BRITISH STANDARD

BS EN 1514-7:2004

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

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

The European Standard EN 1514 7:2004 has the status of a British Standard

ICS 23 040 80

BSI British Standards

National foreword

This British Standard is the official English language version of EN 1514 7:2004.

The UK participation in its preparation was entrusted to Technical Committee PSE/2, Jointing materials and compounds, 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 the UK interests informed;

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Flanges and their joints - Gaskets for PN-designated flanges - Part 7: Covered metal jacketed gaskets for use with steel flanges

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Foreword

Th s document (EN 1514-7:2004) has been prepared by Techn ca Comm ttee CEN/TC 74 "F anges and the r jo nts", the secretar at of wh ch s he d by DIN.

Th s European Standard sha be g ven the status of a nat ona standard, e ther by pub cat on of an dent ca text or by endorsement, at the atest by November 2004, and conf ct ng nat ona standards sha be w thdrawn at the atest by November 2004.

The annex A s nformat ve and conta ns "Informat on to be supp ed by the purchaser".

The annex B s nformat ve and conta ns "A-dev at ons".

EN 1514 cons sts of 7 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 6: Covered serrated metal gaskets for use with steel flanges

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

Part 8: Polymeric O-ring gaskets for grooved flanges

Accord ng to the CEN/CENELEC Interna Regu at ons, the nat ona standards organ zat ons of the fo ow ng countr es are bound to mp ement th s European Standard: Austr a, Be g um, Cyprus, Czech Repub c, Denmark, Eston a, F n and, France, Germany, Greece, Hungary, Ice and, Ire and, Ita y, Latv a, L thuan a, Luxembourg, Ma ta, Nether ands, Norway, Po and, Portuga , S ovak a, S oven a, Spa n, Sweden, Sw tzer and and Un ted K ngdom.

1 Scope

This European Standard specifies the construction, dimensions and marking of covered metal jacketed gaskets for use with flanges complying with EN 1092-1 for PN 2,5, PN 6, PN 10, PN 16, PN 25, PN 40, PN 63 and PN 100 up to and including DN 900.

This European Standard does not extend to covered metal jacketed based heat exchanger gaskets with pass bars or large vessel gaskets but, in the lack of a dedicated document for such gaskets, the principles set down may be applied to them.

NOTE 1 Dimensions of other types of gaskets for use with flanges to EN 1092-1, EN 1092-2, EN 1092-3 and EN 1092-4 are given in EN 1514-1, EN 1514-2, EN 1514-3, EN 1514-4, EN 1514-6 and prEN 1514-8.

NOTE 2 Annex A lists information that should be supplied by the purchaser when ordering gaskets in circumstances where the choice of the gasket material is appropriate to the service left to the supplier.

2 Normative references

Not applicable.

3 Terms and definitions

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

3.1
covered metal jacketed gasket
consists of a sealing element with or without a location ring which may not be rigidly fixed to the sealing element

NOTE The sealing element consists of a metal jacketed core and a conformable sealing material adhered to both top and lower metal jacketed core surfaces.

3.2
DN
see EN ISO 6708

3.3
PN
see EN 1333

4 Designations

4.1 Range of PN designations

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

PN 2,5	PN 16	PN 63
PN 6	PN 25	PN 100
PN 10	PN 40	

4.2 Range of DN (nominal sizes)

Gasket nom na s zes sha be des gnated n accordance w th the ranges spec f ed n Tab es 2 and 3.

The genera pr nc p es descr bed n th s standard sha be app ed to gaskets outs de of the range spec f ed n Tab es 2 and 3 by agreement between supp er and customer.

4.3 Gasket types

Gasket types, as ustrated n F gure 1, sha be des gnated as:

Type SC: Sea ng e ement se f centr ng (used w th type C/D or E/F f ange fac ngs);

Type C/I: Sea ng e ement w th nner r ng (used w th type C/D or E/F f ange fac ngs);

Type C/O: Sea ng e ement w th centr ng r ng (used w th type A or B f ange fac ngs);

Type C/IO: Sea ng e ement w th centr ng r ng and nner r ng (used w th type A or B f ange fac ngs).

