INTERNATIONAL STANDARD

ISO 3386-2

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Flexible cellular polymeric materials — Determination of stress-strain characteristics in compression —

Part 2: High-density materials

Matériaux polymères alvéolaires souples — Détermination de la caractéristique de contrainte-déformation relative en compression —

Partie 2: Matériaux à masse volumique élevée

Reference number
ISO 3386-2:1997(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 3386-2 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*.

This second edition cancels and replaces the first edition (ISO 3386-2:1984), of which it constitutes a minor revision (in clause 4, second paragraph, the accuracy required for measurement of the test piece thickness has been changed from 0,02 mm to 0,1 mm).

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Flexible cellular polymeric materials — Determination of stress-strain characteristics in compression —

Part 2:
High-density materials

1 Scope

This part of ISO 3386 specifies a method for the determination of the compression stress-strain characteristics of flexible cellular polymeric materials of density greater than 250 kg/m^3.

The compression stress-strain characteristic is a measure of the load-bearing properties of the material, though not necessarily of its capacity to sustain a long-term load.

The compression stress-strain characteristic differs from the indentation hardness characteristics (as determined in accordance with ISO 2439) which are known to be influenced by the thickness and the tensile properties of the flexible cellular material under test, the shape of the compression plate, and the shape and size of the test piece.

ISO 3386-1 specifies a method for low-density flexible materials, and differs from Part 2 in the following ways:

- Part 1 is concerned with materials of density up to 250 kg/m^3, whilst Part 2 is mainly concerned with materials of density above 250 kg/m^3;
- compression stress values have been deleted from Part 2;
- Part 2 does not allow the use of a cylindrical test piece.

This part of ISO 3386 is a general method for testing denser flexible cellular materials (i.e. expanded cellular rubbers), measurements being made on one of more points on the steeply rising part of the stress-strain curve. The shape factor of the test piece is important and comparative test results can only be obtained on test pieces having the same shape factor.

NOTE 1 For comparison purposes, the method may be used for material of 150 kg/m^3 density or greater.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1923:1981, *Cellular plastics and rubbers - Determination of linear dimensions.*

ISO 2439:---[1], *Flexible cellular polymeric materials - Determination of hardness (indentation technique).*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 compression stress-strain characteristic (CC): The stress, expressed in kilopascals, required to produce a compression, at a constant rate of deformation during the fourth loading cycle of the test specified in this International Standard, expressed as a function of the compression.

NOTE 2 Stresses are usually quoted at compressions of (25 ± 1) %, (40 ± 1) %, (50 ± 1) % and (65 ± 1) %, being designated CC25, CC40, CC50 and CC65 respectively.

3.2 shape factor: The ratio of the area of one applied force bearing face of the test piece to the sum of the areas of the four perpendicular sides of the test piece.

4 Apparatus

The apparatus comprises a test machine capable of compressing the test piece by means of a compression plate moving at a uniform rate of (5 ± 1) mm/min. Autographic recording of the stress-strain values is preferred.

The compression plate shall be maintained parallel to the base plate. The testing machine shall have means of measuring the test piece thickness under load to an accuracy of ± 0,1 mm. It shall be capable of maintaining the specified degree of compression for the period specified by the procedure appropriate to the material under test.

[1] To be published (Revision of ISO 2439:1980).