BRITISH STANDARD

BS EN
682:2002

Elastomeric seals — Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids

The European Standard EN 682:2002 has the status of a British Standard

ICS 23.040.80; 83.140.50

National foreword

This British Standard is the official English language version of EN 682:2002. Together with BS EN 681-2:2000 this publication supersedes BS 2494:1990 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/70, Elastomeric seals for joints in pipes, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled "International Standards Correspondence Index", or by using the "Find" facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

This British Standard, having been prepared under the direction of the Materials and Chemicals Sector Policy and Strategy Committee, was published under the authority of the Standards Policy and Strategy Committee on 28 March 2002

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 18, an inside back cover and a back cover.

The BSI copyright date displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments

ISBN 0 580 39273 2

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 682

February 2002

ICS 83.140.50

English version

Elastomeric Seals - Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids

Garnitures d'étanchéité en caoutchouc - Spécification des matériaux pour garnitures d'étanchéité pour joints de canalisations et des raccords véhiculant du gaz et des fluides hydrocarbures

Elastomer-Dichtungen - Werkstoff-Anforderungen für Dichtungen in Versorgungsleitungen und Bauteilen für Gas und flüssige Kohlenwasserstoffe

This European Standard was approved by CEN on 16 November 2001.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

page

Foreword ... 3

1 Scope ... 4

2 Normative references ... 5

3 Classification ... 6

4 Requirements ... 6
4.1 Materials ... 6
4.2 Finished seal requirements ... 6
4.2.1 Dimensional tolerances ... 6
4.2.2 Imperfections and defects ... 6
4.2.3 Hardness ... 7
4.2.4 Tensile strength and elongation at break ... 7
4.2.5 Compression set in air ... 7
4.2.6 Accelerated ageing in air ... 7
4.2.7 Stress relaxation in compression ... 7
4.2.8 Volume change in liquid B ... 8
4.2.9 Volume change in oil ... 8
4.2.10 Ozone resistance ... 8
4.2.11 Compression set at - 15 °C ... 8

5 Test pieces and temperature ... 10
5.1 Preparation of test pieces ... 10
5.2 Test temperature ... 10

6 Factory production control ... 11

7 Factory product control tests ... 11
7.1 Sampling ... 11
7.2 Routine tests ... 11
7.3 Type tests ... 11

8 Storage ... 11

9 Designation ... 12

10 Marking and labelling ... 12

Annex A (informative) Guidance on storage of seals ... 13

Annex ZA (informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive ... 14

Bibliography ... 18

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 208 “Elastomeric seals for joints in pipework and pipelines”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2002, and conflicting national standards shall be withdrawn at the latest by November 2003.

No existing European Standard is superseded.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this standard.

This European Standard is based on ISO 6447 and ISO 6448, bringing together the requirements for seals used in gas and hydrocarbon fluid applications. The major changes from ISO 6447 and ISO 6448 have been to introduce additional test requirements e.g. an ozone test and to modify some requirements. Finished joint seals have been classified according to their final application and operating temperatures.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies requirements for elastomeric materials used in seals for supply pipes and fittings, ancillaries and valves at operating temperatures in general from - 5 °C up to 50 °C and in special cases from - 15 °C up to 50 °C, for the following:

General applications (see Table 4, type G)

a) gaseous fuel (manufactured, natural and liquefied petroleum gas [LPG] in gaseous phase);

b) hydrocarbon fluids with aromatic content up to 30 % (*V*/*V*), including LPG in liquid phase.

Special applications (see Table 4, type H)

Materials suitable for carrying gaseous fuels containing gas condensates and hydrocarbon fluids of unrestricted aromatic content.

General requirements for finished joint seals are also given; any additional requirements called for by the particular application are specified in the relevant product standards taking into account that the performance of pipe joints is a function of the seal material properties, seal geometry and pipe joint design. This European Standard should be used where appropriate with product standards which specify performance requirements for joints.

This European Standard is applicable to joint seals for all pipeline materials including iron, steel, copper and plastics.

