

# INTERNATIONAL STANDARD



177

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

## Plastics — Determination of migration of plasticizers

*Matières plastiques — Détermination de la migration des plastifiants*

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**Descriptors :** plastics, tests, measurement, migration, diffusion, plasticizers.

## 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.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 61 has reviewed ISO Recommendation R 177 and found it technically suitable for transformation. International Standard ISO 177 therefore replaces ISO Recommendation R 177-1961 to which it is technically identical.

ISO Recommendation R 177 was approved by the Member Bodies of the following countries :

|                |             |                |
|----------------|-------------|----------------|
| Australia      | India       | Spain          |
| Austria        | Israel      | Sweden         |
| Belgium        | Italy       | Switzerland    |
| Bulgaria       | Japan       | Turkey         |
| Czechoslovakia | Netherlands | United Kingdom |
| France         | Poland      | U.S.A.         |
| Germany        | Portugal    | U.S.S.R.       |
| Hungary        | Romania     |                |

No Member Body expressed disapproval of the Recommendation.

No Member Body disapproved the transformation of ISO/R 177 into an International Standard.

# Plastics — Determination of migration of plasticizers

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the determination of the tendency of plasticizers to migrate from plastic products, in which they are contained, into other plastics or other materials, if both substances are brought into close contact with one another.

NOTE — The surfaces into which the migration takes place may also consist of organic surface coatings, such as lacquers.

This test is suitable :

- a) for the evaluation of the tendency of plasticized plastic materials, especially in the form of sheets and films, to lose some of their liquid components when in contact with plasticizer-absorbing materials;
- b) for the study of the migration tendency of plasticizers contained in a resin or a series of resins in one or more concentrations.

In case b), standard compounds should be prepared on the basis of well characterized resins with known ratios of resin to plasticizer.

NOTE — When the absorbing sheets themselves contain a substance capable of migrating, a simultaneous migration may occur from the specimen to the absorbing sheets and vice versa.

## 2 REFERENCES

ISO 291, *Plastics — Standard atmospheres for conditioning and testing.*

ISO 293, *Plastics — Compression moulding test specimens of thermoplastic materials.*

## 3 DEFINITION

For the purpose of this International Standard the following definition applies :

**migration of plasticizers :** The loss of mass of a sheet consisting of a plasticized plastic if placed in close contact between plasticizer-absorbing sheets of another material, under specified conditions.

## 4 APPARATUS

4.1 **Analytical balance**, accurate to 0,001 g.

4.2 **Micrometer**, accurate to 0,01 mm.

4.3 **Air circulating oven**, capable of maintaining the temperature to within  $\pm 2^\circ\text{C}$  in the range from 50 to  $100^\circ\text{C}$ .

4.4 **Glass plates**, with flat surfaces.

4.5 **5 kg weights**.

4.6 **Absorbing discs**,  $60 \pm 1$  mm in diameter and preferably not less than 0,5 mm in thickness.

Suitable materials may be rubber, polyethylene, polyvinyl acetate. Two absorbing discs are required for each test specimen.

## 5 TEST SPECIMENS

5.1 The test specimens shall be in the form of discs  $50 \pm 1$  mm in diameter, preferably not less than 0,5 mm in thickness cut from compression moulded sheet of the appropriate thickness. Attention is drawn to the provisions of ISO 293.

5.2 In the case of film, the specimen of not less than 0,5 mm thickness should be formed from a number of thicknesses of the film, by pressing at a suitable temperature for about one minute.

5.3 If the test is carried out for the determination of the characteristics of specific plasticizers, standard compounds of a given composition, as agreed between vendor and purchaser, shall be used.

5.4 If the plastic material to be tested consists of a support (fabric, paper or other suitable material), coated on one face only by the spreading or calendering of a plasticized resin (such as vinyl fabrics and the like), the test specimen should be obtained by the superposition of two discs, cut from the material itself and superposed in such a way that the free surfaces of the support mate and the resin surfaces are at the outer sides of the "sandwich".

5.5 Three test specimens shall be tested for each material.