BRITISH STANDARD

BS EN
12560-4:2001

Flanges and their joints — Gaskets for Class-designated flanges —

Part 4: Corrugated, flat or grooved metallic and filled metallic gaskets for use with steel flanges

The European Standard EN 12560-4:2001 has the status of a British Standard

ICS 23.040.80

National foreword

This British Standard is the official English language version of EN 12560-4:2001. It supersedes BS 7076-4:1989 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PSE/2, Jointing material and compounds, 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 Engineering Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 March 2001

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 13 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 37049 6

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12560-4

January 2001

ICS 23.040.80

English version

Flanges and their joints — Gaskets for Class-designated flanges — Part 4: Corrugated, flat or grooved metallic and filled metallic gaskets for use with steel flanges

Brides et leurs assemblages — Joints pour les brides désignées Class — Partie 4: Joints métalliques ondulés, plat ou striés et joints métalloplastiques pour utilisation avec des brides en acier

Flansche und ihre Verbindungen — Dichtungen für Flansche mit Class-Bezeichnung — Teil 4: Dichtungen aus Metall mit gewelltem, flachem oder gekerbtem Profil für Stahlflansche

This European Standard was approved by CEN on 28 December 2000.

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, 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

Ref. No. EN 12560-4:2001 E

Contents

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 74, Flanges and their joints, the Secretariat of which is held by DIN.

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 July 2001, and conflicting national standards shall be withdrawn at the latest by July 2001.

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, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

The annex A is informative and contains "A-deviations".

Introduction

EN 12560 consists of seven parts:

Part 1: Non-metallic flat gaskets with or without inserts

Part 2: Spiral wound gaskets for use with steel flanges

Part 3: Non-metallic PTFE envelope gaskets

Part 4: Corrugated, flat or grooved metallic and filled metallic gaskets for use with steel flanges

Part 5: Metallic ring-joint gaskets for use with steel flanges

Part 6: Kammprofile gaskets for use with steel flanges

Part 7: Covered metal jacketed gaskets for use with steel flanges

The terminology and definitions in this standard are in accordance with those given in ISO Standards.

WARNING Gaskets made to this standard may contain asbestos. Materials containing asbestos may be subject to legislation that requires precautions to be taken when handling them to ensure that they do not constitute a hazard to health (see annex A). Attention is drawn to relevant EC directives.

1 Scope

This European Standard specifies the dimensions and marking of IBC (inside bolt circle) type corrugated, flat or grooved metallic and filled metallic gaskets for use in conjunction with flanges complying with prEN 1759-1:2000 for Class 150, 300, 600, 900 and 1500 for nominal sizes DN 15 to DN 600, and for Class 2 500 for nominal size DN 15 to DN 300.

NOTE Dimensions of other types of gaskets for use with flanges complying with prEN 1759-1:2000, prEN 1759-3:1994 and prEN 1759-4:1997 are given in prEN 12560-1:2000, prEN 12560-2:2000, prEN 12560-3:2000, prEN 12560-5:2000, prEN 12560-6:2000 and prEN 12560-7:2000.

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).

prEN 1759-1:2000
Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, Class designated — Part 1: Steel flanges

prEN 1759-3:1994
Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, Class designated — Part 3 :Copper alloy flanges

prEN 1759-4:1997
Flanges and their joints – Circular flanges for pipes, valves, fittings, and accessories, Class designated – Part 4: Aluminium alloy flanges

EN ISO 6708
Pipework components — Definition and selection of DN (nominal size) (ISO 6708:1995)

3 Terms and definitions

For the purposes of this European Standard the following terms and definitions apply:

3.1
DN
see EN ISO 6708

3.2
NPS
see prEN 1759-3:1994

3.3
Class
see prEN 1759-3:1994

4 Designations

4.1 Range of Class designations

Gaskets shall be designated or suitable for use with one or more of the following Class designations of flange:

— Class 150;

— Class 300;

— Class 600;

— Class 900;

— Class 1 500;

— Class 2 500.

4.2 Range of gasket sizes

Gasket nominal sizes shall be designated in accordance with the ranges specified in Table 1.