The type A, type B, type C/D, type E/F f ange fac ngs are spec f ed n EN 1092-1.

4.4 Information to be supplied by the purchaser

The se ect on of gasket mater a s and type shou d take nto account the f u d, the operat ng cond t ons and the propert es of the gasket mater a s as we as the type of f ange. It s recommended that the se ect on of a gasket for any part cu ar app cat on s made n consu tat on w th the gasket supp er who w adv se on the mater a s requ red for a part cu ar serv ce (see annex A).

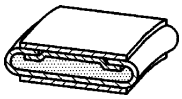
5 Constructional details

5.1 General details

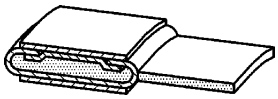
The covered meta jacketed gasket sha cons st of a meta jacketed core and of cover ng ayers stuck on both s des.

A gasket s zes and c asses sha be des gned so that an app ed un form bo t stress of 200 MPa w correct y seat the gasket and offer the requ red eve of sea .

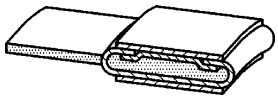
Gaskets for wh ch d mens ons are spec f ed sha be one of the des gns shown n F gure 1.



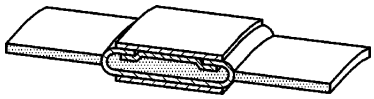
a) Type SC



b) Type C/I

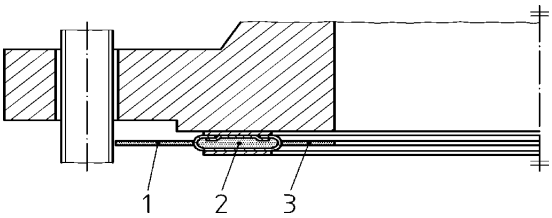


c) Type C/O

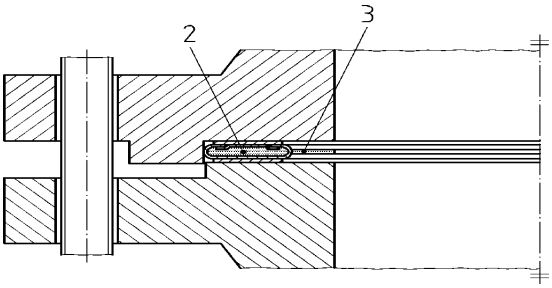


d) Type C/IO

Figure 1 — Covered metal jacketed gaskets



a) gaskets (C/O or C/IO type) for use w th type A (f at face) or type B (ra sed face) f anges



b) gaskets (SC or C/I type) for use w th type C/D (tongue/groove) or type E/F (sp got/recess) f anges

Key
1 Centr ng r ng
2 Sea ng e ement
3 Inner r ng

Figure 2 — Examples of typical covered metal jacketed gaskets configurations

5.2 Metal jacket

5.2.1 Metal jacket description

The to erance of the ns de and the outs de d ameters of meta jacket cross sect on are g ven n Tab es 2 and 3.

Th ckness of the meta jacket cross sect on s depend ng on the soft f er mater a .

5.2.2 Metal jacket material

The mater a of the she of the meta jacket sha be se ected to be compat b e w th the ntended serv ce.

Tab e 4 sts the most frequent y used mater a s.

The she of the meta jacket sha have a th ckness between 0,3 mm and 0,5 mm.

5.3 Soft filler

5.3.1 Soft filler description

The th ckness of the soft f er mater a sha be se ected to ensure:

— a good compress b ty and e ast c recovery of the gasket n order to compensate as much as poss b e the f atness defau ts and to respond to var at ons due to operat ng cond t ons;

— a f na th ckness (w th cover ng ayers) adapted w th the engt h of the p p ng ne (after t ghten ng);

— compat b ty w th the assemb y spec f cat on (sp got and recess or tongue and groove, meta to meta contact, ...).

