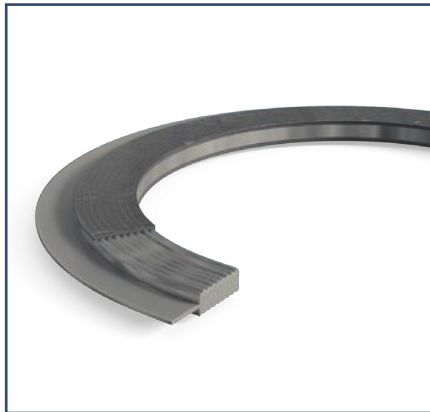




Sealing for Tomorrow's Environment

Quality / Innovation / Service



**KLINGER MIDDLE EAST GASKET
FACTORY L.L.C**

KLINGER MIDDLE EAST a leader manufacturer of sealing products...

Located in Abu Dhabi, the capital of United Arab Emirates, since 2001. The Klinger name is renowned and trusted throughout the whole world, having a huge understanding of sealing products used in a wide range of applications.

Having a built reputation upon quality, reliability and innovation the factory is well equipped with the latest technology machines like water-jet cutting machine, Laser marking machine, Dot-marking machine CNC machines & CNC cutting machines to produce high quality gaskets according to international standards. Klinger Middle East Gasket Factory is certified to API 6A , ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007

Certificates Include...



Current Customers Include...



**Spiral Wound
Gaskets
“Maxiflex”**



**Metal Ring
Joint Gaskets
“RTJ”**



**Kammprofile
Gaskets
“Maxiprofile”**



**Metal Jacketed
Gaskets**



**Asbestos - Free
Soft Cut Gaskets**



**Flange Isolation
Kits**



**Rubber Steel
Gaskets**

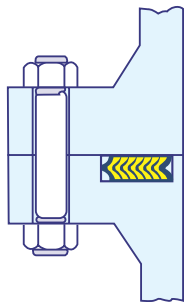


**Maxigraph
Gaskets**



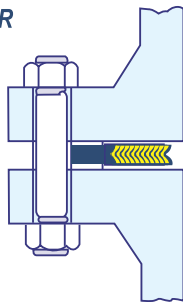
Spiral Wound Gaskets

Type R



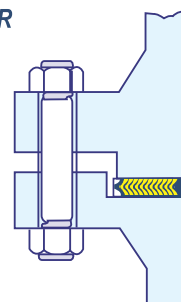
- Maxiflex spiral wound sealing element.
- Wide choice of materials for filler and metal strip.
- Suitable for high pressure and temperature applications.
- Recommended flanges - tongue and groove, male to female and flat face to recess.
- General and critical duties.

Type CR



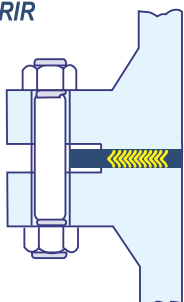
- Maxiflex spiral wound sealing element.
- Solid metal outer ring used as centering device and compression stop.
- Used mainly on raised face and flat face flanges.
- General duties

Type RIR



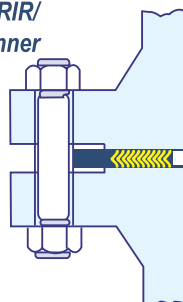
- Maxiflex spiral wound sealing element.
- Solid metal inner ring.
- High pressure temperature capability
- Male to female flanges.
- General and critical duties

Type CRIR



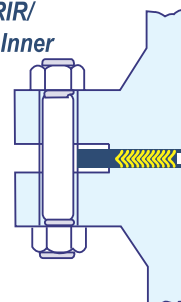
- Maxiflex spiral wound sealing element.
- Solid metal inner and outer ring.
- Suitable for high pressure and temperature applications.
- Raised face or flat face flanges.
- Prevents turbulence and erosion damage to flange.
- Prevents damage to the gasket bore and inner windings.
- Acts as a heat shield.
- Acts as a corrosion barrier.
- General and Critical Duties.

**Type CRIR/
PTFE Inner**



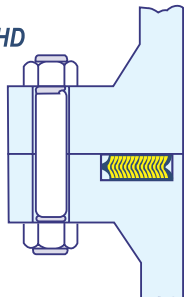
- Maxiflex spiral wound sealing element.
- Solid PTFE inner ring solid metal outer ring.
- Raised face or flat face flanges.
- Acts as a secondary seal.
- Environmentally friendly.
- Corrosion barrier.

**Type CRIR/
Graflex Inner**



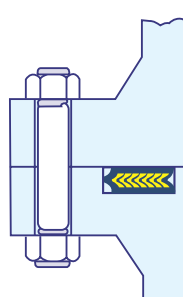
- Maxiflex spiral wound sealing element.
- Solid metal Graflex covered inner.
- Suitable for high pressure and temperature applications.
- Raised face or flat face flanges.
- Corrosive media.
- Acts as a secondary seal.

Type RHD



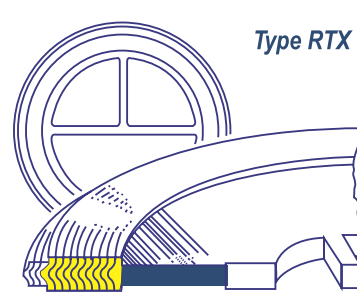
- Maxiflex spiral wound sealing element. Wound high density.
- Wide choice of materials for filler and metal strip.
- High pressure pumps.
- High pressure valves (Gas service).
- Gas service.
- Low emission tested.

**Type R
Graflex
faced**



- Maxiflex sealing element.
- Covered with 0.5mm Graflex.
- Used on Manhole covers.
- Low bolt load applications.
- Uneven sealing faces.
- Double integrity seal.

Type RTX



- (for heat exchanger applications)
- Maxiflex spiral wound sealing element.
- A combination of inner and outer rings.
- The inner ring could have pass bars or could carry either a metal clad or soft gasket with pass bars.
- Manufactured to customer designs.

