



INTRODUCTION

Specialised Engineering Products Limited was established in 1976 (incorporated 2002) and is a quality assured company to industry approved and recognised standards such as ISO9001.

The company manufactures and trades a variety of high quality sealing products for the majority of fluid sealing applications in the industrial and manufacturing sectors.

Our foundations are firmly established as a service company, where our ability to respond quickly, through close technical co-operation has built SEP a dependable reputation. Our vision and company ethos is to maintain these high levels of service as we continue to emerge as a major manufacturing and distribution business.

Our commitment to continuous improvement is verified by those who continue to test our ability and will be demonstrated when approached by others, looking for a progressive, balanced mix of quality sealing solutions with warmth of service.

This brochure has evolved from our knowledge and experience within the sealing industry; from expertise in manufacture through to the careful selection of business partners and their materials recommended within.

SEP will continue to meet and exceed all the technical and commercial demands of modern industry; as such the competitive products we supply will offer only the very best quality and reliability, protecting the environment, minimising equipment down time and increasing plant and public safety.



ANDREW SMITH
Managing Director



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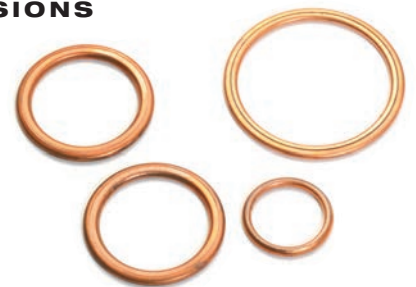
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PRODUCT SELECTION

The suitability of a gasket or gasket material in a given application is dependant on a number of factors:

Chemical resistance – consider process medium and cleaning agents;

Temperature – continuous and peak upper and lower limits;

Pressure

Flange material – configuration and bolt load;

Material Specifications and Approvals – for use with 'Fire-safe' applications, WRAS/WRC Potable Water, FDA Compliance, etc.

Choosing the right product for the application can be a difficult and confusing task, indeed some materials may be suitable, but only in certain thicknesses with given flange configuration. Some gaskets or materials will cover a wide selection of sealing duties, but price constraints may necessitate the use of several types.

Some designers may have specified a 'brand name' rather than a specification, the reason for this must be established before equivalents/alternatives can be proposed. Information solely gained from technical brochures can be misleading as, for example, maximum temperatures and pressures of sheet materials may not necessarily be used simultaneously. Pressure/Temperature charts are more accurate, but they are related to the thickness of the material – thinner materials give better temperature and pressure properties.

This brochure offers designers and end users accurate information regarding a materials general properties and behaviour for reference of existing products and an overview to assist specification of new materials or devices; however should you have any doubt which product to select, please consult our Technical Team for advice.

Materials

Rubber – Natural, Neoprene, Nitrile, EPDM, Silicone, Viton, Specification Rubber Gaskets cut from moulded sheet, Topog E (moulded boiler door gaskets)

Sponge – Varying types and densities, including Natural, Neoprene, Nitrile/Vinyl, Silicone

Cork – Neoprene and Nitrile bonded

Impregnated Paper – Cellulose-based fibre impregnated with a glue glycerine composition or plasticised gelatine

Felt – Wool and Synthetic types of various densities

Glass & Ceramic Textiles – High Temperature Applications

Compressed Synthetic Fibre – Glass, Aramid, Carbon filled; Novus, Klingersil, Flexitallic

PTFE

Modified/Expanded PTFE Sheet – Uniflon, Topchem, Sigma, Gylon, Goretex

Expanded PTFE Spools – Varying sizes; Sealex, Goretex, Uniflon

Graphite Laminate – Exfoliated graphite on plain or tanged foil

Graphite/Stainless Corrugated Gaskets – Elastagraph

Spiral Wound Gaskets

Metallic Gaskets – Ring Type Joints

Metal Clad or Double Jacketed Gaskets – Soft Iron, Stainless, Monel, Copper

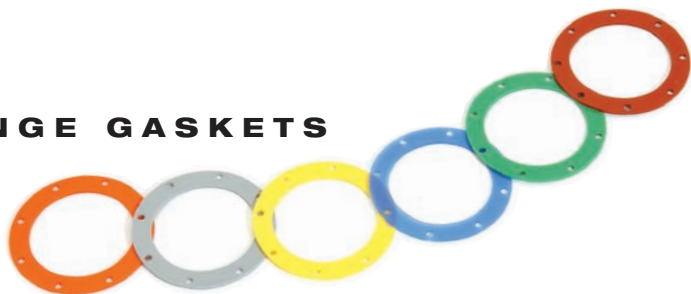
Camprofile Gaskets – Graphite, PTFE, Mica Coated

*Cream DTD 5531 grade Silicone
0.5mm thick, cut from moulded
discs. Ultrasonically cleaned for
oxygen service within the
Aerospace Industry*

**SPECIALISED ENGINEERING
PRODUCTS**
Customer: M-SPEC
Order No: 123456
Works No: 567890
Item No: 2
Quantity: 1
Material: Gaskets
Description: Gaskets

**SPECIALISED ENGINEERING
PRODUCTS**
C2-C7 Premier Centre, Abbey Park
Romsey, Hampshire SO51 9YU
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E-mail: Sales@specialisedengineering.co.uk

RUBBER AND SPONGE GASKETS



Rubber has found itself used in many industrial duties because it provides and maintains elastic properties across a wide range of process conditions and temperatures. As a specialist supplier of seals

and gaskets our development in rubber technology has remained progressive, with rubber lending itself so readily to so many sealing applications. Whilst no single grade has all the desired properties, indeed some properties may only exist in one type of rubber, by understanding the service conditions a suitable grade can generally be selected from stock or achieved through careful compounding to a new specification.