In the case of composite seals requirements in 4.2.8 and 4.2.9 apply only when the materials used for any elastomeric parts come into contact with gaseous fuel or hydrocarbon fluid.

Elongation at break, tensile strength**,** compression set and stress relaxation requirements for materials of hardness categories 80 and 90 apply only when they constitute that part of the seal which participates directly in the sealing function or in long term stability.

This standard is not applicable to the following:

a) seals made from cellular materials;

b) seals with enclosed voids as part of their design;

c) seals with requirements of resistance to flame or to thermal stress;

d) seals which contain splices joining pre-vulcanized profile ends.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

ISO 37, *Rubber, vulcanized or thermoplastic – Determination of tensile stress – strain properties.*

ISO 48, *Rubber, vulcanized or thermoplastic – Determination of hardness (hardness between 10 IRHD and 100 IRHD).*

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

ISO 471, *Rubber – Temperatures, humidities and times for conditioning and testing.*

ISO 815, *Rubber, vulcanized or thermoplastic – Determination of compression set at ambient, elevated or low temperatures.*

ISO 1431–1, *Rubber, vulcanized or thermoplastic – Resistance to ozone cracking – Part 1: static strain test.*

ISO 1817, *Rubber, vulcanized – Determination of the effect of liquids.*

ISO 2859–1, *Sampling procedures for inspection by attributes - Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection.*

ISO 3302–1, *Rubber – Tolerances for products – Part 1: Dimensional tolerances.*

ISO 3384:1999, *Rubber, vulcanized or thermoplastic – Determination of stress relaxation in compression at ambient and at elevated temperatures.*

ISO 3951, *Sampling procedures and charts for inspection by variables for percent nonconforming.*

ISO 4661–1, *Rubber, vulcanized or thermoplastic – Preparation of samples and test pieces – Part 1: Physical tests.*

ISO 9691:1992, *Rubber – Recommendations for the workmanship of pipe joint rings – Description and classification of imperfections.*

3 Classification

Five categories of material for seals are specified in Tables 2 and 3.

A nominal hardness shall be specified within the ranges in Table 1.

Table 1 - Hardness categories

Hardness category	50	60	70	80	90
Range of hardness, IRHD	46 - 55	56 -65	66 - 75	76 - 85	86 - 95

4 Requirements

4.1 Materials

The materials shall be free of any substances which can have a deleterious effect on the life of the seals, or on the pipe and fittings.

4.2 Finished seal requirements

4.2.1 Dimensional tolerances

Tolerances shall be specified from the appropriate categories in ISO 3302-1.

4.2.2 Imperfections and defects

The seals shall be free of defects or irregularities which could affect their function. Classification of imperfections shall be according to ISO 9691:1992 as follows:

- surface imperfections in zones involved in the sealing function as described in 4.1.1 of ISO 9691:1992 shall be considered as defects;

- surface imperfections in zones not involved in the sealing function as described in 4.1.2.1 b) of ISO 9691:1992 shall not be considered as defects.

NOTE 1 Major surface imperfections in zones not involved in the sealing function as described in 4.1.2.1 a) of ISO 9691:1992 can be considered as defects. This should be agreed between the interested parties; the acceptance criteria depends upon the seals' type or design respectively.

NOTE 2 Internal imperfections as described in 4.2 of ISO 9691: 1992 can be considered as defects. The compressive force can be determined according to ISO 7743. The acceptable limiting values of the compressive force should be agreed between the interested parties; they depend upon the seals' type or design respectively.

4.2.3 Hardness

When determined by the micro-test method specified in ISO 48, the hardness shall conform to the requirements given in Tables 2 or 3.

NOTE If the dimensions of a seal are appropriate, the normal test method specified in ISO 48 can be used, provided that the micro-test method is used for reference purposes.

For the same seal, the difference between the minimum and maximum hardness values shall not be more than 4 IRHD. Each value shall be within the specified tolerances.

4.2.4 Tensile strength and elongation at break

Tensile strength and elongation at break shall be determined by the method specified in ISO 37. Dumbbell shaped test pieces of types 1, 2, 3 or 4 shall be used. Type 2 is the preferred type. The test report shall state the dumb-bell type whenever type 2 is not used.