4.3 Gasket types and designs

Gasket types and designs, as defined in clause 6 and illustrated in Figure 1, shall be designated as:

Self-centering:	With centering ring:
— SC/A	— CR/A
— SC/B	— CR/B
— SC/C	— CR/C
— SC/D	— CR/D
— SC/E	— CR/E

4.4 Information to be supplied by the purchaser

The following information should be supplied by the purchaser when ordering gaskets:

a) the number and Part of this European Standard, i.e. EN 12560-4;

b) gasket type (see clause 6);

c) gasket design (see clause 5);

d) nominal size (see Table 1);

e) Class designation (see Table 1);

Additional information that should be supplied by the purchaser:

f) expected operating conditions for which the gasket will be used.

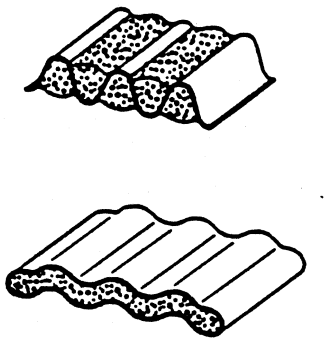
NOTE Before ordering a gasket it is recommended that the selection of the gasket design and type should be made in consultation with the gasket supplier. The selection of gasket design and type should take account of the operating conditions, the properties of the gasket material(s), type and surface finish of the flange facing and the flange bolt loading.

EXAMPLE A gasket according to EN 12560-4, with centering ring (type S6) and corrugated metal design (design B) of nominal size DN 100, Class 150, shall be designated as follows :

Gasket EN 12560-4 — SC/B — DN 100 — Class 150.

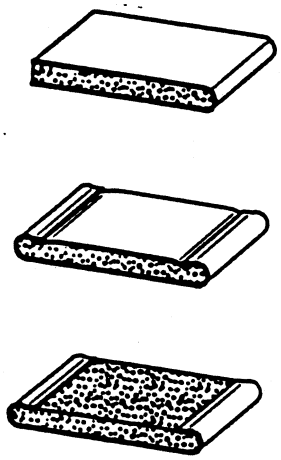
5 Gasket designs

Gaskets shall be one of the designs shown in Figure 1.

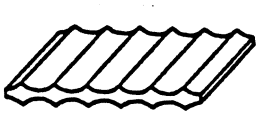


a) Corrugated metal, with filler (top) corrugated metal jacket with filler (bottom) (Design ---/A)

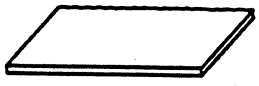
b) Corrugated metal (Design---/B)



c) Flat metal jacketed with filler (Design ---/C)



d) Grooved metal (Design ---/D)



e) Solid flat metal (Design ---/E)

Figure 1 — Designs of corrugated, flat or grooved metallic and filled metallic gaskets

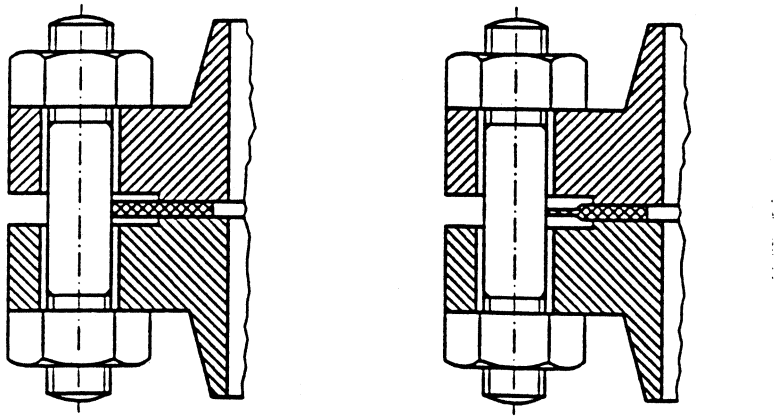
6 Gasket types

Gaskets are IBC (inside bolt circle) type and shall be for use with type A (flat face) or type B (raised face) flange facings (see Figure 2) and shall be one of the following types:

a) self-centering, Type SC/.... (see 4.3);

b) incorporating a centering ring, Type CR/.... (see 4.3).

NOTE Type A and type B flange facings are shown in prEN 1759-1:2000.



a) Self-centering **b) with centering ring**

NOTE Type B, raised face flange facings are shown.

