# SVENSK STANDARD
# SS-EN 12560-2:2013

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SWEDISH STANDARDS INSTITUTE

## Rörflänsar – Dimensioner för packningar för klassbetecknade flänsar –
## Del 2: Spirallindade packningar för stålflänsar

## Flanges and their joints – Dimensions of gaskets for Class-designated flanges –
## Part 2: Spiral wound gaskets for use with steel flanges

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Denna standard ersätter SS-EN 12560-2, utgåva 1.

The European Standard EN 12560-2:2013 has the status of a Swedish Standard. This document contains the official version of EN 12560-2:2013.

This standard supersedes the Swedish Standard SS-EN 12560-2, edition 1.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 12560-2

September 2013

ICS 23.040.01

Supersedes EN 12560-2:2001

English Version

# Flanges and their joints - Dimensions of gaskets for Class-designated flanges - Part 2: Spiral wound gaskets for use with steel flanges

Brides et leurs assemblages - Dimensions des joints pour brides désignées Class - Partie 2: Joints spiralés pour utilisation avec des brides en acier

Flansche und ihre Verbindungen - Dichtungen für Flansche mit Class-Bezeichnung - Teil 2: Spiraldichtungen für Stahlflansche

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# Foreword

This document (EN 12560-2:2013) 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of an identical text or by endorsement, at the latest by March 2014, and conflicting national standards shall be withdrawn at the latest by March 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12560-2:2001.

The main changes to this standard compared with EN 12560-2:2001 are:

a) The normative references have been updated.

b) 5.2 has been revised, and warning clause on asbestos has been deleted.

c) Gasket requirements in Clause 8 have been revised.

d) All tables in the standard have been revised.

e) Informative Annex A with A-deviations for use of asbestos has been deleted.

f) A Bibliography has been added.

EN 12560, "*Flanges and their joints — Gaskets for Class-designated flanges*" consists of seven parts:

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

— *Part 2: Spiral wound gaskets for use with steel flanges* (the present document)

— *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*

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# 1 Scope

This European Standard specifies the dimensions, design, types, designation, materials and marking of spiral wound gaskets for use with type A flat face or type B raised face flange facings complying with EN 1759-1 for the following Class designations:

— Class 150, to Class 1 500 for nominal sizes DN 15 to DN 600, and

— Class designation 2 500 up to and including DN 300.

The centering rings for the spiral wound gaskets according to this standard are sized for use with imperial bolting.

The dimensions of spiral wound gaskets for tongue and groove flange facing types and spigot and recess flange facing types to EN 1759-1 are not included in this standard.

Such gaskets may be available, however, for these types of flange and the purchaser is advised to consult the manufacturer as to their availability. Similarly, for slip-on or screwed flange types, the manufacturer should be consulted about availability.

NOTE Dimensions of other types of gasket for use with flanges complying with the requirements of EN 1759-1 are given in EN 12560-1, EN 12560-3, EN 12560-4 and EN 12560-5, EN 12560-6 and EN 12560-7.

# 2 Normative references

Not applicable.

# 3 Terms and definitions

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

**3.1**
**DN**
alphanumeric designation of size for components of a pipework system, which is used for reference purposes, comprised of the letters DN followed by a dimensionless whole number which is indirectly related to the physical size, in millimetres, of the bore or outside diameter of the end connections

Note 1 to entry: The number following the letters DN does not represent a measurable value and should not be used for calculation purposes except where specified in the relevant standard.

[SOURCE: EN ISO 6708:1995, 2.1, definition slightly modified]

**3.2**
**NPS**
alphanumeric designation of size for components of a pipework system, which is used for reference purposes, comprised of the letters NPS followed by a dimensionless number which is indirectly related to the physical size of the bore or outside diameter of the end connections

Note 1 to entry: The number following the letters NPS does not represent a measurable value and should not be used for calculation purposes except where specified in the relevant standard.

[SOURCE: EN 1759-1:2004, 3.3, definition slightly modified]

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**3.3**
**Class**
alphanumeric designation used for reference purposes related to a combination of mechanical and dimensional characteristics of a component of a pipework system, comprised of the word Class followed by a dimensionless whole number

Note 1 to entry: The number following the word Class does not represent a measurable value and should not be used for calculation purposes except where specified in the relevant standard.

Note 2 to entry: The designation Class is not meaningful unless it is related to the relevant component standard number.

[SOURCE: EN 1759-1:2004, 3.1, definition slightly modified and NOTE 3 deleted]

# 4 Designations

## 4.1 Range of Class designations

Gaskets shall be designated as suitable for use with one or more of the flanges designated:

a) Class 150;

b) Class 300;

c) Class 600;

d) Class 900;

e) Class 1 500;

f) 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 designation

Gasket types, as defined in Clause 8 and illustrated in Figure 1, shall be designated as:

a) Type C/I; or

b) Type C/O.