5.3.2 Soft filler material

The f er mater a sha be se ected n accordance w th the ntended serv ce but as gu dance, sat sfactory mechan ca behav our s usua y obta ned w th the fo ow ng soft f er mater a s:

Su tab e expanded graph te s:

— 98 % pur ty, ash content max. 2 %, su phur content max. 1 000 $\times$ 10^{-6} (ppm), ha ogen contents max. 50 $\times$ 10^{-6} (ppm);

— n t a dens ty sha be 1,0 g/cm^3 to 1,1 g/cm^3.

Su tab e expanded PTFE s:

— not recyc ed 100 % expanded PTFE;

— n t a dens ty sha be 0,7 g/cm^3 to 0,9 g/cm^3.

Su tab e F ex b e M ca s:

— Ph ogop te M ca (content > 96 %) w th S con b nder;

— n t a dens ty sha be 1,8 g/cm^3 to 1,9 g/cm^3.

5.4 Covering layers

5.4.1 Covering layers description

The cover ng ayers mater a and th ckness shou d be se ected to be compat b e:

— w th the process f u d, and the operat ng cond t ons;

— type and surface f n sh of the f ange fac ngs;

— f ange bo t oad ng;

and to guarantee:

— sat sfactory eve of sea ;

— a good adaptat on w th f ange fac ngs defau ts.

5.4.2 Covering layers material

As a gu dance, sat sfactory eakt ghtness s usua y reached w th the fo ow ng cover ng mater a s:

Su tab e expanded graph te s:

— 98 % pur ty, ash content max. 2 %, su phur content max. 1 000 $\times$ 10^{-6} (ppm), ha ogen contents max. 50 $\times$ 10^{-6} (ppm);

— n t a dens ty sha be 1,0 g/cm^3 to 1,1 g/cm^3;

— to be f n shed w th an ant -st ck ng coat ng.

Su tab e V rg n PTFE s:

— not recyc ed 100 % PTFE;

— n t a dens ty sha be 1,6 g/cm^3.

Su tab e Expanded Verm cu te s:

— n t a dens ty sha be 1,2 g/cm^3.

NOTE It wou d be preferab e that the gasket does not show any adhes on to the f ange fac ngs.

5.5 Inner and outer rings

5.5.1 Inner and outer rings description

The r ng th ckness depend on the sea ng e ement th ckness.

The r ngs mater a and th ckness shou d be se ected to be compat b e:

— w th the assemb y cons dered (sp got and recess or tongue and groove, meta to meta contact, ...);

— w th the process f u d, and the operat ng cond t ons;

and to guarantee:

— protection of the sealing element against overload;

— sufficient load to assure good level of sealing.

The tolerances of the inside and outside diameters of the inner and/or outer rings are given in Tables 2 and 3.

5.5.2 Inner and outer rings material

For the outer ring, carbon steel may be selected as standard.

For the inner ring, the same material or one with better corrosion resistance than that of the metal jacket shall be selected as standard.

5.6 Attachment of facing

5.6.1 Methods of attachment

An appropriate bonding adhesive shall be used (maximum chlorine levels of below 50 ppm).

5.6.2 De-greasing of core

Where an adhesive is used the core shall be de-greased before use of the adhesive and the amount of the adhesive used shall be minimised.

5.6.3 Number of joins

In case of joins in the facing material, their number shall be minimised.

5.6.4 Excessive facing

Once the sealing faces have been applied any excess material shall be removed paying particular attention that none protrudes inside of the inner diameter of the gasket.

5.7 Integrity of facing attachment

In order to ensure adequate fixation of the cover layer to the metal jacketed, it shall be ensured that the material is free from any defects such as incisions, cracks or fractures.

5.8 Construction characteristics details

As a guidance, satisfactory configuration of covered metal jacketed gaskets is obtained as described in Table 1.

