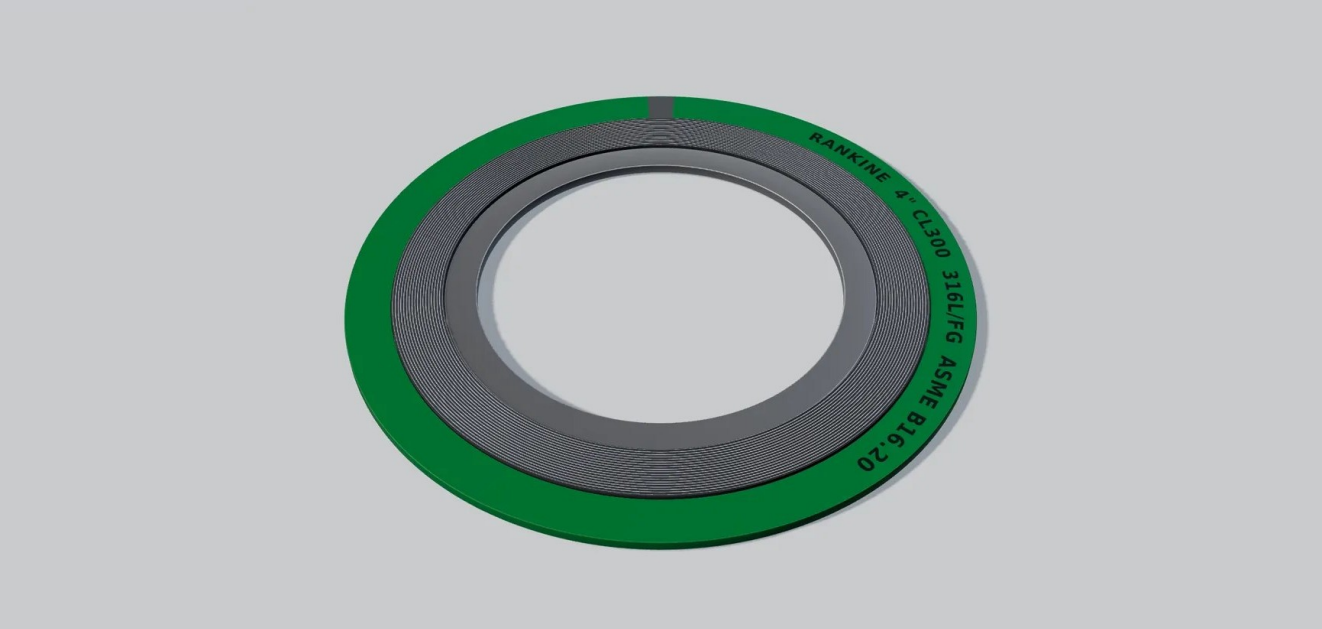
RANKINE
GASKETS

PRODUCT DATASHEET

Spiral wound gaskets

Metal strip and soft filler wound into a spring. ASME B16.20, EN 1514-2.



Spiral wound gasket style CGI. Product images are 3D renders.

The standard gasket for raised-face process flanges. V-profile metal strip and soft filler, wound together, recover as the joint moves with temperature and pressure.

Construction and styles

- R: sealing element only, for tongue-and-groove and male-female faces
- RIR: with inner ring, for recessed faces
- CG: outer ring only, where the purchaser specification allows
- CGI: outer and inner rings. Our standard; required with PTFE and graphite fillers
- Heat exchanger and low-stress variants

Specification

Standards	**ASME B16.20, EN 1514-2**
Pressure	**Class 150 to 2500**
Flange faces	**Raised face, tongue and groove, male and female**
Temperature	**−200 to 1000 °C**

TEMPERATURE RANGE, °C

−200 0 200 400 600 800 1000

Upper limit set by filler: PTFE 260 °C, graphite 450 °C in air, mica 1000 °C

Notes

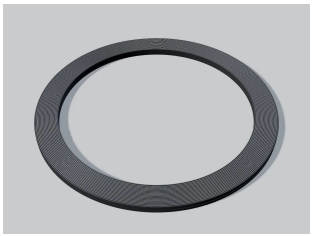
- ASME B16.20 calls for an inner ring with PTFE and flexible graphite fillers unless the purchaser specifies otherwise.
- The outer ring colour identifies the winding metal; a stripe identifies the filler. See the table on page 3.
- Fit a new gasket every time the joint is opened.

Specify when enquiring

- Nominal size and pressure class
- Flange standard (ASME B16.5, B16.47 Series A or B, EN 1092-1)
- Style: R, RIR, CG or CGI
- Winding metal, filler and ring metals
- Service temperature, pressure and media

Four styles, chosen by flange face

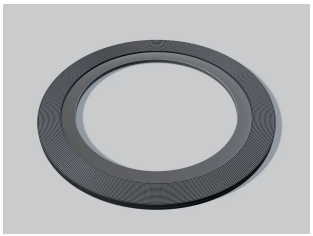
The flange face decides the style. Rings are added where the joint needs centring, a compression stop or bore protection.



Style R

Sealing element only

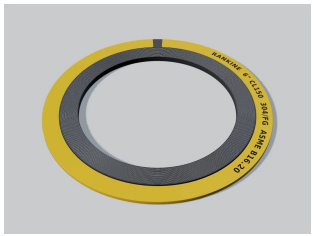
For tongue-and-groove and male-female flanges, where the groove locates and limits the gasket.



Style RIR

With inner ring

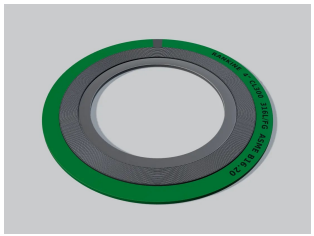
For male-female and recessed faces where the bore needs protecting from turbulence and buckling.



