Metaflex®
Spiral wound gaskets

Metaflex® gaskets are manufactured from V-shaped metal strips, spirally wound with an inlay of filler between each turn. At the start and conclusion of the spiral form, several continuous turns of the metallic windings are securely welded together.

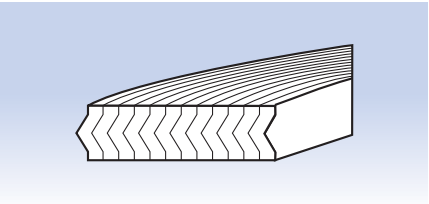
The construction is capable of infinite variety as the number of metal plies in relation to filler plies can be increased or decreased. The metal and filler material can be varied to suit practically any service conditions.

The use of steel supporting rings on the inside or outside of the spiral wound portion (or both) permits the application of *Metaflex*® gaskets to be extended to flat or raised face flanges under high pressure lines.

Features

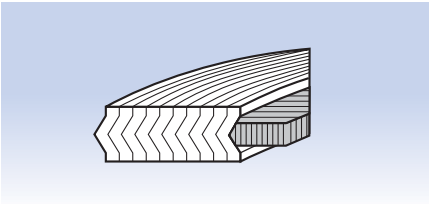
- *Available in materials capable of withstanding temperatures from the cryogenic range to at least 1000°C.*
- *Can, in standard form, seal pressures up to 350 bar. Higher pressures can be considered on request.*
- *Maintain a seal under conditions of thermal cycling or vibration.*
- *Resist corrosion and leave flange faces clean.*
- *Do not require ground or lapped flange faces.*
- *Are quick to fit and remove.*
- *Can often be used on bowed or pitted flanges.*
- *Offer good performance on difficult dry gas or high vacuum applications.*

Gasket profiles



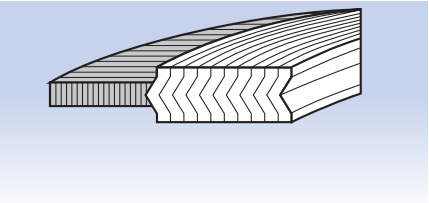
Type C

Basic construction style. Suitable for tongue and groove, male and female or flat face and recess flanges.



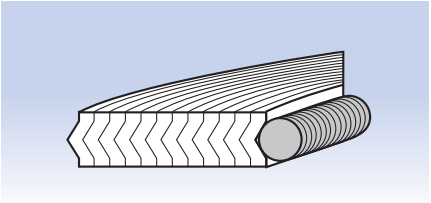
Type C/IR

Identical to the Type C but fitted with the protective inner ring which gives high pressure and temperature capabilities with improved sealing performance. Used on male and female flanges.



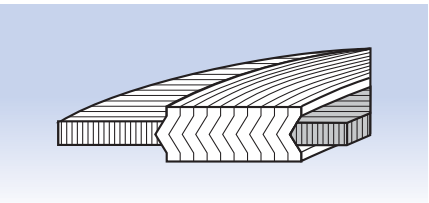
Type SG

As Type C but fitted with an external ring which accurately centralises the sealing element. In addition the ring provides extra radial strength and acts as a compression stop. Generally used on raised face and flat face flanges.



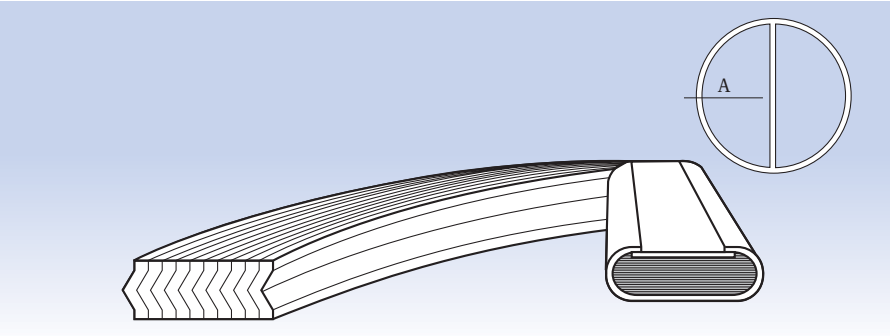
Type H and H/IW

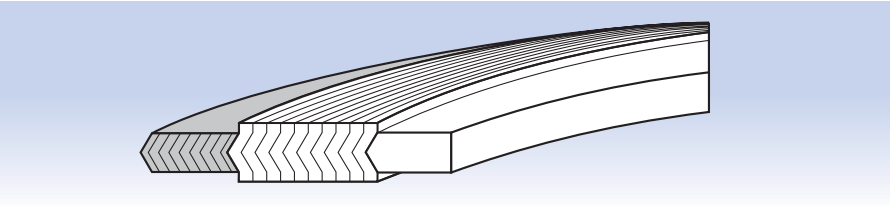
In appearance these are identical to Type C but specifically designed for the sealing of manholes, handholes, tubecaps and plugs in boilers and vessels. They can be produced in a wide variety of shapes, the most common being circular, obround, square, oval and diamond. The H/IW incorporates a stainless steel wire on the inner surface which protects the inner windings and reduces the risk of extrusion under compression.

