
**Composition cork — Gasket
material — Classification system,
requirements, sampling, packaging
and marking**

*Aggloméré composé de liège — Matériau pour joints pour industries
mécaniques — Système de classification, exigences, échantillonnage,
emballage et marquage*

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 87, *Cork*.

This third edition cancels and replaces the second edition (ISO 4709:2000), which has been technically revised.

The main changes compared to the previous edition are as follows: [Clause 5](#) and [Table 1](#) have been technically revised.

Composition cork — Gasket material — Classification system, requirements, sampling, packaging and marking

1 Scope

This document gives a classification system for composition cork intended to be used as gaskets in the mechanical industry. It provides a means for specifying or describing the relevant properties.

Since not all properties that contribute to gasket performance are included, the use of this system is limited to the selection of materials in accordance with specified requirements.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 633, *Cork — Vocabulary*

ISO 4708, *Composition cork — Gasket material — Test methods*

ISO 7322, *Composition cork — Test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 633 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Basis of classification

4.1 General

4.1.1 The classification system outlined in this document is intended to encourage uniformity in reporting properties, to provide a common language between suppliers and consumers, and to guide designers and engineers in stipulating specifications based on common test methods for commercially available materials.

4.1.2 This classification system is versatile enough to also cover new materials and test methods as they are introduced. It is based on the principle that non-metallic gasket materials should be described, as far as possible, in terms of specific physical and mechanical properties and that an infinite number of such descriptions can be formulated by using one or more statements, based on tests.

4.1.3 Users of gasket materials may, by selecting different combinations of different statements, specify different combinations of desired properties. Suppliers may, likewise, report properties available in their respective products.

4.2 Significance of the system

4.2.1 This classification system establishes letter or number symbols or both ("line call-out") for various performance levels of each property or characteristic (see [Clause 5](#)).

4.2.2 Various levels of specification or description can be established by increasing or decreasing the number of letter-numeral symbols used in the "line call-out".

4.2.3 The specification or description of gasket materials, in this system, shall include a reference to this document followed by six numerals, e.g. ISO 4709, (220304).

4.2.4 Each numeral represents one characteristic (see [Clause 5](#)).

4.2.5 The numeral "0" is used when the description of any characteristic is not desired.

4.2.6 The numeral "9" is used when the description of any characteristic is specified by some supplement to this classification system, such as engineering drawings.

4.2.7 To specify or describe gasket materials further, each "line call-out" can include one or more suffix letter-numeral symbols (see [Table 1](#)).

5 Description of the system

5.1 Basic characteristics

5.1.1 The first numeral in the "line call-out" is related to the type of raw material that is the base of the gasket material; for cork products the number 2 shall be used.

5.1.2 When the first numeral is 2, the second numeral in the "line call-out" can assume the following figures (related to the type of agglomerate).

0	not specified
1	composition cork
2	cork and elastomeric
3	cork and cellular rubber
9	as specified

5.1.3 The third numeral is related to the compressibility characteristics of the agglomerated cork, expressed as a percentage and determined in accordance with ISO 4708:

0	not specified	5	from 20 % to 30 %
1	from 0 % to 10 %	6	from 25 % to 40 %
2	from 5 % to 7 %	7	from 30 % to 50 %
3	from 10 % to 20 %	8	from 40 % to 60 %
4	from 15 % to 25 %	9	as specified

5.1.4 The fourth numeral is related to the thickness increase of the agglomerated cork, after immersion in ASTM IRM 903 oil expressed as a percentage and determined in accordance with ISO 4708:

0	not specified	5	from 20 % to 40 %
1	from 0 % to 15 %	6	from 30 % to 50 %
2	from 5 % to 20 %	7	from 40 % to 60 %
3	from 10 % to 25 %	8	from 50 % to 70 %
4	from 15 % to 30 %	9	as specified

5.1.5 The fifth numeral is related to the mass increase of the agglomerated cork, after immersion in ASTM IRM 903 oil, expressed as a percentage and determined in accordance with ISO 4708:

0	not specified	5	maximum 40 %
1	maximum 10 %	6	maximum 60 %
2	maximum 15 %	7	maximum 80 %
3	maximum 20 %	8	maximum 100 %
4	maximum 30 %	9	as specified

5.1.6 The sixth numeral is related to the mass increase of the agglomerated cork, after immersion in water, expressed as a percentage and determined in accordance with ISO 4708:

0	not specified	5	maximum 40 %
1	maximum 10 %	6	maximum 60 %
2	maximum 15 %	7	maximum 80 %
3	maximum 20 %	8	maximum 100 %
4	maximum 30 %	9	as specified

5.2 Supplementary characteristics

The characteristics given in [Table 1](#) are found to be important for some specific purposes (see [4.2.7](#)).

6 Requirements

6.1 Basic requirements

The characteristics of gasket materials identified by this classification shall be indicated by the first six numerals of the "line call-out", within the limits shown in [5.1.1](#) to [5.1.6](#), and by additional letter-numeral symbols as shown in [Table 1](#).

Table 1 — Supplementary characteristics

Symbol	Characteristic	Test method	Requirement
E0 to E9	Thickness increase (%) See Annex A	ISO 4708 and ISO 7322	E0 not specified E1 from 0 % to 5 % E2 from 0 % to 10 % E3 from 0 % to 15 % E4 from 5 % to 20 % E5 from 10 % to 25 % E6 from 15 % to 35 % E7 from 25 % to 45 % E8 from 30 % to 60 % E9 as specified
T1 to T9	Tensile strength (MPa)	ISO 4708 and ISO 7322	M1 $\geq 0,670$ MPa M2 $\geq 1,7$ MPa M3 $\geq 3,4$ MPa M4 $\geq 6,8$ MPa M5 $\geq 10,3$ MPa M6 $\geq 13,8$ MPa M7 $\geq 20,7$ MPa M8 $\geq 27,6$ MPa M9 as specified
D	Binder durability See Annex A	ISO 4708	Shall not disaggregate ^a
F	Flexibility	ISO 4708	Shall be flexible ^b

^a A test specimen is said to “disaggregate” if it splits open and/or if it shows substantial loss of particles during the test.

^b A test specimen is said to be flexible if it does not show any crack, break or surface separation after testing.

6.2 Thickness requirements

Gasket materials identified by this classification shall conform to the thickness tolerances specified in [Table 2](#).

Table 2 — Thickness and tolerances allowed

Type	Thickness mm	Tolerances
Composition cork	Nominal value	$\pm 0,10$ % or 0,25 mm (whichever is the greatest)
Cork and elastomeric	< 1,5	$\pm 0,25$ mm
	$\geq 1,5$	$\pm 0,40$ mm
Cork and cellular rubber	$\geq 1,5$	$\pm 0,40$ mm

7 Sampling

Test specimens shall be selected from sheets of suitable size. They shall be cut squarely. The grain direction shall be noted by an arrow, whenever possible. See ISO 2859-1 for sampling schemes.

8 Packaging

Composition cork shall be kept in moisture-resistant packages or pallets which ensure transportation without damaging the products until arrival at their destination.

9 Marking

Packages shall show the following information:

- a) reference to this document, i.e. ISO 4709;
- b) product designation in accordance with [4.2](#);
- c) manufacturer identification, even if coded;
- d) source.

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