INTERNATIONAL STANDARD

ISO 3934

Second edition
2002-09-01

Rubber, vulcanized and thermoplastic — Preformed gaskets used in buildings — Classification, specifications and test methods

Caoutchouc vulcanisé et thermoplastique — Profilés d'étanchéité utilisés dans le bâtiment — Classification, spécifications et méthodes d'essai

Reference number
ISO 3934:2002(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

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.

The main task of technical committees is to prepare International Standards. 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.

ISO 3934 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 4, *Products (other than hoses)*.

This second edition cancels and replaces the first edition (ISO 3934:1978), which has been technically revised.

Annexes A to E form a normative part of this International Standard.

Introduction

Preformed gaskets used in buildings have conditions of use which differ depending on their function and position in the building. When preparing this International Standard, it was felt necessary to take into account the various conditions to which the gaskets are subjected in order to define the material specifications. The tests take into account the static and dynamic stresses to which the gaskets are subjected.

Rubber, vulcanized and thermoplastic — Preformed gaskets used in buildings — Classification, specifications and test methods

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 system of classification of materials used in preformed gaskets for buildings. It applies to the following products:

a) gaskets for use round the inside of door or window casings, i.e. weatherstripping (dynamic gaskets);

b) gaskets for glazing (static gaskets);

c) gaskets for use round infilling;

d) gaskets for use between façade parts;

e) gaskets for use between masonry walls.

In addition to specifying the characteristics required for the constituent materials, some functional tests on the gaskets themselves are specified. The corresponding test procedures are given in the annexes.

This International Standard applies to preformed gaskets made from vulcanized or thermoplastic rubber. It also applies to preformed gaskets made of cellular rubber designed for use at temperatures between − 20 °C and + 55 °C (thermal conditions category P_1) and between − 40 °C and + 70 °C (thermal conditions category P_3) (see clause 4).

2 Normative references

The following normative documents contain 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 editions of the normative documents 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 37:1994, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 105-A02:1993, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour*

ISO 188:1998, *Rubber, vulcanized or thermoplastic — Accelerated ageing and heat resistance tests*

ISO 812:1991, *Rubber, vulcanized — Determination of low-temperature brittleness*

ISO 815:1991, *Rubber, vulcanized or thermoplastic — Determination of compression set at ambient, elevated or low temperatures*

ISO 1431-1:1989, *Rubber, vulcanized or thermoplastic — Resistance to ozone cracking — Part 1: Static strain test*

ISO 2285:2001, *Rubber, vulcanized or thermoplastic — Determination of tension set under constant elongation, and of tension set, elongation and creep under constant tensile load*

ISO 4892-2:1994, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc sources*

ISO 7619:1997, *Rubber — Determination of indentation hardness by means of pocket hardness meters*

3 Terms and definitions

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

3.1
compression force
force needed to compress a test piece through its working range to its minimum width

3.2
compression recovery
the ability of a gasket to recover its shape after being compressed through its working range

3.3
minimum width
the lower limit of the working compression range

NOTE 1 For a glazing gasket, the minimum width is the sum of the gaps between the glass and the frame on each side of the glass. For weatherstripping, it is the gap between the door or window and the casing, measured at the hinge side.

NOTE 2 It is recommended that the minimum width of weatherstripping and the minimum clearance between glazing and frame for a glazing gasket be agreed by consultation between designer, manufacturer and user.

3.4
sample
a complete batch of test material (gaskets) as supplied by the manufacturer for test purposes and from which test pieces are cut

3.5
stress relaxation
time-dependent decrease in stress at a constant deformation

3.6
weathering resistance
resistance to combined detrimental influences of the outdoor environment (for example sunlight, ozone, oxygen, humidity, temperature) on a material

3.7
working compression range
range, stated by the manufacturer, through which the gasket performs its function of being compressed or otherwise deformed when used in any particular product (see annex A)

EXAMPLE For a gasket of free height 7,5 mm, the manufacturer states a working range of 3 mm to 6 mm.

