SLOVENSKI STANDARD
SIST EN 12560-7:2004

01-september-2004

Prirobnice in prirobnični spoji - Tesnila za prirobnice z oznako Class - 7. del: Kovinska oplaščena tesnila za jeklene prirobnice

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

Flansche und ihre Verbindungen - Dichtungen für Flansche mit Class-Bezeichnung - Teil 7: Metallummantelte Dichtungen mit Auflage für Stahlflansche

Brides et leurs assemblages - Joints pour les brides désignées Class - Partie 7: Joints métalloplastiques revetus pour utilisation avec des brides en acier

Ta slovenski standard je istoveten z: **EN 12560-7:2004**

ICS:

23.040.60	Prirobnice, oglavki in spojni elementi	Flanges, couplings and joints
23.040.80	Tesnila za cevne zveze	Seals for pipe and hose assemblies

SIST EN 12560-7:2004 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12560-7

June 2004

ICS 23.040.80

English version

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

Brides et leurs assemblages - Joints pour les brides désignées Class - Partie 7: Joints métalloplastiques revêtus pour utilisation avec des brides en acier

Flansche und ihre Verbindungen - Dichtungen für Flansche mit Class-Bezeichnung - Teil 7: Metallummantelte Dichtungen mit Auflage für Stahlflansche

This European Standard was approved by CEN on 1 April 2004.

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 Central Secretariat 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 Central Secretariat 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, Slovakia, Slovenia, 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 4

3 Terms and definitions 4

4 Designations 4
4.1 Range of Class designations 4
4.2 Range of gasket sizes 5
4.3 Gasket types 5
4.4 Information to be supplied by the purchaser 5

5 Constructional details 5
5.1 General details 5
5.2 Metal jacket 7
5.2.1 Metal jacket description 7
5.2.2 Metal jacket material 7
5.3 Soft filler 7
5.3.1 Soft filler description 7
5.3.2 Soft filler material 7
5.4 Covering layers 8
5.4.1 Covering layers description 8
5.4.2 Covering layers material 8
5.5 Inner and outer rings 8
5.5.1 Inner and outer rings description 8
5.5.2 Inner and outer rings material 9
5.6 Attachment of facing 9
5.6.1 Methods of attachment 9
5.6.2 De-greasing of core 9
5.6.3 Number of joins 9
5.6.4 Excessive facing 9
5.7 Integrity of facing attachment 9
5.8 Construction characteristics details 9

6 Dimenisons 10

7 Marking 12

8 Colour coding 13

9 Packaging 13

Annex A (informative) Information to be supplied by the purchaser 15

Annex B (informative) A-deviation 16

Bibliography 18

Foreword

This document (EN 12560-7:2004) 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 December 2004, and conflicting national standards shall be withdrawn at the latest by December 2004.

The annex A is informative and contains "Information to be supplied by the purchaser".

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

EN 12560 consists 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 5: Metallic ring joint 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

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 the construction, dimensions and marking of covered metal jacketed gaskets for use with flanges complying with prEN 1759-1 for Class 150, Class 300, Class 600, Class 900. Class 1 500 for sizes up to and including NPS 24, and for Class designation 2 500 up to and including NPS 12.

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 prEN 1759-1, EN 1759-3 and EN 1759-4 are given in EN 12560-1, EN 12560-2, EN 12560-3, EN 12560-4, EN 12560-5 and EN 12560-6.

NOTE 2 Annex A lists information that should be supplied by the purchaser when ordering gaskets in circumstances where the choice of the gasket materials appropriate to the service is 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 both top and lower metal jacketed core surfaces.

3.2
DN
see EN ISO 6708

3.3
NPS
see EN 1759-3

3.4
Class
see EN 1759-3

4 Designations

4.1 Range of Class designations

Gaskets shall be designated as 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 and Class 2 500.

4.2 Range of gasket sizes

Gasket nominal sizes shall also be designated in accordance with the ranges specified in Tables 2 and 3.

The general principles described in this standard shall be applied to gaskets outside of the ranges specified in Tables 2 and 3 by agreement between supplier and customer.

4.3 Gasket types

Gasket types, as illustrated in Figure 1, shall be designated as:

Type SC: Sealing element self centring (used with type C/D or E/F flange facings);

Type C/I: Sealing element with inner ring (used with type C/D or E/F flange facings);

Type C/O: Sealing element with centring ring (used with type A or B flange facings);

Type C/IO: Sealing element with centring ring and inner ring (used with type A or B flange facings).

The type A, type B, type C/D, type E/F flange facings are specified in prEN 1759-1.

4.4 Information to be supplied by the purchaser

The selection of gasket materials and type should take into account the fluid, the operating conditions and the properties of the gasket materials as well as the type of flange. It is recommended that the selection of a gasket for any particular application is made in consultation with the gasket supplier who will advise on the materials required for a particular service (see annex A).

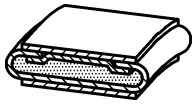
5 Constructional details

5.1 General details

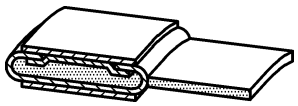
The covered metal jacketed gasket shall consist of a metal jacketed core and of covering layers stuck on both sides.

All gasket sizes and classes shall be designed so that an applied uniform bolt stress of 200 MPa will correctly seat the gasket and offer the required level of seal.

