

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

The European Standard EN 682:2002, with the incorporation of amendment A1:2005, has the status of a British Standard

ICS 23.040; 83.140.50

# National foreword

This British Standard is the official English language version of EN 682:2002, including amendment A1:2005. Together with BS EN 681-2:2000 this publication supersedes BS 24942:1990 which is withdrawn.

The start and finish of text introduced or altered by CEN amendment is indicated in the text by tags A1 A1. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by A1 A1.

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 international/European committee any enquiries on the interpretation, or proposals for change, and keep 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 Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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## 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.

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English version

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

(includes amendment A1:2005)

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  
(inclut l'amendement A1:2005)

Elastomer-Dichtungen - Werkstoff-Anforderungen für Dichtungen in Versorgungsleitungen und Bauteilen für Gas und flüssige Kohlenwasserstoffe  
(enthält Änderung A1:2005)

This European Standard was approved by CEN on 16 November 2001. Amendment A1 was approved by CEN on 14 July 2005.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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## 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.

## Foreword to amendment A1

This document (EN 682:2002/A1:2005) 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 Amendment to the European Standard EN 682:2002 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2006, and conflicting national standards shall be withdrawn at the latest by February 2006.

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