3.8
free height
height of a gasket measured without causing any significant deformation (see Figure 1)

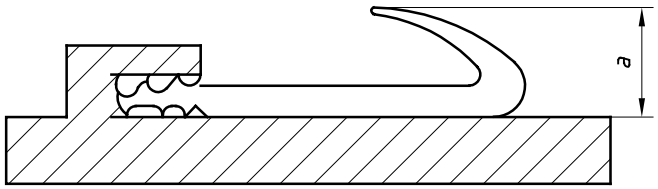

Figure 1 — Example of measurement of free height

4 Environmental conditions

The conditions to which gaskets may be subjected in the working environment are divided into the following categories:

a) Thermal conditions (depending on the climate and the position in the construction)

- P_1: temperature of preformed gasket – 20 °C to + 55 °C
- P_2: temperature of preformed gasket – 20 °C to + 85 °C
- P_3: temperature of preformed gasket – 40 °C to + 70 °C
- P_4: temperature of preformed gasket – 40 °C to + 100 °C

b) Mechanical conditions

- X: static uses (see Table 1), i.e. between fixed elements
- Y: dynamic uses (see Table 1), i.e. between moving elements

c) Weathering

- R_1: protected from solar radiation
- R_2: exposed to solar radiation

5 Classification and specification

5.1 Classification

From the results of the tests carried out in accordance with this International Standard, the classification of a particular type of gasket shall be determined using Table 1. The numbers from Table 1, taken in the order given, form the classification code for that gasket, viz:

A	B	C	D	E	F	G

— A: type of gasket

— B: working compression range

— C: compression force

— D: working temperature range

— E: compression recovery

— F: stress relaxation

— G: weathering resistance

Table 2 gives a typical example of a classification code.

5.2 Specifications

Tables 3 to 10 give the specifications for different classification criteria.

6 Test pieces

Test pieces shall be prepared in accordance with the relevant standard test method or the relevant annex of this International Standard and, whenever possible, shall be cut from the gasket to be tested.

Failing this, they shall be taken from extruded ribbon (2 mm thick, 30 mm in width) or from appropriately dimensioned test slabs prepared from the same batch of material used to produce the gaskets being assessed and obtained under conditions that have been shown by experience to give comparable results.

If measurements are made on test pieces not conforming to the standard referenced in Tables 3 to 10 (for example part of a gasket), the results may be different and the requirements to be met shall be subject to agreement between the interested parties.

Table 1 — Classification of gaskets

Code-letter	Characteristic	Class									
		0	1	2	3	4	5	6	7	8	9
A	Type of gasket	X: static use Y: dynamic use									
B	Working compression range (mm) Annex A		⩽ 1	> 1 but ⩽ 2	> 2 but ⩽ 4	> 4 but ⩽ 6	> 6 but ⩽ 8	> 8 but ⩽ 10	> 10 but ⩽ 15	> 15 but ⩽ 30	> 30
C	Compression force (N/m) Annex B		⩽ 10	> 10 but ⩽ 20	> 20 but ⩽ 50	> 50 but ⩽ 100	> 100 but ⩽ 200	> 200 but ⩽ 500	> 500 but ⩽ 700	> 700 but ⩽ 1 000	> 1 000
D	Working temperature range (°C)		– 20 to + 55 (P_1)	– 20 to + 85 (P_2)	– 40 to + 70 (P_3)	– 40 to + 100 (P_4)					
E	Compression recovery (%) Annex C		⩽ 20	> 20 but ⩽ 30	> 30 but ⩽ 40	> 40 but ⩽ 50	> 50 but ⩽ 60	> 60 but ⩽ 70	> 70 but ⩽ 80	> 80 but ⩽ 90	> 90
F	Stress relaxation (%) Annex D		⩽ 20	> 20 but ⩽ 30	> 30 but ⩽ 40	> 40 but ⩽ 50	> 50 but ⩽ 60	> 60 but ⩽ 70	> 70 but ⩽ 80	> 80 but ⩽ 90	> 90
G	Weathering resistance		R_1 Table 9	R_2 Table 10							

Table 2 — Typical example of classification code