



# **KLINGER MAXIFLEX (Spiral Wound Gaskets)**

**Fire Safe to API 6FB**



# KLINGER MAXIFLEX

## Spiral Wound Gaskets

### The Design Principle

Maxiflex spiral wound gaskets have the ability to recover under the action of fluctuating loads caused by process fluid pressure and temperature changes, flange face temperature variations, flange rotation, bolt stress relaxation and creep.

The gasket sealing element consists of a pre-formed metallic winding strip with layers of a softer, more compressible sealing material which, during compression, is densified and flows to fill imperfections in the flange surfaces. The metal strip holds the filler giving the gasket mechanical resistance and resilience.



### Product Advantages

Maxiflex spiral wound gaskets combine the ease of sealing a graphite, PTFE or mica filler with the strength afforded by a specially profiled metallic, spring-like reinforcement. The sealing element is manufactured by interleaving plies of alternating metallic winding strip and filler to create a gasket that is robust and easy to install. Maxiflex spiral wound gaskets create a very tight and reliable seal suitable for high temperature and pressures and can be manufactured to suit standard flanges and also custom-designed vessels.

Maxiflex gaskets are capable of giving an excellent seal over a wide range of flange surface finishes, but as a general guide we suggest under general duties, a flange surface finish of 125-250µin. (3.2-6.3 µm).



### Maxiflex Spiral Wound Gasket Construction

Above is the “Maxiflex” spiral wound gasket’s basic sealing element. Several layers of specially formed continuous V shaped (also called chevron shaped) metal strips are spirally wound with alternate plies of soft filler strip.

The V profile allows the gasket to act as a spring and the depth is carefully controlled to give the sealing element the best compression and recovery characteristics. Maxiflex spiral wound gaskets are manufactured to specifications of ASME B16.20.

Computer controlled winding machines carefully monitor and adjust the tension of the winding strips. A uniform density throughout the product is produced. This provides the spring-like action within the gasket that resists buckling and maintains a seal even when subject to fluctuating compressive loads.

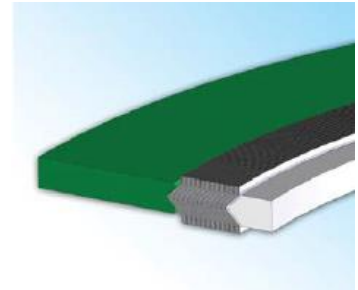
# KLINGER MAXIFLEX

## Spiral Wound Gaskets

KLINGER Maxiflex Spiral Wound Gaskets are manufactured to specifications of ASME B16.20. They are available in a range of configurations and materials. They are suitable to use for flange standards to: ASME B16.5, DIN, BS 10, JIS, AS2129 and customer designs. Below are the most common gasket types:

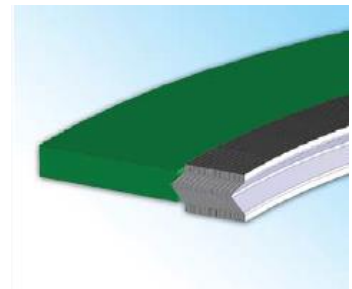
### Type CRIR

- Solid metal inner and outer rings
- Suitable for high pressure and high temperature applications
- Standard spiral wound gasket for raised face or flat flanges
- Prevents turbulence and erosion damage to flange
- Prevents damage to the gasket bore and inner windings
- Inner ring acts as a heat shield and a corrosion barrier
- Wide choice of material for filler and metallic strip
- General and critical duties



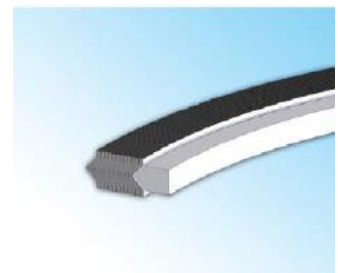
### Type CR

- Solid metal outer ring used as a centering device and compression stop
- Used mainly on raised face and flat face flanges
- Wide choice of material for filler and metallic strip
- General duties



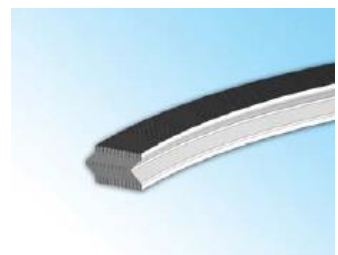
### Type RIR

- Solid metal inner ring
- High pressure and high temperature capability
- Male to female flanges in vessels, valves and pumps
- Wide choice of materials for filler and metallic strip
- General and critical duties