Most natural and synthetic grades of rubber are also available in sponge form (cellular rubber) in both open and closed cell grades. Open cell will absorb fluid, such as a car washing sponge; varying densities and materials of open cell can be used for packaging, acoustic and sound insulation, filters and low pressure duty dust tight seals. Closed cell sponges do not readily absorb fluid and make excellent gaskets in cut or strip form where lighter compressive loads and/or uneven flange faces exist, to make effective low cost dust and low pressure fluid seals.

SEP can supply all rubber and sponge materials in:

Sheet/Roll – commercial, specification & diaphragm grades;

Gasket, Diaphragm, Strip or Die/Cad-Cam cut shape up to 100mm thick

Tape – to specified width & thickness with or without pressure sensitive adhesive backing;

Fabricated forms – segmented, dovetailed, vulcanised joints;

Extrusion and Moulded Shapes – see SEP brochure 'Manufacturing in Rubber'.



Special application requests show our ultimate flexibility. Where a requirement exists for a commercial or specification grade of rubber, thickness, hardness and colour that is not readily available or economical; we have the ability to mould the material in economic sheet, disc or ring sizes and then cut the gasket within the same factory – and if required on the same day.

Viton Gaskets 596mm od x 572mm id x 4mm thick cut from economic, waste free moulded rings

PHYSICAL & CHEMICAL SUITABILITY GUIDE FOR COMMERCIAL GENERAL GRADE ELASTOMERS

For 'Specification Grade Elastomers' or for further assistance with listed or non-listed chemical suitability, please consult the SEP Technical Team.

