PetroMarys

Metallic Gasket Data Sheet

Spiral Wound Gaskets

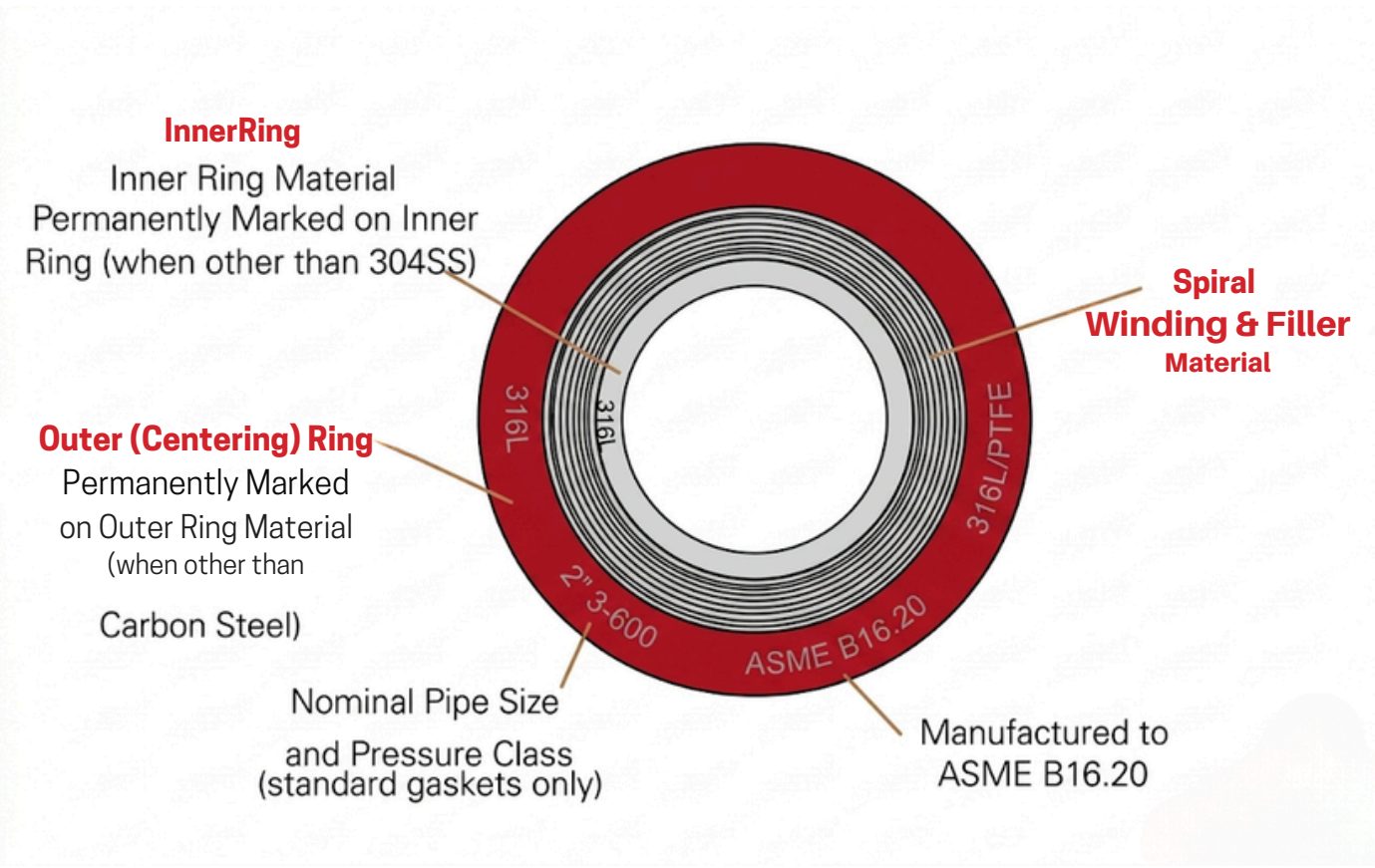
MANUFACTURED IN ACCORDANCE WITH ASME B16.20

Spiral wound gaskets—made with an alternating combination of formed metal wire and soft filler materials—form a very effective seal when compressed between two flanges. A v-shaped crown centered in the metal strip acts as a spring, giving gaskets greater resiliency under varying conditions. Filler and wire material can be changed to accommodate different chemical compatibility requirements. Fire safety can be assured by choosing flexible graphite as the filler material. If the load available to compress a gasket is limited, gasket construction and dimensions can be altered to provide an effective seal.