Table 1 — Construction characteric details

	Genera petrochem ca app cat ons	Genera chem ca app cat ons	H gh temperature w th ow pressure
Meta jacket			
she mater a	316 L sta n ess stee	Mone 400	Incone 600
f er mater a	Expanded graph te	Expanded PTFE	F ex b e M ca
f er th ckness	1,5 mm	3 mm	2 mm
Cover ng ayer			
mater a	Graph te	V rg n PTFE	Expanded Verm cu te
th ckness	0,8 mm	1 mm	0,75 mm
Center ng R ng (f used)			
mater a	Carbon stee	Carbon stee	316L sta n ess stee
th ckness	2,5 mm	2,5 mm	2,5 mm
Inner R ng (f used)			
mater a	316L sta n ess stee	Mone 400	Incone 600
th ckness	2,5 mm	2,5 mm	2,5 mm

6 Dimensions

D ameters of covered meta jacketed gaskets, for use w th types A and B f ange fac ngs, sha be as g ven n Tab e 2.

D ameters of covered meta jacketed gaskets, for use w th types C/D and E/F f ange fac ngs, sha be as g ven n Tab e 3.

Table 2 — Diameters of covered metal jacketed gaskets for A and B flange facings

Dimensions in millimetres

DN	Inner ring inside diameter[a] (min)	Sealing element inside diameter[b] (min)	Sealing element outside diameter[c]	Centring ring outside diameter[d]							
				PN 2,5	PN 6	PN 10	PN 16	PN 25	PN 40	PN 63	PN 100
10		19	31	40	40	48	48	48	48	58	58
15		19	31	45	45	53	53	53	53	63	63
20		25,5	38	55	55	63	63	63	63	74	74
25		32	46	65	65	73	73	73	73	84	84
32	36	42	58,5	78	78	84	84	84	84	90	90
40	42	48	68	88	88	94	94	94	94	105	105
50	54	60	84,5	98	98	109	109	109	109	115	121
65	69,5	75,5	100	118	118	129	129	129	129	140	146
80	82,5	88,5	117	134	134	144	144	144	144	150	156
100	107,5	115	145,5	154	154	164	164	170	170	176	183
125	131,5	141,5	173,5	184	184	194	194	196	196	213	220
150	157,5	167,5	202	209	209	220	220	226	226	250	260
200	207,5	217,5	258	264	264	275	275	286	293	312	327
250	260,5	270,5	312	319	319	330	331	343	355	367	394
300	311,5	318	360	375	375	380	386	403	420	427	461
350	343,5	359,5	402,5	425	425	440	446	460	477	489	515
400	394	412,5	459	475	475	491	498	517	549	546	575
450	447	467	519	530	530	541	558	567	574		
500	497	517	571	580	580	596	620	627	631	660	708
600	597,5	617,5	672	681	681	698	737	734	750	768	
700	711,0	727,0	763,0	786	786	813	807	836		883	
800	810,0	826,0	869,0	893	893	920	914	945		994	
900	910,0	924,0	970,0	993	993	1 020	1 014	1 045		1 114	
1 000	1 003,0	1 019,0	1 068,0	1 093	1 093	1 127	1 131	1 158		1 226	
1 100	1 106,0	1 122,0	1 170,0			1 237	1 231	1 258			
1 200	1 206,0	1 222,0	1 270,0	1 293	1 310	1 344	1 345	1 368		1 458	
1 400	1 408,0	1 422,0	1 470,0	1 493	1 527	1 551	1 545	1 584			
1 500	1 514,0	1 530,0	1 581,0			1 661	1 658	1 694			
1 600	1 610,0	1 626,0	1 678,0	1 703	1 727	1 775	1 768	1 804			
1 800	1 811,0	1 827,0	1 879,0	1 903	1 934	1 975	1 968	2 006			
2 000	2 012,0	2 028,0	2 079,0	2 103	2 141	2 185	2 174	2 236			
2 200	2 215,0	2 231,0	2 286,0	2 310	2 351	2 388					
2 400	2 418,0	2 434,0	2 486,0	2 510	2 561	2 598					
2 600	2 610,0	2 626,0	2 686,0	2 710	2 765	2 798					
2 800	2 812,0	2 828,0	2 892,0	2 927	2 975	3 018					
3 000	3 012,0	3 028,0	3 092,0	3 127	3 175	3 234					
3 200	3 212,0	3 228,0	3 292,0	3 327	3 385						
3 400	3 412,0	3 428,0	3 492,0	3 527	3 595						
3 600	3 618,0	3 634,0	3 698,0	3 737	3 808						
3 800	3 818,0	3 834,0	3 898,0	3 934							
4 000	4 018,0	4 034,0	4 098,0	4 134							