	Natural NR	Ethylene Propylene EPDM	Butyl IIR	Neoprene CR	Nitrile NBR	Silicone SI	Fluorocarbon (Viton®) FKM		Natural NR	Ethylene Propylene EPDM	Butyl IIR	Neoprene CR	Nitrile NBR	Silicone SI	Fluorocarbon (Viton®) FKM
Resistance to Heat – max. continuous	75°C	130°C	130°C	95°C	100°C	160°C	200°C								
Resistance to Heat – max. intermittent	105°C	150°C	150°C	125°C	125°C	200°C	230°C								
Resistance to Low Temperature	-30°C	-40°C	-30°C	-20°C	-20°C	-55°C	-20°C								
Resistance to Oxidation	Fair	Excellent	Excellent	Very Good	Good	Excellent	Outstanding								
Resistance to Ozone & Weather	Poor	Outstanding	Outstanding	Very Good	Fair	Outstanding	Outstanding								
Physical Strength	Excellent	Good	Good	Good	Good	Fair/Poor	Good								
Abrasion Resistance	Excellent	Good	Good	Good	Good	Poor	Good								
Flame Resistance	Poor	Poor	Poor	Excellent	Poor	Good	Excellent								
Permeability to Gases	Fair	Fairly Low	Excellent	Low	Low	Fairly Low	Very Low								
Steam (less than 120°C)	D	A	C	D	D	D	D	Lye	B	A	A	C	C	C	C
Water	A	A	A	B	A	A	A	Magnesium Chloride	A	A	A	A	A	A	A
Water (potable)	*	*	*	*	*	*	*	Methane	D	D	D	C	A	D	C
								Methyl Alcohol (Methanol)	A	A	A	A	A	A	D
Air	A	A	A	A	A	A	A	Methyl Chloride	D	D	D	D	D	D	C
Acetic Acid (10%)	D	A	A	C	D	A	D	Methyl Ethyl Ketone	D	A	A	D	D	D	D
Acetone	B	A	A	C	D	D	D	Methylene Chloride	D	D	D	D	D	D	C
Acetylene	D	D	D	C	A	C	A	Mineral Oils	D	D	D	D	A	B	A
Adipic Acid	A	A	A	A	A			Naptha	D	D	D	D	B	D	A
Aluminium Chloride	A	A	A	A	A	C	A	Natural Gas	D	D	D	B	A	B	A
Ammonia (Anhydrous, dry)	D	A	A	A	C	C	D	Nitric Acid (10%)	B	A	A	B	D	B	A
Ammonium Chloride	A	A	A	A	A	C	A	Nitrogen	A	A	A	A	A	A	A
Ammonium Hydroxide (10%)	B	A	A	B	B	B	B	Octane	D	D	D	D	B	D	A
Aniline	D	B	B	D	D	D	C	Oleum	D	D	D	D	D	D	C
Benzene	D	D	D	D	D	D	C	Oxalic Acid (25%, 70°C)	B	B	A	C	C	C	A
Bleach Solutions	D	A	A	D	D	C	A	Oxygen	B	A	A	A	C	A	A
Brine	D	D	D	D	D	D	A	Perchloroethylene	D	D	D	D	D	D	A
Bromine (Anhydrous)		D	D	D	D	D	A	Phenols	A	B	A	C	D	A	A
Bunker Fuel	D	D	D	D	A	C	A	Phosphoric Acid (50%)	C	A	A	C	D	C	A
Butane	D	D	D	B	A	D	A	Potassium Dichromate (10%)	B	A	A	A	A	A	A
Butyl Alcohol (50°C)	A	C	C	A	A	C	A	Potassium Hydroxide (50%)	B	A	A	C	B	C	D
Calcium Chloride	A	A	A	A	A	A	A	Potassium Nitrate	A	A	A	A	A	A	A
Calcium Hydroxide	B	A	A	A	B	B	A	Propane	D	C	D	C	A	D	A
Calcium Hypochlorite (15%)	C	A	A	D	D	C	A	Pyridine	D	D	C	D	D	D	D
Carbon Dioxide	B	C	C	C	A	C	C	Refrigerants (uncontaminated)							
Carbon Disulphide	D	D	D	D	D	D	A	R12	D	C	C	A	A	D	C
Carbon Tetrachloride	D	D	D	D	D	D	A	R13	A	A	A	A	A	D	C
Chlorine (dry)	D	D	D	D	D	D	B	R22	B	A	A	A	D	D	D
Chlorine (wet)	D	D	D	D	D	D	B	R134A	A	A	A	A	A	B	D
Chromic Acid (40%)	D	C	D	D	D	D	A	Sea Water	A	A	A	B	A	A	A
Creosote	D	D	D	D	B	D	A	Soap Solution	B	A	A	B	A	A	A
Diesel Oil	D	D	D	C	A	D	A	Soda Ash	A	A	A	A	A	A	A
Diethyl Ether	D	D	D	D	D	D	D	Sodium Bicarbonate	A	A	A	A	A	A	A
Ethane	D	D	D	C	A	D	A	Sodium Dichromate (10%)		A					
Ethanolamines (less than 5%)	B	B	B	D	D	B	D	Sodium Hydroxide (50%)	C	B	B	B	C	B	D
Ether	D	D	D	D	D	D	D	Sodium Hypochlorite (20%)	C	B	C	D	C	C	C
Ethyl Alcohol (Ethanol)	B	A	A	A	A	A	A	Styrene	D	D	D	D	D	D	D
Ethylene		B			A		D	Sulphur Dioxide (dry)	B	A	B	D	D	C	A
Ethylene Glycol	B	A	A	A	A	A	A	Sulphur Dioxide (wet)		A	A		D	C	A
Ethylene Oxide	D	D	D	D	D	D	D	Sulphur Trioxide	B	C	C	D	D	C	A
Ferric Chloride (wet)	A	A	A	C	A	C	A	Sulphuric Acid (10%)	B	A	A	B	C	D	B
Foodstuffs (FDA)	*	*	*	*	*	*	*	Tannic Acid	A	A	A	C	A	C	A
Formaldehyde (40%)	B	A	B	D	D	C	D	Titanium Tetrachloride	D	D	D	D	B	D	C
Formic Acid	C	A	D	B	D	C	D	Toluene	D	D	D	D	D	D	A
Glycerine	A	A	A	A	A	A	A	Transformer Oil	D	D	D	C	A	B	A
Green Liquor (Sulphate)	B	A	A	C	C	A	A	Trichloroethane	D	D	D	D	D	D	B
Heavy Oils							A	Trichloroethylene	D	D	D	D	D	D	A
Hydrobromic Acid (37%)	A	A	A	D	D	D	A	Turpentine	D	D	D	D	A	D	A
Hydrochloric Acid (37%)	D	C	C	D	C	D	A	Urea Solution (30%)		A	A	A	A		A
Hydrofluoric Acid (48%)	C	B	B	A	D	D	A	Vinyl Chloride	D	C	D	D	D		A
Hydrogen Peroxide (less than 30%)	D	A	D	B	B	A	A	White Spirit	D	D	D	D	B	D	A
Hydrogen Sulphide (dry, 5%)	A	A	A	A	A	D	D	Xylene	D	D	D	D	D	D	A
Isobutyl Alcohol	B	C	A	A	C	A	A								
Isopropyl Alcohol	B	A	A	A	C	A	A								
Kerosene (70°C)	D	D	D	D	A	D	A								
Liquid Petroleum Gas	D	D	D	C	A	D	A								

A = Suitable in most cases
B = Suitable but with some swell/attack
C = Check with SEP Technical Team
D = Not suitable
* = Suitability will depend on grade selected

The information on compatibility should only be used as a general guide to the selection of the most suitable material; customers must assure themselves that the parts supplied will be safe in use and have been appropriately tested. If in doubt contact the SEP Technical Team.
All media considered at 20°C unless otherwise stated.