Technical Details

Metal Strip Material

Stainless Steel 316L, 316, 316Ti, 304, 321, 310, 347 Duplex
Monel 400
Inconel 600, 625
Nickel 200
Titanium, Hastelloy/Incoloy 800, 825

Filler Material Temperature Units

Mica	1000°C
PTFE	260°C
Graphite	550°C

Gasket Compression and Choice of Thickness

Gasket Nominal Thickness	Recommended Compressed Thickness
--------------------------	----------------------------------

3.2mm	2.3-2.5mm
4.5mm	
6.4mm	4.6-4.9mm
7.2mm	4.8-5.0mm

Centering ++ and Inner + Ring Standard Material

Carbon Steel Zinc Plated with Chrome Passivate ++
Stainless Steel 316, 304, 410, 316L, 316Ti, Duplex
Monel, Nickel, Titanium, Inconel 600, 625

Standard Thickness 3.2mm

Recommended Flanges Surface Finish

Maxiflex gaskets are capable of giving an excellent seal over a wide range of flange surface finishes, but as a general guide we offer the following:

	Micro Inch	Micro Metre
General	125-200	3.2-5.1
Critical	125	3.2
Vacuum	80	2.0

Flange Suitability

BS1560 and ANSI B16.5 1/2"-24" 150-2500lbs
BS10 Tables D-T
B4504 10-250 Bar
ASME B16.47 A (MSS SP 44) 26"-60" 150-900lbs
ASME B16.47 B (API 605) 26"-60" 150-900lbs
DIN

Maximum pressure versus temperature

Flange Class	100°F (37°C)	300°F (148°C)	500°F (260°C)	700°F (398°C)	1000°F (538°C)
150	290 psi	230 psi	--	--	--
300	750 psi	730 psi	665 psi	505 psi	50 psi
600	1500 psi	1455 psi	1330 psi	1010 psi	105 psi
900	2250 psi	2185 psi	1995 psi	1510 psi	155 psi
1500	3750 psi	3640 psi	3325 psi	2520 psi	260 psi
2500	6250 psi	6070 psi	5540 psi	4200 psi	430 psi

Important notes:

- These figures are not complete and refer to one type of carbon steel only. Consult ANSI B16.5 for full detail.
- Other standard flanges (eg. DIN, BS10, BS4504) similarly have temperature/pressure ratings listed.

The following guidelines reflect common custom and practice for sizes 1/2" to 24" inclusive:-

	Class 150	Class 300	Class 600	Class 900	Class 1500	Class 2500
Rubber	+					
Klinger C4500/C4430/C4509		②	④			
Klinger C8200/C4400/C4324		④	④			
Graphite SLS			④			
Graphite PSM-AS			④			
C4430 with PTFE envelope			④			
Spiral Wound ^③	←					→
+ graphite filler						
Sealex						

Notes

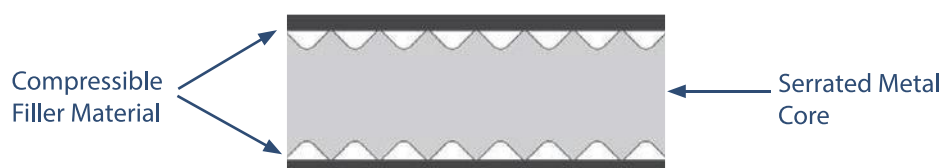
- Not exceeding 10 bar pressure and usually for liquids only.
- We recommend 1.5mm gasket thickness for Class 150 and 2.0mm for Class 300.

- We recommend that inner and outer retaining rings also be fitted i.e., Maxiflex Type CRIR with zinc plated carbon steel outer ring, stainless steel 316L metal winding, "Graflex" graphite filler winding and

- stainless steel 316 inner ring. Initial thickness of winding 4.5 mm (compressed thickness 3.2 to 3.4 mm).
- Can be used to this Class rating but suitability depends on operating temperature, pressure and media.

Kammprofile Gaskets “Maxiprofile”

The Klinger Maxiprofile is a composite gasket which utilises a serrated metal core with a soft facing material. The metal core is machined on each contact face with concentric serrations which provide high pressure areas, ensuring that the soft coating flows into any imperfections in the flange even at relatively low bolt loads. The result is a gasket which combines the benefits of soft cut materials with the advantages of seal integrity associated with metallic gaskets.



Expanded graphite is the most common facing material used for Maxiprofile gaskets. However, other materials can be used, such as PTFE for chemically aggressive duties or mica for high temperature duties.

Facing Material	Maximum Temperature
Graphite	550°C
PTFE	260°C
Mica	1000°C
KLINGERSIL® C-4430	250°C

Maxiprofile gaskets can also be manufactured from a range of core materials according to media compatibility and temperature considerations.