A spiral wound gasket has as many as three main metallic components; the outer center ring, the winding and the inner ring. The outer centering ring centers the gasket , and can potentially act as a compression limiter if the gasket is subjected to extremely high compressive stress. The main function of the inner ring is to provide structural integrity by preventing radial buckling within the windings. The inner ring can also help protect or shield the winding and filler from erosion or cavitation in extreme conditions.

Resiliency and strength make spiral wound gaskets an ideal choice under a variety of conditions and applications. The spiral wound gasket is a proven sealing solution that is used extensively throughout hydrocarbon processing, chemical processing, power generation, pulp and paper, aerospace, as well as other industries.

GASKET IDENTIFICATION MARKINGS REQUIRED BY ASME B16.20



Spiral Wound Specifications

TEMPERATURE LIMITS FOR COMMON METALS (ASME B16.20)

Material	Minimum °F	Minimum °C	Maximum °F	Maximum °C	Abbreviation	Guide Ring Edge Color Code
304 Stainless Steel	-320	-195	1,400	760	304	Yellow
316L Stainless Steel	-150	-100	1,400	760	316L	Green
317L Stainless Steel	-150	-100	1,400	760	317L	Maroon
321 Stainless Steel	-320	-195	1,400	760	321	Turquoise
347 Stainless Steel	-320	-195	1,700	925	347	Blue
Carbon Steel	-40	-40	1,000	540	CRS	Silver
20Cb-3 (Alloy 20)	-300	-185	1,400	760	A-20	Black
HASTELLOY® B 2	-300	-185	2,000	1,090	HAST B	Brown
HASTELLOY® C 276	-300	-185	2,000	1,090	HAST C	Beige
INCOLOY® 800	-150	-100	1,600	870	IN 800	White
INCOLOY® 825	-150	-100	1,600	870	IN 825	White
INCONEL® 600	-150	-100	2,000	1,090	INC 600	Gold
INCONEL® 625	-150	-100	2,000	1,090	INC 625	Gold
INCONEL® X750	-150	-100	2,000	1,090	INX	No Color
MONEL® 400	-200	-130	1,500	820	MON	Orange
Nickel 200	-320	-195	1,400	760	NI	Red
Titanium	-320	-195	2,000	1,090	TI	Purple

STANDARD THICKNESSES

Winding	Ring(s) Inner & Outer
0.125"	3/32"
0.175"	1/8"
0.250"	3/16"
0.285"	3/16"

TEMPERATURE LIMITS FOR FILLER MATERIAL (ASME B16.20)

Material	Minimum °F	Minimum °C	Maximum COT °F	Maximum COT °C	Abbreviation	Guide Ring Edge Stripe Color Code
Ceramic	-350	-212	2,000	1,090	CER	Light Green
Flexible Graphite	-350	-212	850	454	F.G.	Gray
PTFE	-400	-24	500	260	PTFE	White
4122 THERMa-PUR®	-	0 -	1,832	1,000	4122	Light Blue

STANDARD TOLERANCES***

For non-ASME windings

Gasket Diameter	I.D.	O.D.
Up to 1" 1" to	+1/64"-0	+0-1/32"
24" 24" to 36"	+1/32"-0	+0-1/32"
36" to 60" 60"	+3/64"-0	+0-1/16"
and above	+1/16"-0	+0-1/16"
	+3/32"-0	+0-3/32"

For spiral wound gaskets not otherwise specified.

Gasket Thickness	Tolerance	Width Limits Minimum	Width Limits Maximum	Compressed Thickness
0.125"**	±0.005"	3/16"	1"†† 1-	0.090- 0.100"
0.175"**	±0.005"	1/4"	1/2"†† 1-	0.125- 0.135"
0.250"**	±0.005"	5/16"	1/2"†† 1-	0.180- 0.200"
0.285"**	±0.005"	5/16"	1/2"††	0.200- 0.220"

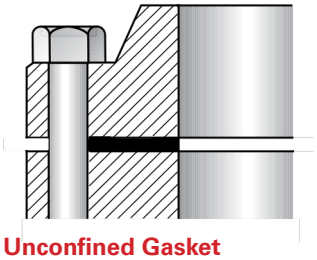
NOTE:

Thickness tolerance is ±0.005" on spiral wound gaskets, except +0.010"-0.005" on gaskets with:

- Less than 1" ID and greater than 26"ID
- PTFE filler
- Flange widths of 1" or greater

Spiral wound gaskets can be made to large maximum widths if required. Call PetroMarys for details.