[a] Tolerances + 1,6 mm 0 mm for DN 10 to DN 600 and + 3,2 mm 0 mm for DN 700 to DN 4 000

[b] Tolerances + 0,8 mm 0 mm for DN 10 to DN 600 and + 1,6 mm 0 mm for DN 700 to DN 4 000

[c] Tolerances 0 mm 0,8 mm for DN 10 to DN 600 and 0 mm 1,6 mm for DN 700 to DN 4 000

[d] Tolerances 0,8 mm for DN 10 to DN 600 and 1,6 mm for DN 700 to DN 4 000

Table 3 — Diameters of covered metal jacketed gaskets for C/D and E/F flange facings

Dimensions in millimetres

Nominal size	Inner ring inside diameter min.[a]	Sealing element inside diameter min.[b]	Sealing element outside diameter max.[c]
DN	PN 2,5, PN 6, PN 10, PN 16, PN 25, PN 40, PN 63, PN 100		
10	—	24,0	34,0
15	—	29,0	39,0
20	—	36,0	50,0
25	—	43,0	57,0
32	36,0	51,0	65,0
40	42,0	61,0	75,0
50	54,0	73,0	87,0
65	69,5	95,0	109,0
80	82,5	106,0	120,0
100	107,5	129,0	149,0
125	131,5	155,0	175,0
150	157,5	183,0	203,0
200	207,5	239,0	259,0
250	260,5	292,0	312,0
300	311,5	343,0	363,0
350	343,5	395,0	421,0
400	394,0	447,0	473,0
450	447,0	497,0	523,0
500	497,0	549,0	575,0
600	597,5	649,0	675,0
700	711	751,0	777,0
800	810	856,0	882,0
900	910	961,0	987,0
1 000	1 003	1 062	1 092
1 200	1 206	1 262	1 292
1 400	1 408	1 462	1 492
1 600	1 610	1 662	1 692
1 800	1 811	1 862	1 892
2 000	2 012	2 062	2 092

[a] Tolerance + 1,6 mm; 0 mm for DN 10 to DN 600 and + 3,2 mm; 0 mm for DN 700 to DN 2 000

[b] Tolerance + 0,8 mm; 0 mm for DN 10 to DN 600 and + 1,6 mm; 0 mm for DN 700 to DN 2 000

[c] Tolerance ± 0,8 mm for DN 10 to DN 600 and ± 1,6 mm for DN 700 to DN 2 000

7 Marking

The ocat on dev ce sha be marked w th the fo ow ng nformat on:

a) number of th s European Standard, .e. EN 1514-7;

b) manufacturer's name or trademark;

c) nom na s ze — DN (see Tab e 2);

d) PN des gnat on (see Tab e 2);

e) manufacturer's symbo s for the mater a s of the meta c jacket, the f er mater a , and (where app cab e) of the nner r ng: See co our cod ng.

EXAMPLE EN 1514-7 — AAA/BBB — DN 200 — PN 40 — XXX

The gasket sha be dent f ed e ther nd v dua y or on the packag ng conta n ng the gasket(s) w th the number of the European Standard .e. EN 1514-7.

8 Colour coding

Covered meta jacketed gaskets sha be marked w th a co our code that dent f es the meta c jacket core and the soft f er and cover ng ayers. See Tab e 4.

A cont nuous co our around the outer ocat on r ng sha dent fy the meta c jacket core.

Interm ttent str ps around the outer ocat on r ng sha dent fy the soft gasket f er and cover ng ayers:

For s zes be ow DN 40, gaskets w have a m n mum of 2 str ps — 180 deg. apart.

For s zes above DN 40, gaskets w have a m n mum of 4 str ps — 90 deg. apart.