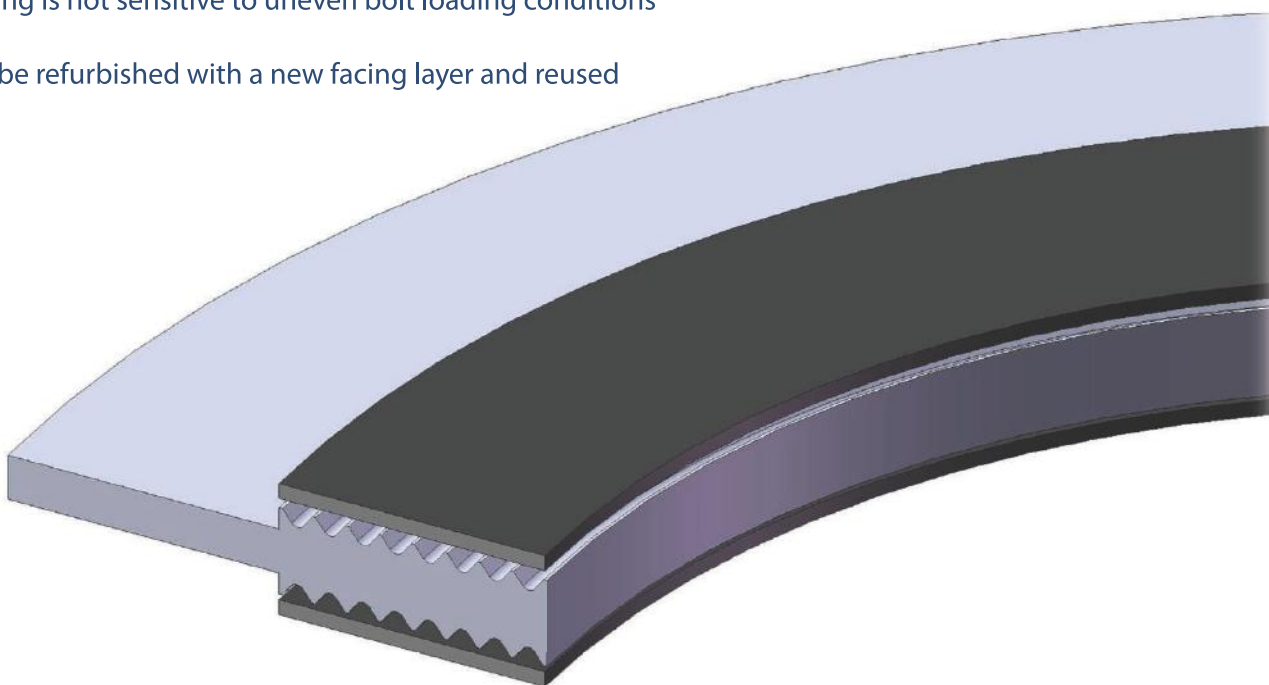
Core Material	Maximum Temperature
316L Stainless Steel	800°C
304 Stainless Steel	650°C
Duplex UN S31803	800°C
347 Stainless Steel	870°C
321 Stainless Steel	870°C
Monel 400	800°C
Nickel 200	600°C
Titanium Gr 2	500°C
Hastelloy B-2/B-3	700°C
Hastelloy C-276	700°C

Core Material	Maximum Temperature
Inconel 600	1000°C
Inconel 625	1000°C
Incoloy 825	600°C
Zirconium	500°C
Super Duplex	600°C
254 SMO	600°C
Titanium Gr7	500°C
Hastelloy C-22	700°C
Hastelloy G-31	800°C
Alloy 20	600°C

Kammprofile Gaskets “Maxiprofile”

General Properties of Maxiprofile Gaskets:

- A wide range of seating stresses under which the seal is effected and maintained
- Can be used when there is insufficient bolt load to seal conventional gasket materials
- Easy to handle and fit
- Suitable for a wide range of operating conditions
- The soft facing layer prevents damage to the mating flange
- Sealing is not sensitive to uneven bolt loading conditions
- Can be refurbished with a new facing layer and reused



Applications of Maxiprofile Gaskets:

- Heat exchanger and vessel applications
- High and low temperatures
- Pressures of up to 250 bar
- Low bolt loads
- Narrow flange widths
- Damaged flanges

Core Design

Standard core design is parallel which offers the advantage of even stress distribution across the gasket face. Convex Maxiprofiles are also available which have a reduced depth of grooves towards the profile centre. This type of profile ensures a high seating stress in the middle of the profile and is effective for low bolt load applications.

Kammprofile Gaskets “Maxiprofile”



Klinger Maxiprofile Type 109

Applications:

- Used for a wide range of applications including steam, oil , hydrocarbon and can also be tailored to suit more aggressive chemicals
- Used for applications requiring a high-integrity seal such as chlorine
- Especially suited to use in heat exchangers

Typical Properties:

- High pressure gasket with a wide seating stress range
- Excellent tightness even at low bolt loads
- Reusable metallic core can be refaced after service
- Available facings include:
Graphite, PTFE, KLINGERSIL and Soft-chem

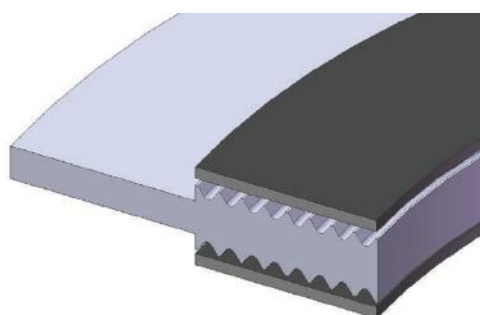
Typical Specifications:

Core material :	316L - 3.0, 4.0, 5.0mm
Facing material:	Graphite - 0.5mm
Facing density:	1 g/cm ³ (alternative 0.7g/cm ³)
Max. temperature :	550°C
Max. pressure	>400 bar
Suitability	For flanges to ASME B16.5, DIN standards and BS 10, can also be manufactured in custom sizes.

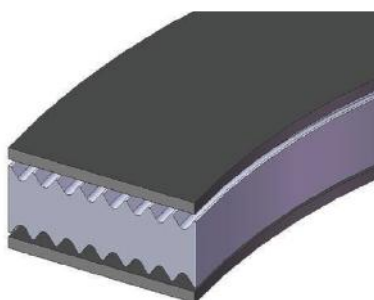
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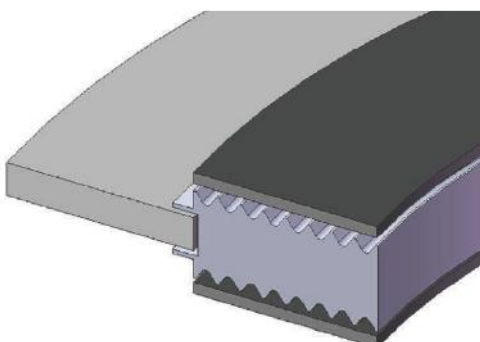
LA 1	Lateral profiled joint with guide ring for raised and flat face applications
LA 2	Lateral profiled joint without guide ring for male and female, tongue and groove and grooved flanges
LA 3	Lateral profiled joint with floating guide ring for raised and flat face applications
CA1, 2 & 3	Convex profiled joints in the same style as LA 1, 2 and 3. The convex profile is designed to assist sealing in low bolt load applications