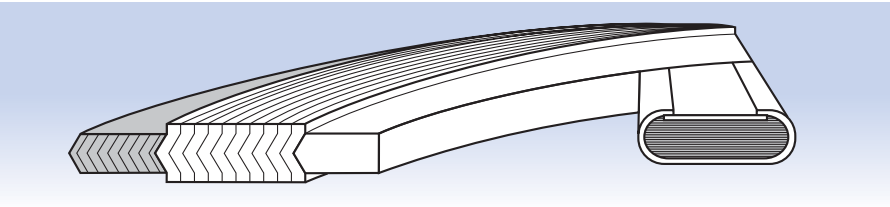


Type SG/IR

Identical to the Type SG but also fitted with an inner ring to prevent damage to the gasket bore and inner windings. It also acts as a heat shield and corrosion barrier and improves recovery characteristics and sealing performance.







Type TE

This type is identical to the Type C but is fitted with pass-partition bars for use on heat exchangers and vessels. The bars are usually manufactured metal-jacketed gaskets but can also be solid metal faced with graphite, PTFE or soft jointing material.

Type WG and WG/IR

Designed to suit the relatively narrow seating space on many heat exchangers by utilising a spirally wound steel centring ring instead of a solid ring. WG/IR has a solid inner ring.

Type WG/TE and WG/IR/TE

Identical to the WG profile but fitted with partition bars.
WG/IR/TE has an inner ring.

See page 26 for typical pass partition bar configurations.

Metaflex® manufacturing parameters

The standard *Metaflex*® Type SG and SG/IR gaskets are produced with a sealing element thickness of 4.5mm and 3.0mm centring ring/inner rings. However, virtually all types are available in a variety of thicknesses from 2.5mm to 7.3mm nominal.

The following tables specify the various nominal and corresponding recommended compressed thicknesses together with maximum and minimum diameters for each thickness.

SIZES NOMINAL THICKNESS	MINIMUM DIAMETER	MAXIMUM DIAMETER
2.5mm (0.098”)	22mm (⅞”)	300mm (12”)
3.2mm (0.125”)	10mm (⅜”)	760mm (30”)
4.5 (0.175”)	10mm (⅜”)	1520mm (60”)
7.3mm (0.285”)	60mm (2.⅜”)	3550mm (140”)*

* Whilst we do not generally recommend above 3550mm, we have supplied type SG/IR in excess of 5 metres diameter.

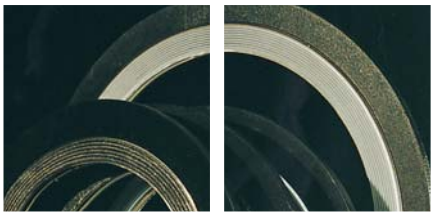
Metaflex® gasket compression

Metaflex® gaskets must be compressed by a specific degree if maximum service potential is to be realised.

NOMINAL THICKNESS	COMPRESSED THICKNESS
2.5mm (0.098”)	1.9/2.1mm (0.075/0.85”)
3.2mm (0.125”)	2.4/2.6mm (0.095/0.105”)
4.5 (0.175”)	3.2/3.45mm (0.125/0.135”)
7.3mm (0.285”)	5.00/5.25mm (0.197/0.207”)

Note: Due to the compression characteristics of PTFE, full compression may not always be achieved. If flange face contact is essential then special clearances can be considered.

Metaflex® materials



METAL WINDING STRIP
304
304L
316
316L
320
310
321
347
17-7 PH
ALLOY 20
MONEL 400 & K500
NICKEL 200
INCONEL 600, 625 & X750
INCOLOY 800 & 825
TITANIUM
HASTELLOY B2 & C276
COPPER
ZIRCONIUM
DUPLEX

FILLER MATERIAL
STANDARD PURITY GRAPHITE 'SPG'
(98% MIN. PURITY)
HIGH PURITY GRAPHITE 'HPG'
(99.7% MIN. PURITY)
COMPRESSED NON-ASBESTOS
FIBRE 'XA'
PTFE
HIGH TEMPERATURE FILLER 'HTF'

TEMPERATURE LIMITS
) 500°C (Oxidising conditions)
) 600°C (Inert/reducing media)
) 650°C (Steam)
500°C
260°C
1000°C

INNER & OUTER RING MATERIAL	
CARBON STEEL*	310
304	321
304L	MONEL 400
316	NICKEL 200
316L	INCONEL 600, 625 & X-750
320	INCOLOY 800 & 825
TITANIUM	
HASTELLOY B2 & C276	
COPPER	
ZIRCONIUM	
DUPLEX	
PTFE (INNER RINGS ONLY)	

The most widely used material for winding metal is SS 316L and is usually used with carbon steel or stainless steel flanges. The standard inner ring material is also SS 316L. It is normal practice for the inner ring and windings to be the same as, or compatible with, the flange metal. This practice prevents corrosion and differential expansion problems. For very high temperatures or highly corrosive applications, alternative materials may be chosen for both windings and inner rings. PTFE inner rings can be supplied for highly corrosive media.

As standard the centring rings are supplied in carbon steel with an anti-corrosion coating/treatment primarily to prevent corrosion in storage. The use of stainless steel for centring rings is quite common where the external flange environment conditions are corrosive to carbon steel, or temperature conditions prohibit the use of carbon steel.

** As standard supplied with a paint coating to inhibit corrosion during storage. Other protective coatings, eg. zinc plating with a chrome passivate, are available on request.*