
INTERNATIONAL STANDARD



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Flexible cellular materials — Determination of compression set

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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 1856 was drawn up by Technical Committee ISO/TC 45, *Rubber and rubber products*.

It was approved in October 1969 by the Member Bodies of the following countries :

Australia	Greece	Romania
Austria	Hungary	South Africa, Rep. of
Belgium	India	Spain
Brazil	Iran	Switzerland
Canada	Israel	Thailand
Chile	Italy	Turkey
Czechoslovakia	Japan	United Kingdom
Egypt, Arab Rep. of	Netherlands	U.S.A.
France	New Zealand	U.S.S.R.
Germany	Poland	

The Member Body of the following country expressed disapproval of the document on technical grounds :

Sweden

Flexible cellular materials – Determination of compression set

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies three methods for determining the compression set of flexible cellular materials.

At present this International Standard only applies to latex and polyurethane foams greater than 2 mm in thickness. Tests for other materials will be added as required.

2 REFERENCES

ISO/R 471, *Standard atmospheres for the conditioning and testing of rubber test pieces.*

ISO/R 1794, *Flexible cellular materials – Measurement of dimensions of test pieces.*

3 PRINCIPLE

The methods consist of maintaining a test piece for a specified time at a specified temperature under constant deflection and noting the effect on the thickness of the released test piece.

4 DEFINITION

compression set: The difference between initial thickness and final thickness of a test piece of the cellular material after compression for a given time at a given temperature and after a given recovery time, this difference being referred to the initial thickness.

5 APPARATUS

5.1 Compression device, consisting of two flat plates having dimensions larger than those of the test pieces, with spacers and clamps such that the plates are held parallel to each other and the space between the plates is adjustable to the required deflected height.

For testing thin materials, a requisite number of square photographic glass mounting slides shall be provided. The thickness of the slides shall be between 1 and 1.5 mm and the length of side shall be between 50 and 55 mm.

5.2 Means of measuring the dimensions of the test piece by a device in accordance with ISO/R 1794.

6 TEST PIECES

6.1 Requirements

Test pieces shall have parallel top and bottom surfaces and essentially vertical sides. They shall be 50 ± 1 mm long, 50 ± 1 mm wide and 25 ± 1 mm thick. All test pieces shall be free from any contamination and skin on the vertical sides.

When thin materials are to be tested, sufficient test pieces $50 \text{ mm} \times 50 \text{ mm}$ shall be taken so that the sum of their thicknesses before compression is at least 25 mm. The test pieces shall be plied together and interleaved with the photographic mounting slides where the number of plies is greater than two, and the complete assembly shall be treated during the test as a single thick test piece.

6.2 Number of test pieces

Five 25 mm thick test pieces, or five assemblies in the case of thin materials, shall be tested.

6.3 Conditioning

Materials shall not be tested for at least 72 h after manufacture. Prior to the test the test pieces shall be conditioned for at least 16 h in one of the standard atmospheres specified in ISO/R 471, i.e.:

- 20 ± 2 °C, 65 ± 5 % relative humidity,
- or 23 ± 2 °C, 50 ± 5 % relative humidity,
- or 27 ± 2 °C, 65 ± 5 % relative humidity.

7 PROCEDURE

The test may be carried out by either Method A, Method B or Method C or all three. The three methods, however, may not give the same results.