Maxiprofile LA 1



Maxiprofile LA 2



Maxiprofile LA 3

Kammprofile Gaskets “Maxiprofile”

Klinger Maxitherm

Applications:

- Designed for use at high temperatures and to create a seal at low bolt loads.
- Especially suited to use in heat exchangers

Typical Properties:

- High pressure gasket with a wide seating stress range
- Excellent tightness even at low bolt loads
- Reusable metallic core can be refaced with mica after service

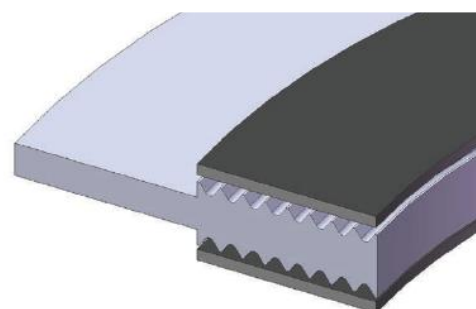
Typical Specifications:

Core material :	Inconel 600 - 3.0, 4.0 or 5.0mm
Facing material:	Mica - 0.5mm
Facing density:	1 g/cm ³ (alternative 0.7g/cm ³)
Max. temperature :	900°C.
Max. pressure	>40 bar.
Suitability	For flanges to ASME B16.5, DIN standards and BS 10, can also be manufactured in custom sizes.

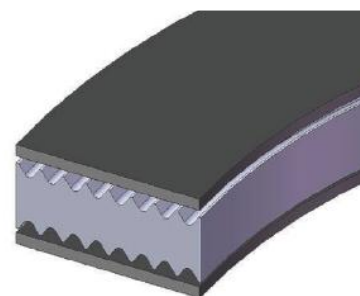
Style:

Description:

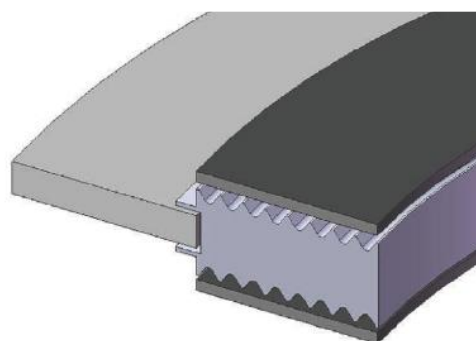
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LA 3	Lateral profiled joint with floating guide ring for raised and flat face applications.
CA1, 2 & 3	Convex profiled joints in the same style as LA 1, 2 and 3. The convex profile is designed to assist sealing in low bolt load applications.



Maxiprofile LA 1



Maxiprofile LA 2



Maxiprofile LA 3

Asbestos - Free Sealing Products

Material Description

Klingersil C4430



Premium quality compressed fibre jointing based on glass fibre with NBR binder.
Colour: Green one side, White one side.
Finish 3XA anti-stick surfaces. Available with wire reinforcement (**Klingersil C4438**).

General purpose material with excellent chemical resistance and mechanical properties. Suitable for use with air, steam, oil & fuels, gases (including oxygen) and potable water applications.

Klingersil C4400



Premium quality compressed synthetic fibre jointing compressed of aramid fibres with NBR binder.
Colour: Green both sides.
Finish: 3xA anti-stick surfaces.
Available with wire reinforcement. (**Klingersil C4408**).

General purpose material which is suitable for use with air, water, steam, oils, fuels & gases. Particularly suitable for use in internal combustion engines, compressors and hydraulics applications.

Klingersil C4500



Top quality compressed synthetic fibre jointing material composed of carbon fibre with NBR binder.
Colour: Black both sides.
Finish: 3xA anti-stick surfaces.
Available with expanded steel reinforcement. (**Klingersil C4509**).

Universal material with excellent steam (290°C) oil and chemical resistance. Particularly suitable for use in highly alkaline applications, and applications requiring high load bearing characteristic.

Klingersil C8200



Premium quality compressed fibre jointing consisting of a blend of organic and inorganic fibres with a special elastomer binder.
Colour: Off-white both sides.
Finish: 3xA anti-stick surfaces.

Chemical grade joining with wide resistance range including most acids, fuels, oils, solvents, alkalis, water and steam.
(Not suitable for concentrated nitric acid).

Klingersil C4324



Medium quality compressed recycled synthetic fibre jointing with NBR binder.
Colour: Black one side, Green one side.
Finish: 3xA anti-stick surfaces.

General purpose commercial material suitable for oils, fuels, low pressure steam, water and gases. Particularly suitable for sealing natural gas.

Klingersil C6307



Premium quality compressed synthetic fibre jointing composed of aramid fibres with SBR/NR binder.
Colour: Fawn both sides.
Finish: 3xA anti-stick surfaces.

Highly suitable for automotive applications due to 'controlled swell' properties in oil combines with good resistance to water. Also suitable for light industrial and domestic appliance applications.

Klinger Graphite SLS



Pure exfoliated (expanded) graphite with a stainless steel foil reinforcement for improved handling characteristics.

A top quality universal material with excellent performance at high temperature

Klinger Graphite PSM-AS



Pure exfoliated (expanded) graphite with a tang (pegged) stainless steel sheet reinforcement for improved blow-out resistance.

A top quality universal material with excellent performance at high temperature and pressure, with special anti-stick finish.

Klinger Milam PSS



Top quality jointing material consisting of micaceous material with stainless steel tang reinforcement.
Colour: Light Brown.

Suitable for use in hot dry gas applications such as exhaust manifolds, turbines, turbo chargers, air heat exchangers.