The tensile strength and the elongation at break shall conform to the requirements given in Tables 2 or 3.

4.2.5 Compression set in air

4.2.5.1 General

If the test piece is taken from a seal, then the measurement shall be carried out as far as possible in the direction of compression of the seal in service.

1.1.1.2 Compression set at 23 °C and 70 °C

When determined by the method specified in ISO 815, at 23 °C and 70 °C using the small type B test piece, the compression set shall conform to the requirements given in Tables 2 or 3.

4.2.5.3 Low temperature compression set at –5 °C

When determined by the method specified in ISO 815 using the small type B test piece and a recovery time of (30 ± 3) min, the compression set after 72 h at -5 °C, when measured at -5 °C, shall conform to the requirements given in Tables 2 or 3.

4.2.6 Accelerated ageing in air

Test pieces prepared for the determination of hardness (see 4.2.3) and for the determination of tensile strength and elongation at break (see 4.2.4) shall be aged in air at 70 °C for 7 days by the normal oven method specified in ISO 188:1998 (Method A).

The changes in hardness, tensile strength and elongation at break shall conform to the requirements given in Tables 2 or 3.

4.2.7 Stress relaxation in compression

The stress relaxation shall be determined by Method A of ISO 3384:1999, using a test piece in accordance with 5.1, after applying mechanical and thermal conditioning. Measurements shall be taken after 3 h, 1 day, 3 days and 7 days for the 7 days test and after 3 h, 1 day, 3 days, 7 days, 30 days and 90 days for the 90 days test. The best fit straight line shall be determined by regression analysis using a

logarithmic time scale. The 7 days and 90 days requirements in Tables 2 and 3 are those derived from these straight lines.

The stress relaxation in compression shall conform to the requirements given in Tables 2 or 3.

For continuous measurements using an apparatus described in paragraph one of 5.2 of ISO 3384:1999, the 7 days and 90 days requirements in Tables 2 and 3 are those derived from the measurement at 7 days and 90 days.

The test temperature shall be maintained within the specified tolerance during the whole period of the test and verified by suitable recording equipment on a continuous basis.

The 90 days test shall be considered as a type approval test.

If the test piece is taken from a seal, then the measurement shall be carried out as far as possible in the direction of compression of the seal in service.

4.2.8 Volume change in liquid B

When determined by the method specified in ISO 1817, the volume change after a 7 days immersion at 23 °C in liquid B and, in addition, followed by drying in air for 4 days at 70 °C, shall conform to the requirements given in Tables 2 or 3.

4.2.9 Volume change in oil

When determined by the method specified in ISO 1817, after a 7 days immersion at 70 °C in oil IRM 903, the volume change shall conform to the requirements given in Tables 2 or 3.

4.2.10 Ozone resistance

When determined by the method specified in ISO 1431-1, under the conditions set out below:

Ozone concentration		(50 ± 5) pphm
Temperature		(40 ± 2) °C
Pre-tension time		(72 + 0/-2) h
Exposure time		(48 + 0/-2) h
Elongation:	hardness categories 50, 60 and 70	(20 ± 2) %
	hardness category 80	(15 ± 2) %
	hardness category 90	(10 ± 1) %
Relative humidity		(55 ± 10) %

the test pieces shall conform to the requirements given in Tables 2 or 3.

Sealing elements which are protected and packaged separately up to the time of installation shall meet the same requirements but using an ozone concentration of (25 ± 5) pphm.

4.2.11 Compression set at - 15 °C

When determined by the method specified in ISO 815 using the small test piece type B and a recovery time of (30 ± 3) min, the compression set of elastomeric materials which are intended to be used at

temperatures below - 5 °C and down to - 15 °C shall, after 72 h at -15 °C, when measured at - 15 °C, conform to the requirements given in Table 2.