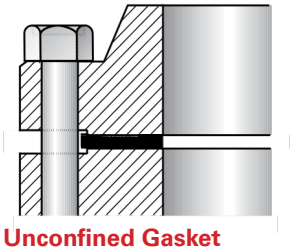
Flange Types



Unconfined Gasket

- Mating faces of both flanges are flat
- Gasket may be ring type, or full face, which covers the entire face both inside and outside the bolts (ring gaskets are not acceptable in many flat face flanges) due to flange materials of construction

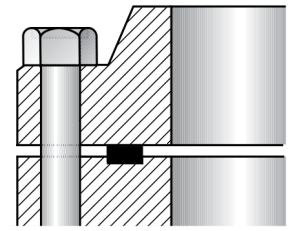
RAISED FACE



Unconfined Gasket

- Flange sealing surface is reduced to achieve higher seating stress
- Gasket is usually ring type, contained entirely within bolt circle

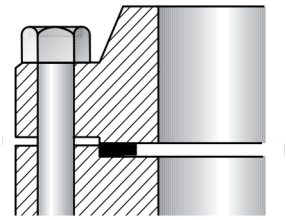
GROOVE TO FLAT



Fully Confined Gasket

- One flange face is flat, the other is recessed
- For applications requiring accurate control of gasket compression
- Only resilient gaskets are recommended—spiral wound, hollow metal O-ring, pressure-actuated, and metal-jacketed gaskets

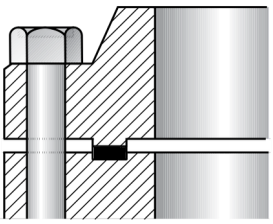
MALE-FEMALE



Semi-Confined Gasket

- Depth of female (recessed) face normally equal to or less than height of male (raised) face, to prevent metal-to-metal contact during gasket compression
- Recessed O.D. normally is not more than 1/16" larger than the O.D. of the male face
- Joint must be pried apart for disassembly

TONGUE AND GROOVE



Fully Confined Gasket

- Groove depth is equal to or less than tongue height
- Groove usually not over 1/16" wider than tongue
- Gasket dimensions will match tongue dimensions
- Joint must be pried apart for disassembly

Selection of Metals

The chemical resistance of gaskets are governed by their materials of construction. The selection is generally based on chemical resistance, heat resistance and cost. The most popular metals include:

- Carbon Steel
- Stainless Steel 304
- Stainless Steel 316
- INCONEL® 600*
- Nickle 200
- HASTELLOY C® 276
- MONEL® 400‡
- INCONEL® 625*
- INCOLOY® 825*
- INCONEL® 750

The selection of a metal to be used in a gasket that is suitably resistant to corrosive media or to high temperature involves many considerations. PetroMarys recommends that designers contact the manufacturers of alloyed material, who conduct laboratory corrosive tests and in-plant corrosion testing.

CONCENTRATION OF CORROSIVE AGENTS

Dilute solutions are not necessarily less corrosive than those of full strength, and the reverse is often the case. Probably the most familiar example of this is the action of sulfuric acid on iron; concentrations over 90% acid may be handled by iron without much difficulty, but below this concentration, the rate of attack will increase rapidly with an increase in dilution.

PURITY OF CORROSIVE AGENTS

Purity, in this instance, means the absence of contaminating amounts of other corrosive compounds. For example, the corrosive attack by compounds that are derivatives of an acid: in the pure state these compounds may be relatively inert, but if contaminated by any carry-over of free acid they must be handled more carefully.

TEMPERATURE

Besides its effects upon the mechanical properties of the gasket, the temperature of the corrosive agent will have a marked influence upon the rate of attack.

FORMS OF CORROSION

- General corrosion
- Galvanic corrosion
- Concentration cell or crevice corrosion
- Chemical pitting
- Intergranular corrosion
- Effects of stress on corrosion
  - › Corrosion fatigue
  - › Stress corrosion cracking

CORROSIVE ENVIRONMENTS

- Atmospheric corrosion
- Corrosion by water, acids
- Corrosion by alkalies, salts, fluorine
- Corrosion by chlorines and hydrogen
- Corrosion by chlorides

PetroMarys Metallic Gaskets

PetroMarys is a leading supplier of Metallic Gaskets, backed by the extensive expertise and experience of its skilled workforce.

PetroMarys

www.petromarys.com