9 Packaging

The packag ng sha be suff c ent to protect the sea ng faces from damage dur ng sh pment and subsequent hand ng before nsta at on. Large d ameter gaskets sha be secure y mounted on a carr er board or w th n a protect ve framework.

Table 4 — Colour coding and abbreviations for covered metal jacketed gasket materials

Material	Abbreviation	Colour code
Metal jacket material of		
Aluminium	Al	No colour
Soft iron	—	No colour
Carbon steel	CRS	Silver
X4CrNi 18-10 (1.4301)	304	Yellow
X2CrNi 19-11 (1.4306)	304L	No colour
X15CrNiSi 20-12 (1.4828)	309	No colour
X15CrNiSi 25-20 (1.4841)	310	No colour
X5CrNiMo17-12-2 (1.4401)	316	Green
X2CrNiMo17-12-2 (1.4404)	316L	Green
X6CrNiNb18-10 (1.4550)	347	Blue
X6CrNiTi 18-10 (1.4541)	321	Turquoise
X6Cr17 (1.4016)	430	No colour
Copper	CUA1/CUB1	No colour
CuNi 10Fe (2.0872)	Cupro-Nickel 90/10	No colour
CuNi 30Fe (2.0882)	Cupro-Nickel 70/30	No colour
NiCu30Fe (2.4360)	Monel 400	Orange
Ni 99.2 (2.4066)	Nickel	Red
NiMo28 (2.4617)	Hastelloy B	Brown
NiMo16Cr15W (2.4819)	Hastelloy C-276	Beige
NiCr15Fe (2.4816)	Inconel 600	Gold
NiCr22Mo9Nb (2.4856)	Inconel 625	Gold
X10NiCrAlTi 32-20 (1.4876)	Incoloy 800	White
NiCr21Mo (2.4858)	Incoloy 825	White
Titanium	Ti	Purple
Soft gasket filler and covering materials[a]		
Flexible graphite	F. G.	Grey stripe
Virgin and expanded PTFE	PTFE/PTFE EX	White Stripe
Non asbestos e.g. flexible Mica		Pink Stripe

[a] In every case, the same material as used for the soft gasket filler and the covering layers.

Annex A
(informative)

Information to be supplied by the purchaser

Before order ng a gasket t s recommended that the se ect on of the gasket type and mater a s shou d be made n consu tat on w th the gasket supp er. Th s se ect on shou d take account of the f u d, the operat ng cond t ons, the propert es of the gasket mater a s, the type and surface f n sh of the f ange fac ng and the f ange bo t oad ng.

The fo ow ng nformat on shou d be supp ed by the purchaser when order ng gaskets:

a) number and part of th s European Standard, .e. EN 1514-7;

b) gasket type;

c) nom na s ze — DN (see Tab e 2);

d) PN des gnat on (see Tab e 2);

e) whether an nner r ng s requ red;

f) requ red gasket mater a s or expected operat ng cond t ons for app cat ons where the gasket manufacturer s requ red to se ect gasket mater a s.

Annex B
(informative)

A-deviation

Th s European Standard s mandated under the Counc D rect ve on the approx mat on of the aws of the Member States concern ng pressure equ pment.

A-dev at on: Nat ona dev at on due to regu at ons, the a terat on of wh ch s for the t me be ng outs de the competence of the CEN/CENELEC member.

NOTE (from CEN/CENELEC IR Part 2, 3.1.9): Where standards fa under EC D rect ves, t s the v ew of the Com-m ss on of the European Commun t es (OJ No G 59, 9.3.1982) that the effect of the dec s on of the Court of Just ce n case 815/79 Cremon n /Vrankov ch (European Court Reports 1980, p. 3583) s that comp ance w th A-dev at ons s no onger mandatory and that the free movement of products comp y ng w th such a standard shou d not be restr cted except under the safeguard procedure prov ded for n the re evant D rect ve.

A-dev at ons n an EFTA country are **valid instead** of the re evant prov s ons of the European Standard n that country unt they have been removed.