Table 2 - Requirements for materials used for seals suitable for carrying gaseous fuel and hydrocarbon fluids with aromatic content of up to 30 % (*V/V*) - (see Table 4, type G)

Property	Unit	Test method	Clauses	Requirements for hardness categories				
				50	60	70	80	90
Permissible tolerance on nominal hardness	IRHD	ISO 48	4.2.3	± 5	± 5	± 5	± 5	+ 3/-5
Tensile strength, min.	MPa	ISO 37	4.2.4	10	10	10	10	10
Elongation at break, min.	%	ISO 37	4.2.4	400	300	200	150 [a]	80 [a]
Compression set, max.								
72 h at 23 °C	%	ISO 815	4.2.5.2	10	10	10	15 [a]	15 [a]
24 h at 70 °C	%	ISO 815	4.2.5.2	18	18	18	20 [a]	20 [a/b)]
72 h at -5 °C	%	ISO 815	4.2.5.3	25	25	25	40 [a]	40 [a/b]
Ageing 7 days at 70 °C		ISO 188	4.2.6					
- hardness change, max.	IRHD	ISO 48		± 5	± 5	± 5	± 5	± 5
- tensile strength change, max.	%	ISO 37		± 15	± 15	± 15	± 15	± 15
- elongation at break change, max.	%	ISO 37		+10/-25	+10/-25	+10/-25	+10/-25	+10/-25
Stress relaxation, max.								
- 7 days at 23 °C	%	ISO 3384	4.2.7	12	13	14	15 [a]	15 [a]
- 90 days at 23 °C	%	ISO 3384	4.2.7	18	19	20	22 [a]	22 [a]
Volume change in liquid B after 7 days	%	ISO 1817	4.2.8	+ 35	+ 35	+ 30	+ 30	+ 25
at 23 °C, max.								
Volume change in liquid B and	%	ISO 1817	4.2.8	- 15	- 12	- 10	- 10	- 10
subsequent 4 days at 70 °C air drying,								
max.								
Volume change in oil IRM 903 after 7 days at 70 °C [c]	%	ISO 1817	4.2.9	+ 10/-1	+ 10/-1	+ 10/-1	+ 10/-1	+ 10/-1
Ozone resistance		ISO 1431-1	4.2.10	No cracking when viewed without magnification				
Compression set after 72 h at -15 °C, max [d]	%	ISO 815	4.2.11	40	40	50	60 [a]	65 [a]

[a] Requirements for material of hardness categories 80 IRHD and 90 IRHD are applied only when this material participates directly in the sealing function or in long term stability.

[b] For materials with a hardness ≥ 90 IRHD, the requirement for the compression set at 70 °C is ≤ 40 %. For materials with a hardness ≥ 90 IRHD, the requirement for the compression set at -5 °C is ≤ 50 %.

[c] Not applicable to sealing material types GA and GAL (see Table 4).

[d] For types GAL and GBL only (see Table 4).

Table 3 - Requirements for materials used for seals suitable for carrying gaseous fuels containing gas condensates and hydrocarbon fluids of unrestricted aromatic content (see Table 4, type H).

Property	Unit	Test Method	Clauses	Requirements for hardness categories				
				50	60	70	80	90
Permissible tolerance on	IRHD	ISO 48	4.2.3	± 5	± 5	± 5	± 5	+ 3/-5
nominal hardness								
Tensile strength, min.	MPa	ISO 37	4.2.4	8	8	8	10	10
Elongation at break, min.	%	ISO 37	4.2.4	200	200	150	100 [a]	80 [a]
Compression set, max.								
- 72 h at 23 °C	%	ISO 815	4.2.5.2	14	14	15	15 [a]	15 [a]
- 24 h at 70°C	%	ISO 815	4.2.5.2	14	14	15	15 [a]	15 [a]
- 72 h at -5 °C	%	ISO 815	4.2.5.3	- [b]	45	50	50[a)]	50 [a]
Ageing 7 days at 70 °C		ISO 188	4.2.6					
- hardness change, max.	IRHD	ISO 48		± 3	± 3	± 3	± 3	± 3
- tensile strength change, max.	%	ISO 37		± 15	± 15	± 15	± 15	± 15
- elongation at break change,	%	ISO 37		+10/-15	+10/-15	+10/-15	+10/-15	+10/-15
max.								
Stress relaxation, max								
- 7 days at 23 °C	%	ISO 3384	4.2.7	13	13	15	15 [a]	15 [a]
- 90 days at 23 °C	%	ISO 3384	4.2.7	19	19	22	22[a]	22 [a]
Volume change in liquid B after 7 days	%	ISO 1817	4.2.8	+ 5	+ 5	+ 5	+ 5	+ 5
at 23 °C, maximum								
Volume change in liquid B and	%	ISO 1817	4.2.8	- 2	- 2	- 2	- 2	- 2
subsequent 4 days at 70 °C air drying,								
maximum								
Volume change in standard oil IRM 903 after 7 days at 70 °C	%	ISO 1817	4.2.9	+ 5/-1	+ 5/-1	+ 5/-1	+ 5/-1	+ 5/-1
Ozone resistance		ISO 1431-1	4.2.10	No cracking when viewed without magnification				

