INTERNATIONAL STANDARD

ISO
13362

First edition
2000-11-01

Flexible cellular polymeric materials — Determination of compression set under humid conditions

Matériaux polymères alvéolaires souples — Détermination de la déformation rémanente après compression dans des conditions humides

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

Contents

Page

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 13362 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 4, *Products (other than hoses)*.

Flexible cellular polymeric materials — Determination of compression set under humid conditions

WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

1 Scope

This International Standard specifies a method for determining the compression set of flexible cellular materials under humid conditions.

This method consists of maintaining the test piece under specified conditions of time, temperature, humidity and constant compressive strain and determining the effect on the thickness of the test piece after a specified recovery period.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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

3 Term and definition

For the purposes of this International Standard, the following term and definition applies.

3.1
compression set
difference between the initial thickness and the 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

4 Principle

A test piece is maintained for a specified time at a specified temperature and relative humidity under constant deflection and the effect on the thickness of the test piece noted after release.

5   Apparatus

5.1   Stainless-steel compression device, consisting of two flat plates having dimensions larger than those of the test pieces, with spacers and a clamping mechanism such that the plates are held parallel to each other and the distance between the plates is adjustable to the required compression of the test pieces.

5.2   Dial gauge, as specified in subclause 3.1 of ISO 1923:1981.

5.3   Air-circulating oven/humidity cabinet, hermetically sealed and capable of maintaining a temperature of (40 ± 1) °C and a relative humidity of 95 % to 100 %.

6   Test pieces

The test pieces shall be parallelepipeds, with or without skin, with square load-bearing surfaces of side (100 ± 2) mm and with a thickness of (50 ± 1) mm. Three test pieces shall be tested. These shall not be taken close to the edges or ends of the sample.

7   Conditioning

Material shall not be tested for at least 72 h after manufacture, unless, at either 16 h or 48 h after manufacture, it can be demonstrated that the compression set values obtained do not differ by more than ± 10 % from those obtained after 72 h. Testing is permitted at either 16 h or 48 h if, at the selected time, the above criteria have been satisfied.

Prior to the test, the test pieces shall be conditioned for at least 16 h in one of the following atmospheres:

   (23 ± 2) °C and (50 ± 5) % relative humidity;

   (27 ± 2) °C and (65 ± 5) % relative humidity.

NOTE   This storage period can form the final part of the period following manufacture.

8   Procedure

After conditioning in accordance with clause 7, measure the initial thickness of each test piece to the nearest 0,1 mm as described in subclause 4.3 of ISO 1923:1981.

Place a test piece in the compression device and compress it by $(70 \pm 0,5)$ % of its original thickness. Within 5 min of compression, place the compressed test piece in the oven/humidity cabinet at (40 ± 1) °C and 95 % to 100 % RH for 22^{+2}_{0} h.

Remove the compression device from the oven/humidity cabinet and, within 1 min, remove the test piece from the device and place it on a wooden surface. Allow the test piece to recover for 15 min in the same atmosphere as was used for conditioning and then remeasure the thickness as described above.

9   Calculation

Calculate the percentage compression set under humid conditions, CSH, from the following equation:

$$\text{CSH} = \frac{d_0 - d_r}{d_0} \times 100$$