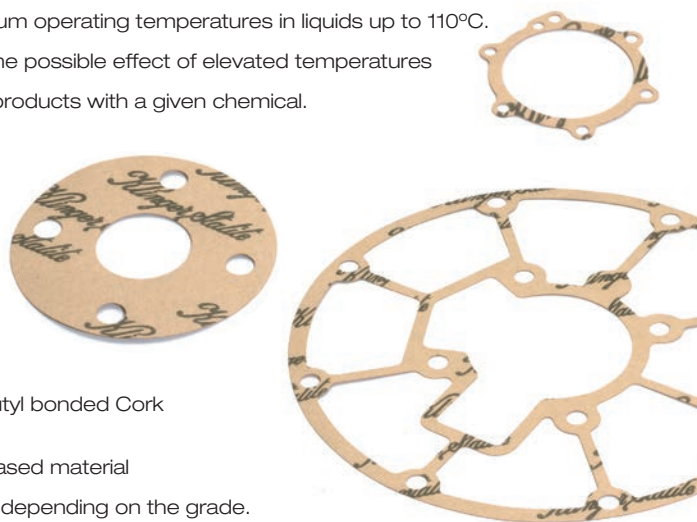
CORK, PAPER & FELTS

Cork-Elastomer Jointings are suitable for many fluid sealing applications in the automotive, engineering and electrical industries. Cork-Rubber products hold up well under external environmental conditions and have the advantage of minimal side flow compared to most rubber materials and generally possess better load distribution across the sealing faces.

The majority of grades available utilise either Nitrile or Neoprene as the blended rubber binder; other blends, such as Silicone and cross blends are available for specific process duties and cover obligatory industry specifications. Our sales office will appropriately recommend the most effective material where such specifications are requested.

Most grades retain flexibility down to -25°C and can withstand maximum operating temperatures in liquids up to 110°C. The 'Chemical Suitability Guide' below is intended only as a guide as the possible effect of elevated temperatures needs to be considered when determining the compatibility of these products with a given chemical.

Air, Water, Water/Glycol	Nitrile or Neoprene bonded Cork
Alcohols	Nitrile or Neoprene bonded Cork
Fuel & Diesel Oil	Nitrile or Neoprene bonded Cork
Lubricating Oil – Mineral	Nitrile or Neoprene bonded Cork
Lubricating Oil – Synthetic	Nitrile bonded Cork
Hydraulic Oil – Mineral	Nitrile or Neoprene bonded Cork
Water/Oil Emulsion	Special Blend – Nitrile/Neoprene/Butyl bonded Cork



OP (Oil & Petrol) Paper Jointing is an economical cellulose fibre-based material impregnated with a glue glycerine composition, or plasticised gelatine depending on the grade. It is predominantly used in the automotive industry as a gasket material for carburettors, fuel and oil pumps, gear casings and pipeline flanges. It has excellent resistance to fuels, oils and most organic solvents and is ideal for use at low bolt loadings.

It has a maximum operating pressure of 8 to 10bar (depending on grade) and an operating temperature range of -20°C to 120°C; limits of pressure and temperature should not be used simultaneously and are dependant on the thickness of the gasket. Supplied in either sheet/roll or precision cut gaskets (maximum 1m wide) from 0.15mm, 0.25mm, 0.4mm, 0.5mm, 0.8mm, 1mm, 1.2mm, 1.6mm, 2mm or 3.2mm thick.

Engineering Felt is available in varying thicknesses, hardness and densities in both woollen and synthetic grades. It can be supplied in sheet, strip or cut shapes for anti-vibration, sound & shock absorption, dust seals, oil seals, wipers, polishing pads/wheels, filters and gaskets. Wool felts are used for wiping because their non-fray homogeneous structure maintains constant performance during wear life and they can carry a liquid layer and distribute it evenly.

They are used for polishing because they are tough and resilient, wearing in such a way that the working surface is constantly renewed. Because of their homogeneous structure wool felts make excellent filter media accommodating high flow rates whilst offering good particle collection efficiencies. Long lasting resiliency under load offers application suitability, in vibration isolators, padding & cushioning, shock absorption and gaskets.



GLASS, CERAMIC TEXTILES & MINERAL WOOL PRODUCTS FOR HIGH TEMPERATURE APPLICATIONS

Since the abolition of asbestos, the textile industry has adapted well in producing high temperature textiles to cope with the varying demands of Industry today.

SEP offer various textiles manufactured from:

Aramid – 300°C

Glass – 550°C

Glass/Wire – 600°C

Silica – 1000°C

Ceramic – 1100°C

Most materials are available in varying forms:

Rolls

Tape – including webbing and ladder

Rope

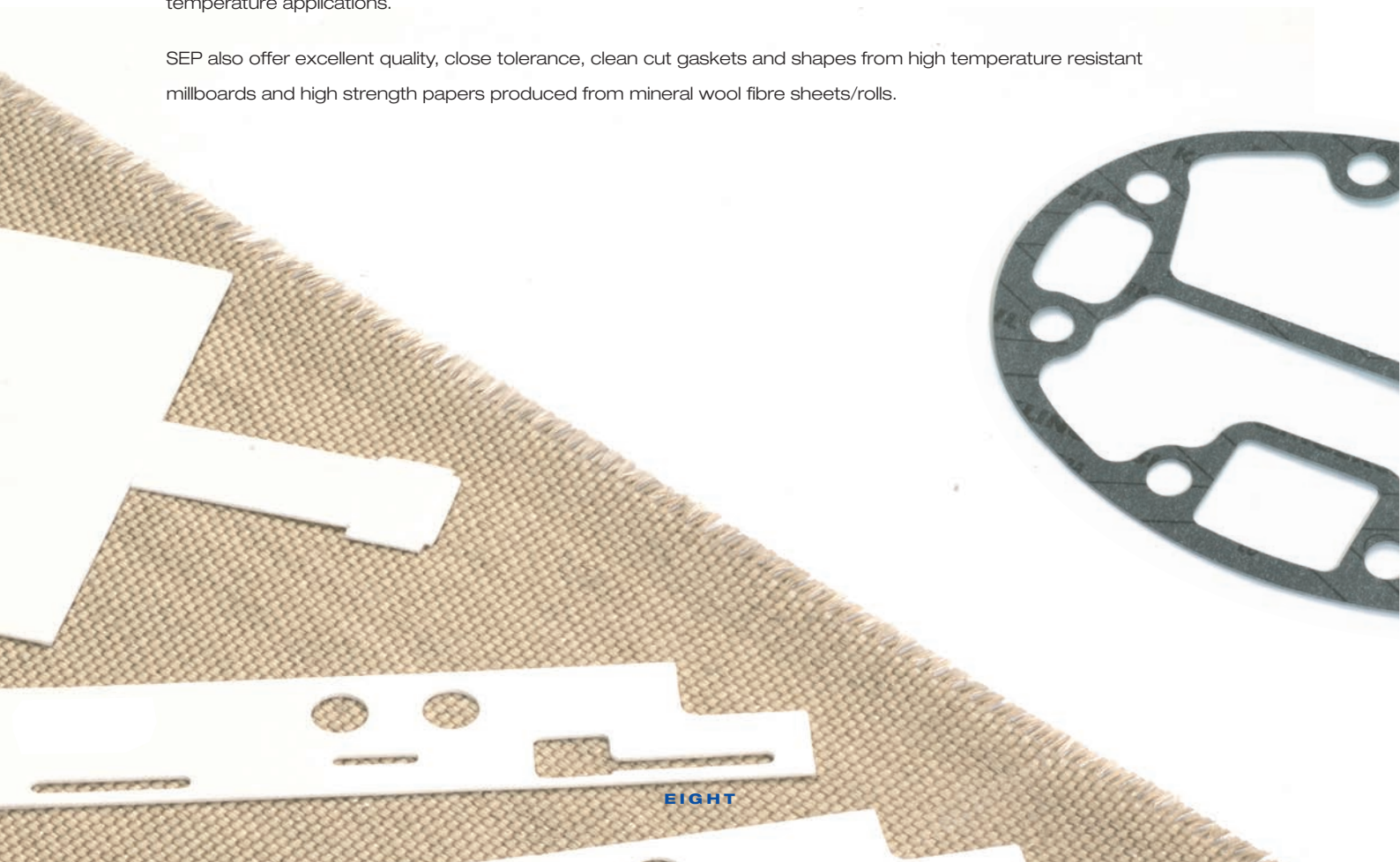
Yarn

Fabricated Parts

Dependant upon application many textiles are available with an array of coatings from Aluminium Foils to Rubbers such as Silicone, Neoprene, Nitrile, EPDM and Viton. These coatings can often assist with service conditions, handling, seal-ability and/or fabrication.

Fabricated forms such as **flexible fabric connectors/compensators** can be produced for the most challenging of duties, offering resistances to high temperature, extreme cold, oils and chemicals, abrasion, or even just the weather. The majority of fabrications are sewn in either kevlar, ptfe/glass fibre or stainless steel thread for high temperature applications.

SEP also offer excellent quality, close tolerance, clean cut gaskets and shapes from high temperature resistant millboards and high strength papers produced from mineral wool fibre sheets/rolls.



COMPRESSED SYNTHETIC FIBRE JOINTING & GASKETS

Based on high performance reinforcing fibres with elastomeric binders, our sheet materials and gaskets have been selected to cover a wide range of industrial, process and manufacturing applications; providing sealing performance with a variety of specifications, covering an array of temperature and service conditions. The careful selection of our business partners has established SEP as a premier independent supplier and gasket cutter of superior industry recognised brands such as:

KLINGERSIL, NOVUS, FLEXITALLIC.

With heightened awareness of safety and environmental issues, reducing emissions from flanged assemblies has become a major priority for industry. It is therefore crucial that the correct material is selected and installed appropriately, to achieve a safe and reliable seal.

Material guidance from our 'Select Range' is available from the 'Material Selection Directory' on pages 10 & 11, and the 'Chemical Resistance Charts' on pages 19 to 22. Please consult our technical team at SEP for further options, or if any doubts exist to a specific materials' suitability.

Notes

Steam is a powerful hydrolyser and is one of the most difficult mediums for a gasket material to seal, as such additional care should be exercised through product selection. Of particular importance is the degree of thermal or pressure cycling expected in service, as the elastomeric binders within the materials can become brittle. For this reason we recommend the use of our graphite sealing products on pages 13, 14, 15 & 18 for cycling steam duties.

Low Temperature service below -40°C will also harden the elastomeric binder in the compressed fibre materials. To ensure safe service of these materials at low temperatures we recommend that:

- the gasket is fitted dry;
- the gasket is fitted at room temperature;
- the gasket is not re-torqued once in service.

