show any trace of burning that might have been caused by the cutting operation.
- 3.4 **Rod and tube.** The specimen is a piece of rod or tube, $50\text{ mm} \pm 1\text{ mm}$ long, prepared by cutting it at right angles to its length. Cut surfaces should be smooth and should not show any trace of burning that might have been caused by the cutting operation.