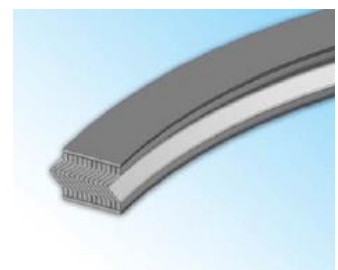
### Type R

- Wide choice of materials for filler and metallic strip
- Suitable for high pressure and high temperature applications
- Recommended flanges: tongue and groove, male to female and flat face to recess in vessels, valves and pumps
- General and critical duties



### Type R Graflex Faced

- Covered with 0.5mm Graflex
- Used on manhole covers
- Low bolt load applications
- Uneven sealing faces
- Double integrity seal

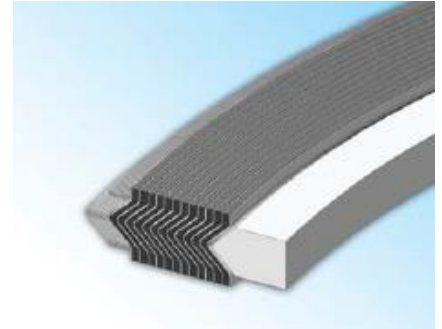


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## Spiral Wound Gaskets

### Type HTX

- A combination of inner and outer rings
- The inner ring could have pass bars or carry either a metal clad or soft gasket with pass bars
- Manufactured to customer designs
- Wide choice of materials for filler and metallic strip
- Manufactured with thin outer windings to create stable, large diameter gaskets for narrow heat exchanger application
- For heat exchanger applications



### Maxiflex Graphite Filled

#### Applications:

- Used for a wide range of media including steam, oil, hydrocarbons and many other chemicals
- Used for applications requiring high integrity sealing performance

#### Typical Properties:

- High integrity gasket designed for raised and flat faced applications
- Excellent tightness properties even under fluctuating load
- Easy to handle and install
- Inner ring protects windings against media and adds stability at higher pressures and for larger diameters
- Maximum temperature: 500°C / Maximum Pressure > 400 bar – please consult Klinger

### Maxiflex PTFE Filled

#### Applications:

- Used for applications demanding chemical resistance

#### Typical Properties:

- High integrity gasket designed for raised and flat faced applications
- Resistant to virtually all chemicals
- Robust and easy to handle and install
- Inner ring must be used with PTFE sealing material
- Inner ring protects windings against media and adds stability at higher pressures
- Maximum temperature: 260°C / Maximum Pressure > 100 bar – please consult Klinger

### Maxiflex Mica Filled

#### Applications:

- High temperature and high pressure applications

#### Typical Properties:

- High temperature gasket designed for raised and flat faced applications
- Excellent tightness properties even under fluctuating loads
- Easy to handle and install
- Inner ring protects windings against media and adds stability at higher pressures and for larger diameters
- Maximum temperature: 1000°C / Maximum Pressure > 100 bar – please consult Klinger

# KLINGER MAXIFLEX

## Spiral Wound Gaskets

### Thickness of Maxiflex Gaskets:

Spiral Wound Gaskets are manufactured with a number of standard thickness which are designed to a specific thickness to attain the best sealing performance and adaptation to the flanges. The thickness is measured to the metallic windings not to the filler. The standard thickness values are as follows:

Initial Thickness	Recommended Compressed Thickness
3.2 mm	2.3 - 2.5 mm
4.5 mm	3.2 – 3.4 mm
6.4 mm	4.6 – 4.8 mm
7.2 mm	4.8 – 5.0 mm

### Standard Winding and Ring Materials:

Maxiflex Gaskets are available to order in a wide range of winding and ring materials to suit specific applications.

### Maximum Temperature Limits:

The table below show some examples of using various winding and filler materials for various temperature limits. Please consult Klinger for specific applications.

Winding Material	Maximum Temperature	Winding Material	Maximum Temperature	Filler Material	Maximum Temperature
304/304L	650°C	Inconel	1000°C	Graphite	500°C
316/316L	800°C	Incoloy	600°C	PTFE	260°C
Duplex 31803	800°C	Hastelloy	700°C	Mica	1000°C
347SS	870°C	Super Duplex	600°C	Mica/Graphite	900°C
321SS	870°C	Alloy 20	600°C		
Monel 400	800°C	254 SMO	600°C		
Nickel 200	600°C	Zirconium	500°C		
Titanium	500°C	Carbon Steel	500°C		

These temperatures given above are guidelines only and do not apply in all fluids. Please consult Klinger for advice.

### Gasket Factors of Maxiflex Gaskets:

$M = 3$  ;  $Y = 69 \text{ MPa}$  \*

\*'M' and 'Y' values are to be used for flange designs only as specified in the ASME Boiler and Pressure Vessel Code. They are not meant to be used as gasket seating stress values in actual service. On request, Klinger can calculate the recommended stress and torque values for specific applications.

Certified according to: DIN EN ISO 9001:2008

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