Gasket Thickness is important and a given material should be selected as thin as possible, yet sufficiently thick to accommodate surface imperfections and irregularities of the flanges. A thinner gasket requires less load to achieve a tight seal, it can accommodate higher gasket loads and has better torque retention properties which helps maintain a good seal throughout the lifetime of the gasket.

The **width** of a gasket, along with its thickness has a significant effect on the maximum permissible gasket stress; we recommend a minimum thickness to width ratio of 1/5.

Good Storage conditions of our compressed fibre sheet and gaskets will ensure a useful minimum life of 5 years. We recommend to store flat at:

- room temperature below 25°C;
- away from sources of UV/Natural light;
- dry (humidity levels <60%).

MATERIAL SELECTION OUR 'SELECT RANGE' OF COMPOUNDS

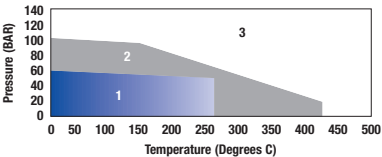
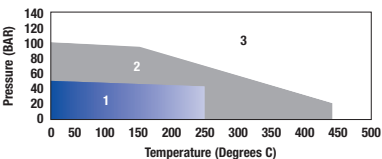
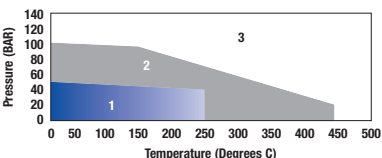
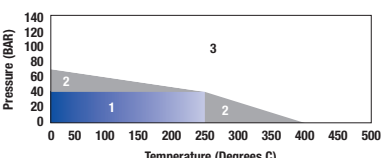
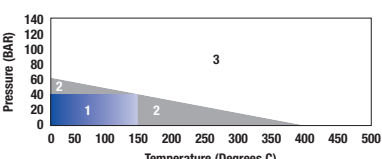
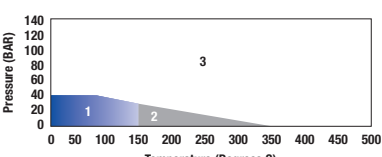
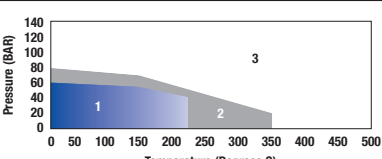
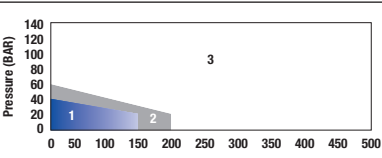
Whilst SEP offer and cut from a larger selection of materials, we can offer the commercial benefits of cutting from high-temperature resistant materials.

Colour	Grade	Approvals/Compliance	BS7531 Grade X/Y Compliance
Black/Black	SEP Premier <i>CF</i> Klingersil C4500 Novus 10	Firesafe API 607 – TA Luft – Germanischer Lloyd Firesafe API 6FA – BAM – DIN DVGW – TA Luft Firesafe API 607 – TA Luft – Germanischer Lloyd	X X X
White/White	SEP Universal <i>AF</i> Novus 34	DIN DVGW – WRAS – BAM – TA Luft – Germanischer Lloyd DIN DVGW – WRAS – BAM – TA Luft – Germanischer Lloyd	X X
Black/Black	SEP Imperial <i>GF</i> Klinger Top-Graph 2000 Novus 49 Graftec	WRAS – BAM – TA Luft – Germanischer Lloyd DIN DVGW – BAM WRAS – BAM – TA Luft – Germanischer Lloyd	X X
Green/White	Klingersil C4430	DIN DVGW – WRAS – BAM – TA Luft – Germanischer Lloyd	X
Green/Green	Klingersil C4400	DIN DVGW – WRAS – BAM – TA Luft – Germanischer Lloyd	Y
Green/Black	Klingersil C4324	DIN DVGW – WRAS – Germanischer Lloyd	Y
Orange/Orange	Novus 30 Supra	DIN DVGW – WRAS – BAM – TA Luft – Germanischer Lloyd	Y
Off White/Off White	SEP Acid Klingersil C8200 Novus 48 Acid		

SELECTION DIRECTORY **COMPRESSED FIBRE SHEET GASKETS**

...ls, choosing from our 'Select Range' offers customers the
...ech, multi-customer Cad/Cam part nesting.



Material	Filler & Elastometric Binder	Pressure/Temperature Chart (Applicable to 1.5mm thickness and below)	Max Temp In Steam	Min Temp Limit
	Carbon Fibres with a Nitrile Rubber Binder All grades available with wire reinforcement		220°C	-196°C
	Aramid & Inorganic Fibres with a Nitrile Rubber Binder		220°C	-120°C
	Graphite reinforced with Aramid Fibres with a Rubber Binder		250°C	-196°C
	Glass Fibres with a Nitrile Rubber Binder		220°C	-196°C
	Aramid Fibres with a Nitrile Rubber Binder		150°C	-196°C
	Aramid & Glass Fibres with a Nitrile Rubber Binder		150°C	-196°C
	Aramid & Inorganic Fibres with a Nitrile Rubber Binder		200°C	-100°C
	Aramid & Inorganic Fibres with an Acid Resistant Binder System		150°C	-40°C

1. Suitable subject to chemical compatibility
2. Possibly suitable, but check with SEP Technical Team
3. Contact SEP Technical Team for advice



PTFE, MODIFIED/EXPANDED PTFE UNIFLON, TOPCHEM, SIGMA, GYLON, GORETEX

PTFE (Polytetrafluoroethylene) is suitable for sealing duties with most chemical media across the whole PH range; the exceptions being molten alkali metals, fluorine gas and any substances that may generate these at the operating temperatures and pressures involved. It has an operating temperature range of -200°C to 250°C.