Asbestos - Free Sealing Products

Operating Guidelines	(see note below*)	Typical Specification Release/Approvals	Typical Original Properties	1.5mm	2.0mm	Typical Properties after Fluid Immersion (1.5 & 2.0mm Thickness)		
Max. Temperature	430°C	BS 7531 GradeX	Specific gravity	1.65	1.65	Thickness increase		
Max. Pressure	100bar	BS 5146 Firesafe Approval	Compressibility	ASTM F36J 7-12%	7-12%	ASTM Oil 3	5 hours 150°C	0-10%
Max. Steam Temperature	250°C	Water Research Council Approval	Recovery	ASTM F36J Min. 55%	Min. 55%	ASTM Fuel A	5 hours 20°C	0-10%
Max. Inert Liquid Temperature	440°C	BAM U VV28 for use with oxygen	Stress Relaxation	BS 7531 31 N/mm ²	-	ASTM Fuel B	5 hours 20°C	0-10%
		Din-DVGW 92.0 1e 052 for GAS Industry		DN 52913	35 N/mm ²			
Max. Temperature	430°C	BS 7531 Grade Y	Specific gravity	1.6	1.6	Thickness increase		
Max. Pressure	100bar	BAM U VV28 for use with oxygen	Compressibility	ASTM F36J 8-11%	8-11%	ASTM Oil 3	5 hours 150°C	0-10%
Max. Steam Temperature	250°C	DIN-DVGW 88.02e052 for Gas Industry	Recovery	ASTM F36J Min. 50%	Min. 50%	ASTM Fuel A	5 hours 20°C	0-10%
		BSF 130 (Dependent on thickness)	Stress Relaxation	BS 7531 23 N/mm ²	-	ASTM Fuel B	5 hours 20°C	0-10%
				DIN 52913	25 N/mm ²			
Max. Temperature	450°C	BS 7531 Grade Y	Specific gravity	1.4	1.4	Thickness increase		
Max. Pressure	130 bar	API 607 (Firesafe)	Compressibility	ASTM F36J 10-14%	10-14%	ASTM Oil 3	5 hours 150°C	0-10%
Max. Steam Temperature	290°C	BAM U VV28 for use with oxygen	Recovery	ASTM F36J Min. 60%	Min. 60%	ASTM Fuel A	5 hours 20°C	0-10%
		DIN-DVGW 88.02e052 for GAS Industry	Stress Relaxation	BS 7531 28 N/mm ²	-	ASTM Fuel B	5 hours 20°C	0-10%
				DIN 52913	30 N/mm ²	Sodium Hydroxide 50%	24 hours 100°C	0-15%
Max. Temperature	200°C		Specific gravity	1.7	1.7	Thickness increase		
Max. Pressure	60 bar		Compressibility	ASTM F36J 8-12%	8-12%	96% Sulphuric acid	18 hours 20°C	0-10%
Max. Steam Temperature	159°C		Recovery	ASTM F36J Min. 50%	Min. 50%	95% Nitric acid	18 hours 20°C	not suitable
			Stress Relaxation	BS 7531 18 N/mm ²	-	50% Nitric acid	1 hour 65°C	0-15%
Max. Temperature	350°C		Specific gravity	1.6	1.6	Thickness increase		
Max. Pressure	50 bar		Compressibility	ASTM F36J 7-17%	7-17%	ASTM Oil 3	5 hours 150°C	0-10%
Max. Steam Temperature	200°C	BS 7531 Grade Y	Recovery	ASTM F36J Min. 50%	Min. 50%	ASTM Fuel A	5 hours 20°C	0-10%
		Water Research Council Approval	Stress Relaxation	BS 7531 23 N/mm ²	-	ASTM Fuel B	5 hours 20°C	0-10%
				DIN 52913	27 N/mm ²	Water	5 hours 100°C	0-10%
Max. Temperature	300°C		Specific gravity	1.5	1.5	Thickness increase		
Max. Pressure	30 bar		Compressibility	ASTM F36J 7-17%	7-17%	ASTM Oil 3	5 hours 150°C	5-25%
Max. Steam Temperature	150°C		Recovery	ASTM F36J Min. 48%	Min. 48%	ASTM Fuel A	5 hours 20°C	0-15%
						ASTM Fuel B	5 hours 20°C	5-20%
						Water	5 hours 100°C	0-10%
Max. Temperature	460°C (Oxidising Atmosphere)		Specific gravity (Graphite only)	1.0	1.0	Thickness increase		
Max. Pressure	150 bar		Compressibility	ASTM F36J 40%	40%	ASTM Oil 3	5 hours 150°C	3%
Max. Steam Temperature	400°C		Recovery	ASTM F36J 15%	15%	ASTM Fuel A	5 hours 20°C	2%
			Stress Relaxation	BS 7531 38 N/mm ²	-	ASTM Fuel B	5 hours 20°C	2%
				DIN 52913	48 N/mm ²			
			Chloride content (extractable)	50ppm max	-			
Max. Temperature	460°C (Oxidising Atmosphere)		Specific gravity (Graphite only)	1.0	1.0	Thickness increase		
Max. Pressure	200 bar		Compressibility	ASTM F36J 35%	35%	ASTM Oil 3	5 hours 150°C	3%
Max. Steam Temperature	500°C		Stress Relaxation	BS 7531 38 N/mm ²	-	ASTM Fuel A	5 hours 20°C	2%
				DIN 52913	48 N/mm ²	ASTM Fuel B	5 hours 20°C	2%
			Chloride content (extractable)	50ppm max	-			
Max. Temperature	900°C		Specific gravity*	2.3		Not Applicable		
Max. Pressure	5 bar		Compressibility*	ASTM F36J 15%				
			Recovery*	ASTM F36J 50%				
			Stress Relaxation	BS 7531 32 N/mm ²				
				*DIN 52913	40 N/mm ²			

*Note that maximum temperature and pressure do not necessarily apply at the same time and are dependant on gasket thickness and flange arrangement. If in doubt consult our Technical Services

Metal Jacketed Gaskets

Metal Jacketed gaskets are the most basic type of semi-metallic gaskets combining the high pressure suitability and blow out resistance of metallic materials with the improved compressibility of soft materials. Metal jacketed gaskets offer an economical seal where sealing faces are narrow and can be produced in a variety of shapes, making them a good option for heat exchanger jointing.