Style CG

With outer centring ring

Outer ring only. Used on raised faces where the purchaser specification allows no inner ring, typically low-pressure utility service.



Style CGI

Outer and inner rings

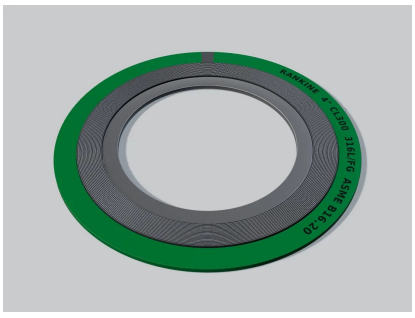
ASME B16.20 calls for an inner ring with PTFE and flexible graphite fillers unless the purchaser specifies otherwise. Our standard for raised faces.

Product images are 3D renders.

Also made. **Heat exchanger:** with welded pass partition bars. **Low stress:** softer windings for Class 150 and weak flanges. **Special shapes:** oval, obround and manway gaskets to drawing.

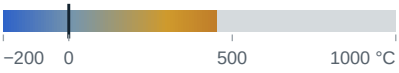
Filler sets the temperature limit

The filler does the sealing. Choose it for the highest temperature and the most aggressive media the joint will see.



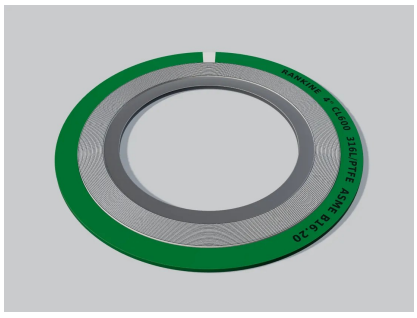
Flexible graphite

−200 to 450 °C



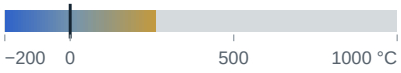
The standard filler. Seals well at low stress and resists most chemicals. Limit 450 °C where air can reach it; higher in steam or inert gas.

Marked with a grey stripe on the outer ring



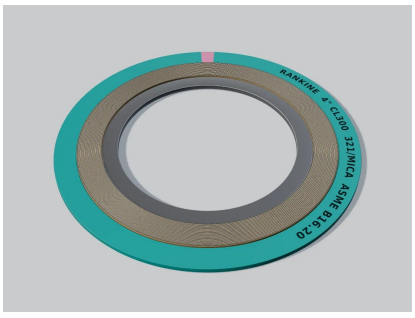
PTFE

−200 to 260 °C



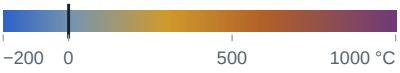
For strong chemicals and oxygen where graphite is not allowed. Always with an inner ring, as PTFE can cold flow.

Marked with a white stripe on the outer ring



Mica / vermiculite

−200 to 1000 °C



For high temperature and oxidising service beyond graphite, including exhaust and fire-safe joints.

Marked with a pink stripe on the outer ring

Product images are 3D renders.

Read the ring: winding metals and colour codes

ASME B16.20 colour-codes the outer ring by winding metal, with a stripe for the filler, so the right gasket can be picked from the store and checked in the flange. Swatches below show the grey stripe of flexible graphite filler.

RING	WINDING METAL	COLOUR	TEMPERATURE	TYPICAL SERVICE
	**304 stainless**	Yellow	−195 to 760 °C	General process, water, steam, mild chemicals
	**316L stainless**	Green	−100 to 760 °C	The default for refinery and chemical service
	**321 stainless**	Turquoise	−195 to 760 °C	High temperature, resists sensitisation
	**347 stainless**	Blue	−195 to 925 °C	High temperature with intergranular corrosion risk
	**Monel 400**	Orange	−130 to 820 °C	Hydrofluoric acid, seawater, chlorides
	**Nickel 200**	Red	−195 to 760 °C	Caustic soda and reducing media
	**Inconel 600**	Gold	−100 to 1090 °C	High temperature oxidising service
	**Inconel 625**	Gold	−100 to 1090 °C	Severe corrosion and high temperature
	**Incoloy 825**	White	−100 to 870 °C	Sulphuric and phosphoric acids
	**Hastelloy C276**	Beige	−185 to 1090 °C	Wet chlorine, strong acids, oxidisers
	**Alloy 20**	Black	−185 to 760 °C	Sulphuric acid service
	**Titanium grade 2**	Purple	−195 to 1090 °C	Chlorides and oxidising acids

Typical winding temperature limits, from Garlock published data. The filler limit applies if it is lower. An arrow marks limits beyond 1000 °C. Limits depend on media and duty; our engineers confirm the limit for your application on every quotation.

Sizes and thickness

ASME B16.5 flanges	**½ to 24 inch, Class 150 to 2500**
ASME B16.47 flanges	**26 to 60 inch, Series A and B**
EN 1092-1 flanges	**To EN 1514-2, PN 10 to PN 160**
Winding thickness	**4.5 mm standard; 3.2 mm and 6.4 mm on request**
Ring thickness	**3.0 mm**
Non-standard	**Any diameter and shape to drawing**

Getting the seal right

1. Use a new gasket every time the joint is opened.
2. Check flange faces for radial scratches and the correct surface finish.
3. Lubricate bolt threads and nut faces.
4. Tighten in a cross pattern in stages, following ASME PCC-1.
5. Stop when the windings reach about 3.2 to 3.4 mm, just above the 3.0 mm ring thickness.

Full procedure: Rankine installation guide (rankine-installation-guide.pdf).