In addition to chemical resistance pure or virgin PTFE is well suited in FDA applications where process contact with foodstuffs is required. Having a very low co-efficient of friction, PTFE can also be used for slide bearings, non-stick applications and can be bonded to various substrates if the bonded surface is chemically etched.

Pure PTFE under certain process conditions is not always dimensionally stable and can creep or cold flow under load, losing gasket stress applied. PTFE Envelopes and Modified or Expanded PTFE materials have been developed to suitably reduce these effects.

PTFE Envelopes can be manufactured to fit most soft cut gasket materials in all thicknesses and diameters, where the recovery of the protected gasket/composite gasket compensates for the minimal creep associated with the thin wall section of the envelope.

Whilst a multitude of fillers can be used, glass has evolved as the most common, improving both dimensional stability and wear resistance; it is readily available in either 15% or 25% filled options. Care must be taken in selection as the use of fillers can impair chemical resistance and in commercial, non-proprietary grades can often remove FDA compliance.

Modified (being reinforced or expanded) PTFE available from SEP, represents the latest generation of multi-directional grade materials from leading brand manufacturers such as KLINGER (TopChem), NOVUS (Uniflon), FLEXITALLIC (Sigma), WL Gore (Gore-Tex), GARLOCK (Gylon).

Benefits and Features of modified PTFE

- Outstanding chemical resistance
- Improved creep resistance properties
- Extremely low gas permeability
- Wide service temperature range
- Excellent sealing performance, even at low seating stress
- Conforms well to glass lined, ceramic, plastic coated and irregular/uneven flanges
- Conforms to FDA regulations
- Environmentally friendly
- Easy to cut, handle and remove from flanges after service
- Up to 2000mm diameter one piece gaskets
- 'Fire-safe' grade



No single material will have all the desired properties, indeed some properties may only exist in one grade, therefore please contact our technical sales team for selection assistance of sheet materials, cut gaskets and available tape types and sizes.





GRAPHITE LAMINATE

Our range of exfoliated graphite products are designed for demanding, higher temperature applications typical of the petrochemical and refining industries. Manufactured from high purity exfoliated graphite, the product is available with a variety of metallic inserts that increase its tensile strength, load bearing capacity and improves handling characteristics.

Ultra high purity grades for the nuclear industry are also available.

Various proprietary brands such as KLINGER PSM-AS & SLS-AS, NOVUS Fi & Ti, SIGRAFLEX HOCHDRUCK, FLEXITALLIC FLEXICARB RGS1, RGS2 & RGS4 are available with:

Foil reinforcement, normally one or more 0.05mm thick 316 stainless steel or nickel insertions laminated with the graphite sheet by means of a super thin chloride free adhesive layer.

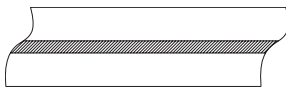
Tanged reinforcement, normally a tanged 0.10mm thick 316 stainless steel insertion mechanically bonded between graphite sheet, resulting in a sturdy gasket material with excellent mechanical strength, capable of sealing higher internal pressures than standard foil reinforced grades.

Cut tanged gaskets can occasionally leave sharp edges; therefore adequate care must be taken during handling, fitting and removal.

Both grades are available from SEP in sheet or cut gasket form, with or without 'Anti-Stick' finish to a maximum sheet size of 1.5M x 1.5M. Larger sized gaskets can, depending on service conditions, be successfully dove-tail joined.

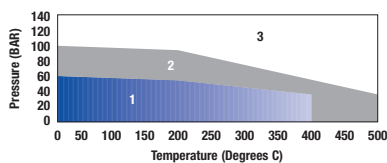
Cut gaskets are also available with a 316 stainless steel eyelet which removes potential process contamination and improves the gaskets' blow-out resistance.

Foil



Approvals/Compliance

BAM
DVGW
'Fire-Safe'



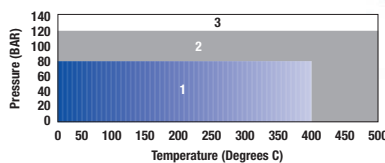
1. Suitable subject to chemical compatibility
2. Possibly suitable, but check with SEP Technical Team
3. Contact SEP Technical Team for advice