Corrugated gaskets are a highly versatile family of products, available in wide variety of configurations and suited to a wide range of applications. For improved sealing performance the gaskets can be partially or completely covered.

General Properties

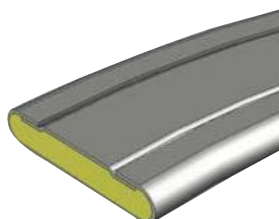
- Economical
- Easy to handle and install
- Suitable for high temperatures
- Suitable for narrow flanges
- Good blow-out resistance

Applications

- Heat exchangers
- Exhaust gases
- Valve bonnet gaskets
- Narrow flanges

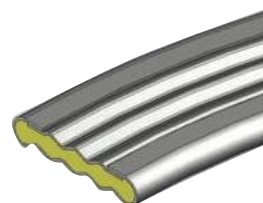
Metal Jacketed and corrugated gaskets can be manufactured to suit a range of chemical environments by the selection of a suitable alloy jacket or core. The following materials are available:

Types of Metal Jacketed Gaskets



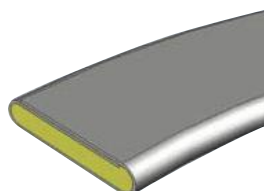
Double Jacketed

Constructed of soft filler encapsulated by a metal jacket and insert. Designed for use on high temperature and pressure applications



Double Jacketed Corrugated (Soft Filler)

The reduced contact area of the construction enhances compressive characteristics making it more suited to applications of lower bolt load or where flanges are uneven.



Single Jacketed Fully Enclosed

Constructed of soft filler completely enclosed in a single jacket for use in applications where the width does not permit the use of a double jacketed gasket.



Klinger Maxigraph Corrugated steel with Soft Facing Layer

Comprises a single corrugated core faced with either PTFE or Graphite dependant on application. The soft facing layer provides the gasket with a high level of tightness while the core gives the gasket both resilience and integrity. Used in variety of applications including heat exchangers, valve bonnet application and small recess gaps.

Klinger Double Jacketed Type 100

Applications:

- Used for boilers and heat exchangers, suitable for narrow sealing faces.

Typical Properties:

- Economical, basic with added strength from metallic jacket
- Metal jacket provides increased gasket stability and blow-out resistance
- Chemical resistance to a wide range of media can be accommodated by selection of a suitable metal

Typical Specifications:

Standard materials :	Soft Iron / high temperature millboard
Max. temperature :	400°C
Max. pressure	100 bar
Thickness:	3.0mm (standard)



Klinger Double Jacketed Type 108

Applications:

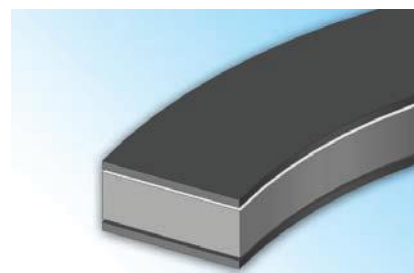
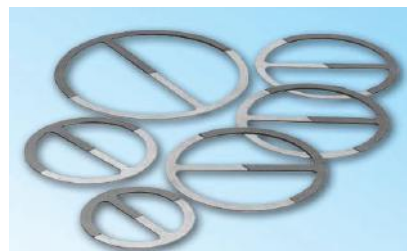
- Used for boilers and heat exchangers, suitable for narrow sealing faces
- Used to create a more stable gasket than laminated graphite materials for large applications

Typical Properties:

- Economical alternative to Maxiprofile gaskets for lower pressure, lower criticality applications
- Medium pressure gasket with a wide seating stress range
- Excellent tightness at low bolt loads

Typical Specifications:

Material :	316L / Graphite
Max. temperature :	450°C
Max. pressure	100 bar
Thickness:	Core: 3.0mm (standard) Facing: 0.5mm



Klinger Maxigraph

Applications:

- Vessel applications with narrow seating widths
- Pipeline applications
- Suitable for a wide range of application temperatures

Typical Properties:

- Corrugated metallic core provides the gasket with improved handling characteristics over graphite laminates
- Corrugations on the core create high stress regions to allow excellent sealing properties even with low gasket loads
- Provides greater recovery properties than graphite laminate gaskets

Typical Specifications:

Material :	316 / Graphite
Max. temperature :	450°C
Max. pressure	100 bar
Thickness:	2.5mm (standard)



Ordering Information

- Outside diameter
- Inside diameter
- Shape per standard index
- Type Number
- Thickness
- Materials (meral or metal filler)
- Bar size
- Radii
- Distance from centre line of gasket to centre line of bars.