## 4.4 Information to be supplied by the purchaser

When ordering gaskets, the purchaser shall provide to the supplier the:

a) number and Part of this European Standard;

b) gasket type designation (see 4.3) for incorporation of inner ring (see Clause 8);

c) nominal size (see Table 1);

d) Class designation (see Table 1);

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e) required gasket materials or, where the gasket manufacturer is required to select the materials, the expected operating conditions for the application(s) for which the gasket(s) will be used.

Before ordering a gasket, it is recommended that the selection of the gasket type be made in consultation with the gasket supplier. The selection of gasket type should take account of 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.

EXAMPLE A gasket according to EN 12560-2, Type C/I, of nominal size DN 100, Class 150, winding material X4CrNi18-10 (abbreviation 304) and PTFE filler material shall be designated as:

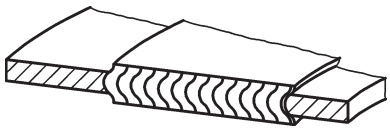
Gasket EN 12560-2 — C/I — DN 100 — Class 150 — 304 — PTFE

# 5 Gasket designs and materials

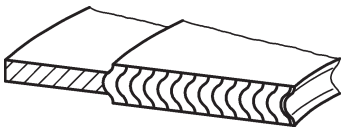
## 5.1 Gasket designs

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

The centering ring and, where used, the inner ring, shall be suitably grooved to retain the sealing element.



**a) Type C/I**



**b) Type C/O**

**Figure 1 — Spiral wound gasket designs**

NOTE 1 Type A and type B flange facings are shown in EN 1759 -1.

NOTE 2 The profile of the metal winding of the sealing element is at the option of the manufacturer.

## 5.2 Materials

A list of metal windings and filler materials is given in Table 3.

The inner ring material shall match the winding material unless the purchaser specifies otherwise.

Gaskets made to this standard shall not contain asbestos.

The centering ring may be carbon steel that is painted, metal plated or otherwise coated to inhibit atmospheric corrosion.

The materials of the gasket, may, if required be chosen by the manufacturer to suit the operating conditions in the enquiry and/or order (see 4.4).

# 6 Construction

Spiral wound gaskets shall be constructed as alternative plies of preformed metal windings and pliant fillers which are spirally wound. For the finished gasket, the filler shall be essentially flush with, but not below, the metal winding on both contact faces of the gasket. The thickness of the metal winding strip in the sealing

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element shall be between 0,15 mm and 0,23 mm. The filler material thickness is left to the discretion of the manufacturer. The profile of the metal winding of the sealing element is at the option of the manufacturer.

The inner windings shall have a minimum of three plies of preformed metal strip without filler. The inner plies shall be spot-welded about their circumference with a minimum of three welds, each no further than 75 mm apart.

The outer windings shall have a minimum of three plies of preformed metal without filler. The outer two plies shall be spot-welded about their circumference with a minimum of three terminal welds, with no more than 40 mm distance between the first and terminal welds.

Four additional loose preformed metal windings beyond the terminal weld may be used to retain the gasket into the centering ring.

## 7 Gasket compression

Gaskets for DN 15, DN 20 and DN 25 in Class 150, Class 300 and Class 600 shall be constructed so that an applied uniform bolt stress of 172 MPa, based on the nominal bolt root diameter, will compress the gasket to a thickness of 3,2 mm to 3,4 mm. All other gasket sizes and classes shall be constructed so that a uniform bolt stress of 207 MPa will compress the gasket to a thickness of 3,2 mm to 3,4 mm.

## 8 Gasket types

Gaskets shall be either of the following types:

a) sealing element type with centering ring and inner ring (designation: Type C/I); or

b) sealing element type with centering ring only (designation: Type C/O).

All gaskets shall have a centering ring. The centering ring thickness shall be from 2,97 mm to 3,33 mm and suitably grooved on the inside diameter so as to retain the spiral wound sealing element.

Inner rings shall be furnished with all spiral wound gaskets having PTFE (polytetrafluoroethylene) filler material.

Inner rings for flexible graphite filled spiral wound gaskets shall be furnished unless the purchaser specifies otherwise.

All filler material inner rings shall be furnished in spiral wound gaskets for:

— DN 600 in Class 900;

— DN 300 and larger in Class 1 500;

— DN 100 and larger in Class 2 500.

## 9 Dimensions

The diameters of spiral wound gaskets with centering ring, for use with types A and B flange facings, shall be as given in Table 1. For gaskets with an inner ring, the sealing element outside diameter and centering ring outside diameter shall be as given in Table 1 and the inner ring inside diameter shall be as given in Table 2.

NOTE Type A and B flange facings are shown in EN 1759-1.