Figure 2 — Gaskets for type A or type B flange facings

7 Dimensions

7.1 Diameters

The dimensions of corrugated, flat or grooved metallic and filled metallic gaskets shall be as given in Table 1.

Table 1 — Dimensions of corrugated, flat or grooved metallic and filled metallic gaskets

Nominal size		Gasket inside diameter min.	Gasket or centering ring outside diameter					
			Class 150	Class 300	Class 600	Class 900	Class 1 500	Class 2 500
DN	NPS[a]	mm	mm	mm	mm	mm	mm	mm
15	½	22	47,6	54,0	54,0	63,5	63,5	69,9
20	¾	27	57,2	66,7	66,7	69,9	69,9	76,2
25	1	34	66,7	73,0	73,0	79,4	79,4	85,7
32	1¼	43	76,2	82,6	82,6	88,9	88,9	104,8
40	1½	49	85,7	95,3	95,3	98,4	98,4	117,5
50	2	61	104,8	111,1	111,1	142,9	142,9	146,1
65	2½	73	123,8	130,2	130,2	165,1	165,1	168,3
80	3	89	136,5	149,2	149,2	168,3	174,6	196,9
100	4	115	174,6	181,0	193,7	206,4	209,6	235,0
125	5	141	196,9	215,9	241,3	247,7	254,0	279,4
150	6	169	222,3	250,8	266,7	288,9	282,6	317,5
200	8	220	279,4	308,0	320,7	358,8	352,4	387,4
250	10	273	339,7	362,0	400,1	435,0	435,0	476,3
300	12	324	409,6	422,3	457,2	498,5	520,7	549,3
350	14	356	450,9	485,8	492,1	520,7	577,9	-
400	16	407	514,4	539,8	565,2	574,7	641,4	-
450	18	458	549,3	596,9	612,8	638,2	704,9	-
500	20	508	606,4	654,1	682,6	698,5	755,7	-
600	24	610	717,6	774,7	790,6	838,2	901,7	-

[a] For information only.

For flat metal gaskets or filled metal jacketed gaskets the inner diameters of the gaskets shall be as given in Table 2, the outer dimensions remain as shown in Table 1.

Table 2 — Gasket inside diameter for flat metal gaskets or filled metal jacketed gaskets

Nominal size		Gasket inside diameter	
		Class 150 Class 300	Designation Class 600 Class 900 Class 1 500 Class 2 500
DN	NPS[a]	mm	mm
15	½	22	22
20	¾	29	29
25	1	38	38
32	1¼	48	48
40	1½	57	54
50	2	75	73
65	2½	90	86
80	3	113	108
100	4	141	132
125	5	165	152
150	6	196	190
200	8	253	238
250	10	294	286
300	12	356	343
350	14	382	375
400	16	434	425
450	18	500	498
500	20	540	533
600	24	647	641
[a] for information only			

7.2 Thickness

For jacketed gaskets the following specifications shall apply:

a) The jacket metal thickness shall be a minimum of 0,38 mm.

b) The filler thickness shall be a minimum of 1,5 mm.

NOTE The selection of the gasket should take into account the fluid, the operating conditions, the properties of the gasket materials, the type and surface finish of the flange facing and the flange bolt loading. It is recommended that selection of gaskets for any particular application is made in consultation with the gasket supplier.

8 Marking

Gaskets shall be marked either individually or on the packaging containing the gaskets, or by agreement between supplier and purchaser, on the packaging containing each individual gasket, with the following information:

a) the number and part of this European Standard, i.e. EN 12560-4;

b) gasket type/design designation (see 4.3);

c) the nominal size (see Table 1);

d) the Class designation (see Table 1);

e) materials;

f) manufacturer's name or trademark.

EXAMPLE

EN 12560-4 — SC/A — DN 100 — Class 600 — XXX — AAA/BBB.

Annex A
(informative)

A-deviations

This European Standard is mandated under the Council Directive on the approximation of the laws of the Member States concerning pressure equipment.

A-deviation: National deviation due to regulations, the alteration of which is for the time being outside the competence of the CEN/CENELEC member.

NOTE (from CEN/CENELEC) IR Part 2, 3.1.9): Where standards fall under EC Directives, it is the view of the Commission of the European Communities (OJ No G 59, 9.3.1982) that the effect of the decision of the Court of Justice in case 815/79 Cremonini/Vrankovich (European Court Reports 1980, p. 3583) is that compliance with A-deviations is no longer mandatory and that the free movement of products complying with such a standard should not be restricted except under the safeguard procedure provided for in the relevant Directive.