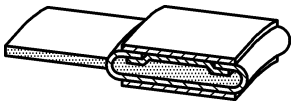
Gaskets for which dimensions are specified shall be one of the designs shown in Figure 1.



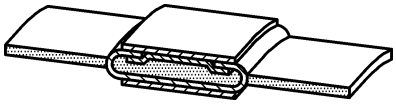
a) Type SC



b) Type C/I

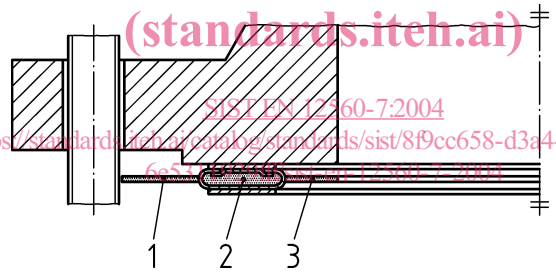


c) Type C/O

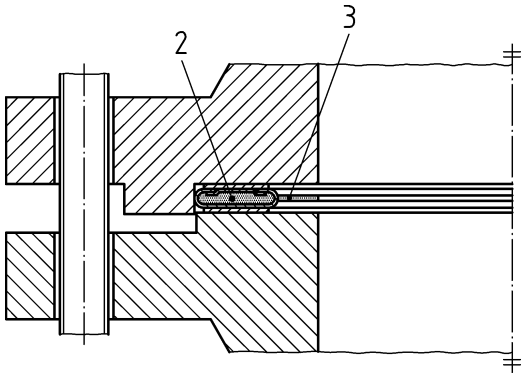


d) Type C/IO

Figure 1 — Covered metal jacketed gaskets



a) gaskets (C/O or C/IO type) for use with type A (flat face) or type B (raised face) flanges



b) gaskets (SC or C/I type) for use with type C/D (tongue/groove) or type E/F (spigot/recess) flanges

Key
1 Centring ring
2 Sealing element
3 Inner ring

Figure 2 — Examples of typical covered metal jacketed gaskets configurations

5.2 Metal jacket

5.2.1 Metal jacket description

The tolerance of the inside and the outside diameters of metal jacket cross section are given in Tables 2 and 3.

Thickness of the metal jacket cross section is depending on the soft filler material.

5.2.2 Metal jacket material

The material of the shell of the metal jacket shall be selected to be compatible with the intended service.

Table 4 lists the most frequently used materials.

The shell of the metal jacket shall have a thickness between 0,3 mm and 0,5 mm.

5.3 Soft filler

5.3.1 Soft filler description

The thickness of the soft filler material shall be selected to ensure:

— a good compressibility and elastic recovery of the gasket in order to compensate as much as possible the flatness defaults and to respond to variations due to operating conditions;

— a final thickness (with covering layers) adapted with the length of the piping line (after tightening);

— the compatibility with the assembly specification (spigot and recess or tongue and groove, metal to metal contact, ...).

5.3.2 Soft filler material

The filler material shall be selected in accordance with the intended service but as guidance, satisfactory mechanical behaviour is usually obtained with the following soft filler materials:

Suitable expanded graphite is:

— 98 % purity, ash content max. 2 %, sulphur content max. 1 000 $\times$ 10^{-6} (ppm), halogen contents max. 50 $\times$ 10^{-6} (ppm),

— the initial density shall be 1,0 g/cm^3 to 1,1 g/cm^3.

Suitable expanded PTFE is:

— Not recycled 100 % expanded PTFE,

— the initial density shall be 0,7 g/cm^3 to 0,9 g/cm^3.

Suitable Flexible Mica is:

— Phlogopite Mica (content > 96 %) with Silicon binder,

— the initial density shall be 1,8 g/cm^3 to 1,9 g/cm^3.

5.4 Covering layers

5.4.1 Covering layers description

The covering layers material and thickness should be selected to be compatible:

— with the process fluid, and the operating conditions;

— the type and surface finish of the flange facings;

— the flange bolt loading;

and to guarantee:

— satisfactory level of seal;

— a good adaptation with flange facings defaults.

5.4.2 Covering layers material

As a guidance, satisfactory leaktightness is usually reached with the following covering materials:

Suitable expanded graphite is:

— 98 % purity, ash content max. 2 %, sulphur content max. $1\,000 \times 10^{-6}$ (ppm), halogen contents max. 50×10^{-6} (ppm),

— the initial density shall be 1,0 g/cm^3 to 1,1 g/cm^3.

— to be finished with an anti-sticking coating

Suitable Virgin PTFE is:

— not recycled 100 % PTFE,

— the initial density shall be 1,6 g/cm^3.

Suitable Expanded Vermiculite is:

— the initial density shall be 1,2 g/cm^3.

NOTE It would be preferable that the gasket does not show any adhesion to the flange facings.

5.5 Inner and outer rings

5.5.1 Inner and outer rings description

The ring thickness depend on the sealing element thickness.

The rings material and thickness should be selected to be compatible:

— with the assembly considered (spigot and recess or tongue and groove, metal to metal contact, ...),

— with the process fluid, and the operating conditions,

and to guarantee:

— protection of the sealing element against over-load

— sufficient load to assure good level of seal.

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.