[a] Requirements for material of hardness categories 80 IRHD and 90 IRHD are applied only when the material participates directly in the sealing function or in long term stability.

[b] Elastomers of this hardness category should not be used below 0 °C.

5 Test pieces and temperature

5.1 Preparation of test pieces

Unless otherwise specified, test pieces shall be cut from the finished product by the method specified in ISO 4661-1. If satisfactory test pieces cannot be prepared in accordance with the instructions given for the appropriate test method they shall be taken from laboratory samples of the same formulation, process conditions and method of preparation as the finished seals.

For tests in which different sizes of test pieces are permissible, the same size of test piece shall be used for each batch and for any comparative purposes.

1.2 Test temperature

Unless otherwise specified, tests shall be carried out at (23 ± 2) °C in accordance with ISO 471.

NOTE Two standard laboratory temperatures are given in ISO 471.

6 Factory production control

The manufacturer shall establish and maintain an effective documented internal factory production control system, so as to achieve conformance with the relevant standards for specific applications.

NOTE 1 Having regards to the hazards associated with transportation of flammable and explosive fluids, attention is particularly drawn to the need for stringent production control procedures.

Factory production control shall comprise continuous inspection carried out by the manufacturer to ensure conformance with the requirements of this product standard.

NOTE 2 A factory production control system in conformity with EN ISO 9001, and made specific to the requirements of this standard, meets this requirement.

7 Factory product control tests

7.1 Sampling

The product control tests shall be carried out on lots of finished components using sampling procedures in accordance with either:

a) ISO 2859-1 with a specified inspection level of S2 and an AQL of 2,5 % for attributes; or

b) ISO 3951 with a specified inspection level of S3 and an AQL of 2,5 % for variables.

These requirements do not preclude the use by the manufacturer of more stringent combinations of inspection levels and AQL values from ISO 2859-1 or ISO 3951.

7.2 Routine tests

The tests in accordance with 4.2.1 and 4.2.2 and the following tests according to the methods listed in Tables 2 and 3 shall be carried out using test pieces in accordance with 5.1.

a) hardness;

b) tensile strength;

c) elongation at break;

d) compression set for 24 h at 70°C.

7.3 Type tests

All tests except those having a duration in excess of 28 days shall be carried out at least annually and whenever the manufacturing technique is changed significantly. Those tests having a duration in excess of 28 days shall be repeated at five yearly intervals. All tests shall be carried out initially and whenever the compounding formulation is changed significantly.

8 Storage

See annex A.

9 Designation

Elastomeric seals for pipelines, fittings, ancillaries and valves, are designated according to their intended application as described in Table 4. The following information shall be used for a full designation of the seals.

a)	description	e.g. ‘O’ ring
b)	European Standard number	EN 682
c)	nominal size	e.g. DN 150
d)	type of application	e.g. GB (see Table 4)
e)	elastomer type	e.g. NBR
f)	joint name	e.g. ‘Trade name’

Example: ‘O’ ring/EN682/DN 150/GB/NBR/Tradename

Table 4 - Designation of elastomeric seals by type, application and operating temperature