Material Availability

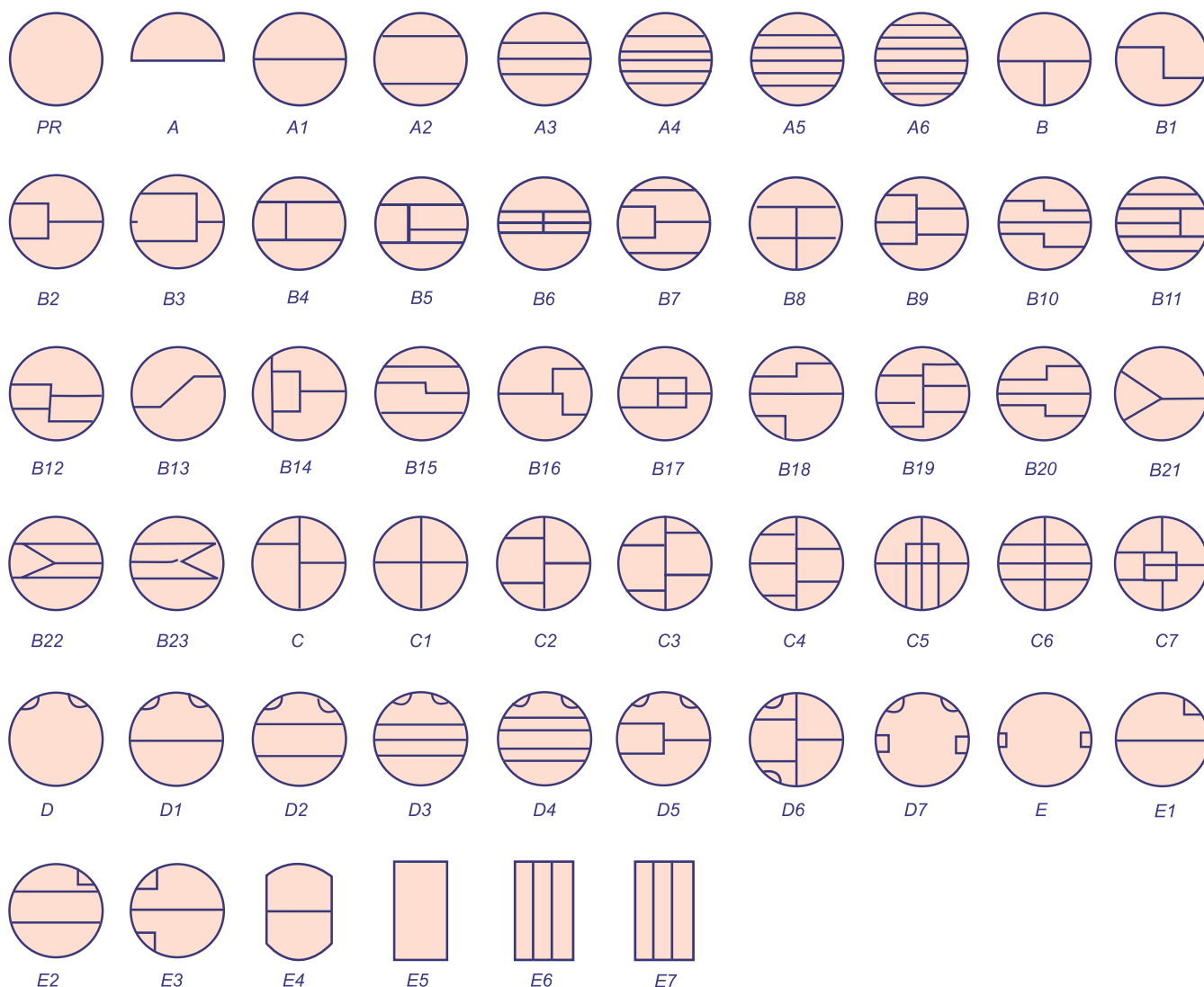
Jacket Material

Soft Iron, Soft Steel, Stainless
Steel 304, 321, 316, 410, Copper,
Brass, Monel, Chrome, Aluminum
Incoloy, Titanium, Inconel, Nickel

Soft Fillers

Non Asbestos,
PTFE, Exfoliated Graphite.

Gasket Shape Index



Metallic Ring Joints

Metallic ring joint gaskets are heavy duty, high-pressure gaskets largely used in offshore petrochemical applications. They are precision-engineered components designed to be used in conjunction with precision-machined flanges. Our Ring Joints are manufactured according to ASME B16.20 or API 6A.

The gasket material is selected on a number of grounds; primarily chemical compatibility with the media and the hardness of the flange. The gasket material ideally needs to be roughly 30 Brinell less than the flange material to ensure sufficient deformation of the gasket without damaging the flange facing.

A number of ring joint styles are available designed for specific flange types, these are:

Type	Nominal Pipe Size	Class Ratings
Type R Oval and Octagonal	1/2" to 24" 26" to 36" 1 1/2" to 20"	300 to 900 ASME B16.20 Series A 150 to 2500 ASME B16.20 API 6A
Type RX	1 1/2" to 24" 26" to 36" 1 1/2" to 20"	720 to 5000 ASME B16.20 300 to 900 ASME B16.20 Series A API 6A
Type BX	1 11/16" to 21 1/4"	5000 to 20000 ASME B16.20

Common Materials

Material	Standard RTJ Hardness (Brinell)	Temperature Limitation	Identification
Soft iron	90	-60 to +400°C	D
Low carbon steel	120	-40 to +500°C	S
4%-6% Cr 1/2% Mo: F5	130	-125 to +500°C	F5
Stainless steel 304	160	-250 to +550°C	S304
Stainless steel 316	160	-110 to +600°C	S316
Stainless steel 321	160	-250 to +800°C	S321
Stainless steel 347	160	-250 to +800°C	S347
Stainless steel 410	170	-20 to +500°C	S410
Inconel 625	-	450°C	625
Incoloy 825	-	450°C	825
Hastelloy C-276	-	450°C	C-276
Duplex	-	800°C	S31803
Titanium	-	350°C	TI

Klinger Type R Oval

Applications:

- Used for high pressure applications.

Typical Properties:

- High integrity seal at high pressures
- Suitable for flat and round bottom groove flanges

Typical Specifications:

Material :	Soft Iron
Max. temperature :	400°C
Max. pressure:	Up to Class 2500



Metal Ring Joint Gaskets “RTJ”

Klinger Type R Octagonal

Applications:

- Used for high pressure applications.

Typical Properties:

- High integrity seal at high pressures
- Suitable for flat bottom groove flanges
- An improvement on the original oval RTJ design

Typical Specifications:

Material :	Soft Iron
Max. temperature :	400°C
Max. pressure:	Up to Class 2500



Klinger Type RX

Applications:

- Used for high pressure applications
- Interchangeable with Type R Octagonal joints

Typical Properties:

- High integrity seal at high pressures
- Suitable for flat bottom groove flanges
- Pressure energised design improves efficiency of seal with increasing internal pressure
- Can be drilled to create “SRX” ring joint for subsea installation

Typical Specifications:

Material :	Soft Iron
Max. temperature :	400°C
Max. pressure:	Up to Class 5000



Klinger Type BX

Applications:

- Used for high pressure API applications.