W th reference to c ause 5, Construct ona deta s:

Austria

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

Accord ng to th s order restr ct ons for trad ng, fabr cat on use and mark ng of mater a s conta n ng asbestos app y n Austr a.

Czech Republic

Decree No. 76/1990 Co . Hea th Regu at ons of the M n stry of Hea th and Soc a Affa rs of CSR — Heat of Pub c Hea th of CSR dated 27 February 1990 wh ch amends the gu de nes of the M n stry of Hea th of CSR — Head of Pub c Hea th of CSR No. 64/1984 Co . Hea th Regu at ons concern ng hea th pr nc p es for work w th chem ca carc nogens.

Commencement of product on of mater a s conta n ng asbestos must be author zed by Head of Pub c Hea th of the Czech Repub c. Products and mater a s conta n ng asbestos may be used on y where abso ute y nec-essary and on y for such techn ca and f re prevent on purposes where no other su tab e mater a s can be used.

Denmark

Bekendtgøre se om asbest

(Nr. 660 af 24. Jun 1986)

Bekendtgøre se om aendr ng af bekendtgøre se om asbest

(Nr. 139 af 23. Marts 1987)

(Nr. 984 af 11. December 1992)

Accord ng to th s order, the use of asbestos and mater a s conta n ng asbestos s proh b ted n Denmark.

France

Decret n° 96-1132 du 24 decembre 1996 mod f ant e decret n° 96-98 du 7 fevr er 1996 re at f a a protect on des trava eurs contre es r sques es a nha at on de pouss eres d am ante.

Decret n° 96-1133 du 24 decembre 1996 re at f a nterd ct on de am ante, pr s en app cat on du code du trava et du code de a consommat on.

Accord ng to these regu at ons, w th n the scope of ndustr a safety the fabr cat on, manufacture, sa e, mport and merchand s ng of products conta n ng asbestos s forb dden on the french market from 1st January 1997.

Germany

Verordnung zur Nove erung der Gefahrstoffverordnung, zur Aufhebung der Gefähr chke tsmerkma ever-ordnung und zur Änderung der ersten Verordnung zum Sprengstoffgesetz vom 26.10.1993 ersch enen m Bundesgesetzb att, Jahrgang 1993, Te 1, Nummer 57 Se te 1782 und Verordnung über d e Neuordnung und Ergänzung der Verbote und Beschränkungen des Herste ens, Inverkehrbr ngens und Verwendens gefähr-cher Stoffe, Zubere tungen und Erzeugn sse nach Paragraph 17 des Chem ka engesetzes vom 14. Oktober 1993, Bundesgesetzb att Jahrgang 1993, Te 1, Se te 1720.

Accord ng to th s ord nance the use of gasket mater a conta n ng asbestos s proh b ted n Germany.

Italy

Law 1992-03-27 N. 257 concern ng "Ru es regard ng the stop of use of asbestos".

Norway

Forskr fter t arbe dsm jø oven fastsatt av Kommuna departementet 16. August 1991 <<Asbest>> (best. nr 235).

Accord ng to th s regu at ons the use of asbestos and mater a s conta n ng asbestos s proh b ted n Norway.

Sweden

Ord nance AFS 1992:2 "Asbest" of the Nat ona Board of Occupat ona Safety and Hea th.

Accord ng to th s ord nance the use of asbestos and mater a conta n ng asbestos s proh b ted.

Switzerland

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

UK

Asbestos products (Safety) Regu at ons 1985.

Contro of Asbestos at Work Regu at ons 1987 (as amended).

Asbestos (Proh b t ons) Regu at ons 1992.

Accord ng to these regu at ons prov s ons cover ng work act v t es nvo v ng exposure to asbestos and the abe ng of products conta n ng asbestos app y n the UK.

Bibliography

EN 1092-1, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges.*

EN 1092-2, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 2: Cast iron flanges.*

EN 1092-3, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 3: Copper alloy flanges.*

EN 1092-4, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 4: Aluminium alloy flanges.*

EN 1333, *Pipework components — Definition and selection of PN.*

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

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BS EN 1514-7:2004

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