Type	Application	Operating temperature °C
GA	Gaseous fuel	- 5 to 50
GAL	Gaseous fuel	- 15 to 50
GB	Hydrocarbon fluids and gaseous fuel	- 5 to 50
GBL	Hydrocarbon fluids and gaseous fuel	- 15 to 50
H	Aromatic hydrocarbon fluids and gaseous fuels containing condensates	- 5 to 50

10 Marking and labelling

Each seal or parcel of seals where the marking is not practicable, shall be marked clearly and durably, as listed below, such that the sealing capability is not impaired.

a) nominal size;

b) manufacturer’s identification;

c) the number of this standard and the seal type and hardness category as a suffix, e.g. EN 682/GB/60;

d) the quarter and year of manufacture;

e) the abbreviation for the elastomer, e.g. NBR.;

f) in case of a product made out of a material resistant to a lower concentration of ozone (see 4.2.10) this should be clearly indicated on the packaging.

NOTE For CE marking and labelling, ZA.3 applies.

Annex A
(informative)

Guidance on storage of seals

At all stages between manufacture and use the seals should be stored in accordance with the recommendations given in ISO 2230 (see Bibliography).

The following points should be noted:

a) the storage temperature should be below 25 °C and preferably below 15 °C;

b) the seals should be protected from light, in particular strong sunlight and artificial light with a high ultraviolet content;

c) the seals should not be stored in a room with any equipment capable of generating ozone, e.g. mercury vapour lamps, high voltage electrical equipment, which can give rise to electric sparks or silent electrical discharges;

d) the seals should be stored in a relaxed condition, free from tension, compression or other deformation. For instance, they should not be suspended from any part of the circumference;

e) the seals should be maintained in a clean condition.

Annex ZA
(informative)

Clauses of this European Standard addressing the provisions of the EU Construction Products Directive

ZA.1 Scope and clauses of the European Standard addressing the essential characteristics of the EU Construction Products Directive

With reference to Clause 1, this annex ZA has the same scope as Clause 1.

This European Standard has been prepared under a Mandate M/131 “Pipes, tanks and ancillaries not in contact with water intended for human consumption” given to CEN by the European Commission and the European Free Trade Association.

The clauses of this European Standard shown in Table ZA.1 below meet the requirements of the Mandate given under the EU Construction Products Directive (89/106/EEC).

Compliance with these clauses confers a presumption of fitness of elastomeric seals – used in pipes and fittings carrying gas and hydrocarbon liquid - covered by this European Standard for their intended use.

WARNING: Other requirements and other EU Directives, not affecting the fitness for intended use, may be applicable to a construction product falling within the scope of this standard.

NOTE In addition to any specific clauses relating to dangerous substances contained in this Standard, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the **provisions** of the EU Construction Products Directive, these requirements **need** also to be complied with, when and where they apply.

NOTE An informative database of European and national provisions on dangerous substances is available at the Construction web site on EUROPA (CREATE, accessed through http://europa.eu.int).

Table ZA.1 - Relevant clauses

Construction product : Elastomeric seals Intended uses: For pipe joints used in pipes and fittings carrying gas and hydrocarbon fluids			
Requirement/characteristic from the mandate	Requirement clauses in this standard	Mandated levels and/or classes	Notes
Dimensional tolerances	4.2.1	-	See ISO 3302-1
Tightness: gas and liquid	4.2.3, 4.2.4, 4.2.5, 4.2.8, 4.2.9	Threshold values – see Tables 2 and 3	See ISO 48, ISO 37, ISO 815, and ISO 1817
Release of dangerous substances	None	-	
Durability	4.2.6, 4.2.7, 4.2.10	Threshold values – see Tables 2 and 3	See ISO 188, ISO 3384 and ISO 1431-1

The requirement on a certain characteristic is not applicable in those Member States (MSs) where there are no regulatory requirements on that characteristic for the intended use of the product. In this case, manufacturers placing their products on the market of these MSs are not obliged to determine nor declare the performance of their products with regard to this characteristic and the option “No performance determined” (NPD) in the information accompanying the CE marking (see ZA.3) may be used. The NPD option may not be used, however, where the characteristic is subject to a threshold level.