A-deviations in an EFTA country are **valid instead** of the relevant provisions of the European Standard in that country until they have been removed.

With reference to clause 5, "Gasket designs":

Denmark

Bekendtgørelse om asbest

(Nr. 660 af 24. juni 1986)

Bekendtgørelse om ændring af bekendtgørelse om asbest

(Nr. 139 af 23. marts 1987)

(Nr. 984 af 11. december 1992)

According to this order, the use of asbestos and material containing asbestos is prohibited in Denmark.

Austria

Order on the use of asbestos (BGBI. Nr 324/1990 Asbestverordnung).

According to this ordinance the use of gasket materials containing asbestos is prohibited in Austria.

Czech Republic

Decree No. 76/1990 Coll. Health Regulations of the Ministry of Health and Social Affairs of CSR — Head of Public Health of CSR dated 27 February 1990 which amends the guidelines of the Ministry of Health of CSR — Head of Public Health of CSR No. 64/1984 Coll. Health Regulations concerning health principles for work with chemical carcinogens.

Commencement of production of materials containing asbestos shall be authorized by Head of Public Health of the Czech Republic. Products and materials containing asbestos may be used only where absolutely necessary and only for such technical and fire prevention purposes where no other suitable materials can be used.

France

Décret n° 96-1132 du 24 décembre 1996 modifiant le décret n° 96-98 du 7 février 1996 relatif à la protection des travailleurs contre les risques liés á l'inhalation de poussières d'amiante.

Décret n° 96-1133 du 24.12.1996 relatif à l'interdiction de l'amiante, pris en application du code du travail et du code de la consommation.

According to these regulations, within the scope of industrial safety the fabrication, manufacture, sale, import and mechandising of products containing asbestos is forbidden on the French market from 1.1.1997.

Germany

Verordnung zur Novellierung der Gefahrstoffverordnung, zur Aufhebung der Gefährlichkeits-merkmaleverordnung und zur Änderung der ersten Verordnung zum Sprengstoffgesetz vom 26.10.1993 erschienen im Bundesgesetzblatt, Jahrgang 1993, Teil 1, Nummer 57 Seite 1782 und Verordnung über die Neuordnung und Ergänzung der Verbote und Beschränkungen des Herstellens, Inverkehrbringens und Verwendens gefährlicher Stoffe, Zubereitungen und Erzeugnisse nach Paragraph 17 des Chemikaliengesetzes vom 14. Oktober 1993, Bundesgesetzblatt Jahrgang 1993, Teil 1, Seite 1720.

According to this ordinance the use of gasket material containing asbestos is prohibited in Germany.

Italy

Law 1992-03-27 N.257 concerning "Rules regarding the stop of use of asbestos".

Netherlands

Asbestbesluit Arbeidsomstandighedenwet (Staatsblad 1993, 136).

According to Dutch legislation, the use of asbestos and asbestos containing products is prohibited in the Netherlands.

Norway

Forskrifter til arbeidsmiljøloven fastsatt av Kommunaldepartementet 16.8.1991 (Asbest) (best. nr 235).

According to this regulation the use of asbestos and materials containing asbestos is prohibited in Norway.

Switzerland

Verordnung über umweltgefährdende Stoffe (Stoffverordnung, StoV) vom 1986-06-09, Stand 1994-01-01, Änderung 1994-01-26, SR 814.013.

Sweden

Ordinance AFS 1992:2 "Asbest" of the National Board of Occupational Safety and Health.

According to this ordinance the use of asbestos and material containing asbestos is prohibited.

UK

Asbestos products (Safety) Regulations 1985

Control of Asbestos at Work Regulations 1987 (as amended)

Asbestos (Prohibitions) (Amendment) Regulations 1999

According to these regulations provisions covering work activities involving exposure to asbestos and the labelling of products containing asbestos apply in the UK.

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: 020 8996 9000. Fax: 020 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: 020 8996 9001. Fax: 020 8996 7001. 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: 020 8996 7111. Fax: 020 8996 7048.

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: 020 8996 7002. Fax: 020 8996 7001. 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