Typical Properties:

- Pressure energised design improves efficiency of seal with increasing internal pressure
- Suitable for API 6BX flanges
- Can be drilled to create “SBX” ring joint for subsea installation

Typical Specifications:

Material :	Soft Iron
Max. temperature :	400°C
Max. pressure:	Up to Class 20,000



We are the exclusive agent in Abu Dhabi for Garlok pipeline technologies GPT (PSI/Pikotek). Flange isolating kits are designed to minimize the effects of electro chemical erosion and isolate sections of the pipework.

Each kit comprises of:

- One insulating gasket
- One insulating sleeve per bolt
- Two insulating and two plated steel washers per bolt.



The Main Types of Isolating Flange Kits are:

GPT
garlok pipeline technologies

VCS

A high reliability gasket used mainly for isolating purposes in Very Critical Services.



VCFS

A Very critical fire safe version was created by taking a standard VCS configuration and adding a secondary sealing element that is capable of maintaining a seal while subject to a 1500°F fire. The VCFS had fully passed the API 6FB, 3rd Edition fire test.



VCSID

A Very critical service Inside Diameter Seal introduces an internal, machined PTFE seal at the bore of the existing VCS design platform to ensure an extremely tight seal and a resistance to effects from internal pressure or aggressive media.



Rubber-Steel Gaskets

Rubber-steel gaskets have amassed a wide range of applications in sealing technology. Wherever the secure sealing of media with an exceptionally low leak rate, as well as low bolt loads at relatively low temperatures is required, rubber-steel gaskets provide the optimal solution.

The steel support ring prevents a blow out of the gasket and increases stability, allowing the rubber-steel gasket to be handled easily, even in difficult fitting conditions.

The rubber sealing material ensures a secure seal is created, even in uneven locations, as it has an excellent ability to adapt to sealing surfaces.

Gasket profiles	Cross-section
WG	
WG2	
WS	
WL	
WL-HT	

A gasket is a precision item of equipment which more often than not contains a polymer binder. It requires correct storage conditions to ensure that it is not damaged or degraded when fitted.

Ideal storage conditions are:-

- A dry atmosphere. Some materials (particularly cellulose based) are hygroscopic and consequently are dimensionally unstable in damp conditions.
- 20°C or below. The rate of oxidation is directly related to the ambient temperature and above 20°C some materials will harden over a period of time. Lower temperatures (e.g. frosts) will not normally harm gaskets. Avoid localised heat such as steam pipes or radiators.
- In the dark, Ultra-violet light in the sun's rays can attack some gasket materials and cause cracking and embrittlement.
- Away from any electrical discharge. Some electrical equipment (e.g. arc-welding) can create ozone gas- which has a serious effect on many polymers.
- Flat gaskets will give its best performance if stored flat instead of rolled, folded or hung on hooks.
- Avoid oil contamination (particularly important for graphite gaskets)

Shelf Life

Storage life can be as short as a few weeks or as long as five years - depending on the gasket material and the storage conditions.

We recommend that if the environment as detailed above is employed then

gaskets should be examined every year to check their condition. Richard Klinger Ltd have several non-destructive tests which can determine residual quality and we offer these facilities to all of our customers.

Flange Surface Finish

We typically recommend the following flange surface finish value for our gasket grades used on standard pipe flanges.

Klingersil (all grades above 1mm thickness)	3.2µm to 12.5µm Ra (125 µ.in to 500µ.in CLA)
Graphite Laminate (SLS and PSM-AS above 0.8mm)	3.2µm to 12.5µm Ra (125 µ.in to 500µ.in CLA)

Note 1. For tongue and groove flange facings or for very thin gaskets (i.e. 0.4mm or below) a surface finish of 1.6µm to 6.3µm Ra (63 to 250 micro inch) is possible. We would never recommend a surface finish value below 1.6µm due to the negative effect of smoother faces on creep resistance of the gasket.

2. The Rz value is typically four times the Ra value.

Maxiflex CRIR spiral wound	- General duties	3.2µm to 5.1µm Ra (125µ.in to 200µ.in)
gasket with graphite filler	- Critical duties	3.2µ Ra (125µ.in CLA)
(as described earlier)	- Vacuum duty	3.2µ Ra (125µ.in CLA)

Gasket Selection

Selection of the correct gasket material is critical to the effective operation of a reliable joint . Klinger Middle East offers a material selection and application appraisal service to ensure the correct gasket is used from the first time to avoid unscheduled shutdowns and refits.

Klinger Middle East Technical Services Department can offer the most suitable gasket type for your applications, if you complete the form we will endeavour to offer material and gasket types to meet your requirements.

Gasket Selection Form

Design / Operating Conditions

Medium :	<input type="text"/>
Pressure (bar) :	<input type="text"/>
Temperature (°C):	<input type="text"/>
Temperature	
Variation in service :	<input type="text"/>
Service Fluid :	<input type="text"/>

Contact Details

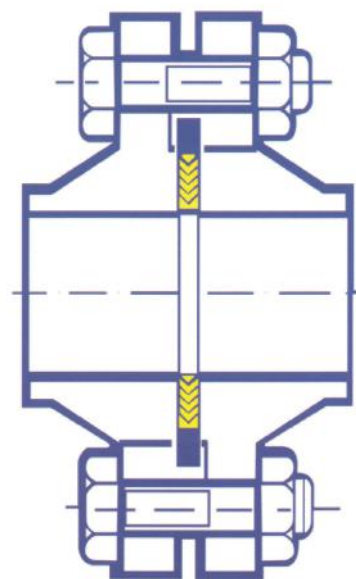
First Name :	<input type="text"/>
Last Name:	<input type="text"/>
E-mail Address :	<input type="text"/>
Company Name :	<input type="text"/>
Telephone Number :	<input type="text"/>
Fax Number :	<input type="text"/>

Flange Details

Flange Standards :	<input type="text"/>
Flange materials :	<input type="text"/>
Bolts :	<input type="text"/>
Number :	<input type="text"/>
Size :	<input type="text"/>
Material / Grade :	<input type="text"/>

Gasket Details

OD of gasket (mm) :	<input type="text"/>
ID of gasket (mm) :	<input type="text"/>
Gasket thickness :	<input type="text"/>





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