ZA.2 System of attestation of conformity

The system of attestation of conformity for elastomeric seals – used in pipes and fittings carrying gas and hydrocarbon fluids - indicated in Table ZA.1, in accordance with the decision of the Commission 1999/472/EC of 1 July 1999 as given in Annex III of the mandate M/131 “Pipes, tanks and ancillaries not in contact with water intended for human consumption”, is shown in Table ZA.2 for the indicated intended use(s).

Table ZA.2 - Attestation of conformity system

Product	Intended use(s)	Level or class	Attestation of conformity system
Joint sealings	In installations for the transport/distribution/storage of gas/fuel intended for the supply of building heating/cooling systems, from the external storage reservoir or the last reduction unit of the network to the inlet of the heating/cooling systems of the building	-	3
System 3: See Directive 89/106/EEC (CPD) Annex III(2)(ii), second possibility			

The attestation of conformity of the products in Table ZA.1 shall be based on the evaluation of conformity procedure resulting from the clauses of this EN indicated in Table ZA.3.

Table ZA.3 - Assignation of evaluation of conformity tasks

Tasks		**Content of the task**	**Clauses to apply**
Tasks for the manufacturer	Factory production control (F.P.C)	Parameters related to all relevant characteristics of Table ZA.1	6 and 7 (excluding 7.3)
Tasks for the notified body	Initial type testing	All relevant characteristics of Table ZA.1	7.3

For each product, the manufacturer shall draw up a declaration of conformity (EC Declaration of conformity) including the following information:

- name and address of the manufacturer, or his authorized representative established in the EEA;
- description of the product (type, identification, use,);
- provisions to which the product conforms (e.g. annex ZA of this EN);
- particular conditions applicable to the use of the product;
- name and address of the notified laboratory (ies);
- name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or of his authorized representative.

This declaration of conformity entitles the manufacturer to affix the CE marking, as described in ZA.3, and shall be presented in the official language or languages of the Member State of the EU in which the product is to be used.

ZA.3 CE Marking

The manufacturer or his authorized representative established within the EU or EFTA is responsible for the affixing of the CE marking.

The CE conformity symbol to affix shall be in accordance with Directive 93/68/EC and shall be shown on the packaging and/or on the accompanying commercial documents, together with the following information:

- name or identifying mark of the producer;
- the last two digits in which the marking is affixed;
- registered address of the producer;
- product type, e.g. seal material and hardness category;
- intended use;
- reference to this European Standard.

In addition to specific information relating to dangerous substances, if any, the product should also be accompanied, when and where required and in the appropriate form, by documentation listing any other legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation.

NOTE European legislation without national derogations needs not be mentioned.

Figure ZA.1 gives an example of the information to be given on the packaging and/or on the commercial documents.

Figure ZA.1 - Example CE marking information

CE 00	CE conformity marking consisting of the 'CE' symbol given in directive 93/68/EC Last two digits of year of affixing of CE marking
Any Co Ltd, P.O. Box 21, B – 1050	Name or identifying mark and registered address of the producer
NBR – 60 GB EN 682	Seal material – Category Intended use Number of European Standard

Bibliography

ISO 2230, *Vulcanized rubber - Guide to storage.*

EN ISO 9001, *Quality management systems – Requirements (ISO 9001:2000).*

ISO 7743, *Rubber, vulcanized or thermoplastic - Determination of compression stress-strain properties.*

blank

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: +44 (0)20 8996 9000. Fax: +44 (0)20 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: +44 (0)20 8996 9001. Fax: +44 (0)20 8996 7001. Email: orders@bsi-global.com. Standards are also available from the BSI website at http://www.bsi-global.com.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: +44 (0)20 8996 7111. Fax: +44 (0)20 8996 7048. Email: info@bsi-global.com.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: +44 (0)20 8996 7002. Fax: +44 (0)20 8996 7001. Email: membership@bsi-global.com.

Information regarding online access to British Standards via British Standards Online can be found at http://www.bsi-global.com/bsonline.

Further information about BSI is available on the BSI website at http://www.bsi-global.com.

Copyright

BSI
389 Chiswick High Road
London
W4 4AL