Tanged



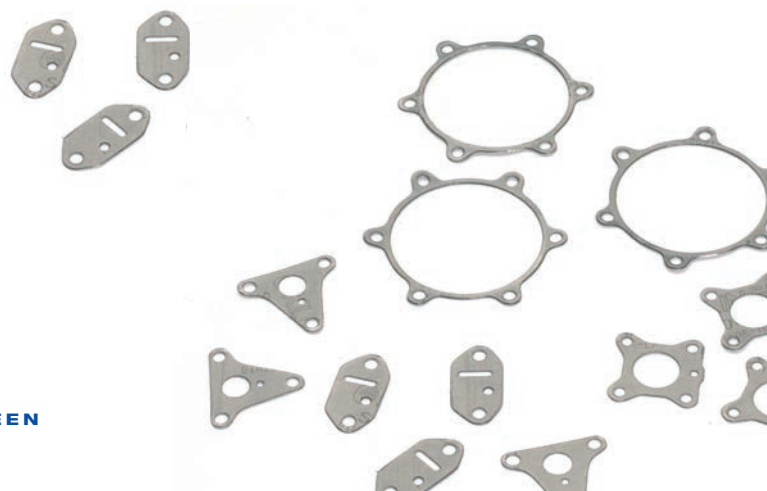
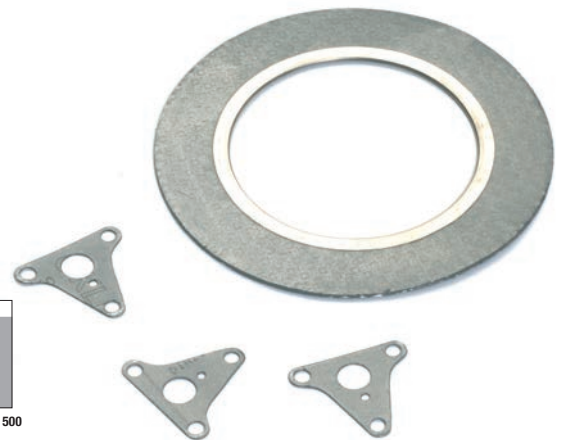
Approvals/Compliance

BAM
DVGW
'Fire-Safe'



General Properties

- High and low operating temperatures -196°C to 400°C
- Excellent chemical resistance – PH range 0 to 14
- Excellent compressibility
- Resistant to thermal cycling
- Excellent stress retention – ideal for steam applications
- Excellent storage life





GRAPHITED CORRUGATED METAL GASKET G-CMG (ELASTAGRAPH)



Elastagraph gaskets are made by infusing a seamless layer of flexible graphite at varying densities and thicknesses over a corrugated metallic core; the standard core being 316 Stainless Steel, with other alloys available on request. Elastagraph utilises a unique corrugated pattern which increases the depth of the groove and the pitch of the corrugation. This greatly improves the gasket's seal-ability over other corrugated designs.

The increased pitch and groove depth increase Elastagraph's recovery or 'spring back' and reduces the surface area of the gasket for a greater unit load at initial torque, as well as a lower minimum seating stress. This ensures maintenance of bolt load during thermal cycling.

The proprietary production process allows the graphite to be applied without the 'seam' that is present in other gaskets fabricated from flexible graphite sheets. Furthermore the inner diameter of the Elastagraph gasket is encapsulated by high density flexible graphite providing total corrosion resistance and increasing seal-ability over traditional laminated designs.

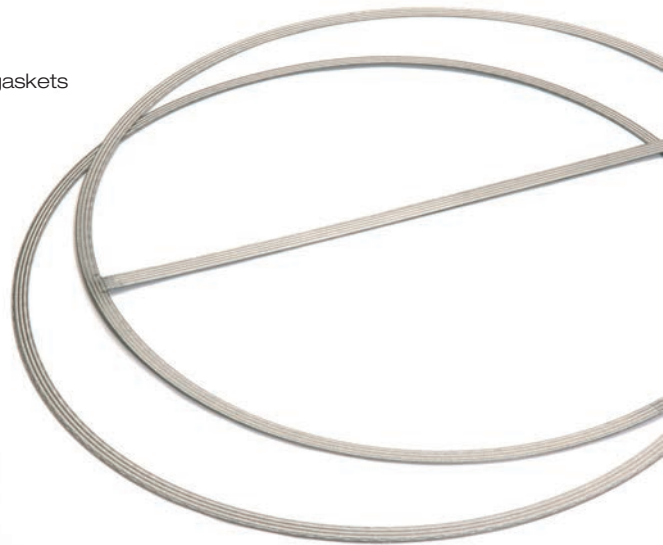
Unlike other corrugated designs Elastagraph does not contain any adhesive that would normally contribute to bolt torque loss.

Availability

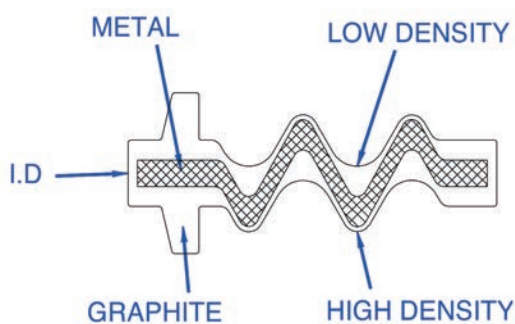
ANSI 1/2" to 24" Class 150 & 300lb. DIN sizes 10,16,25,40 bar. Non standard sizes/special shapes available upon request. Heat exchanger gaskets are available in a selection of flange widths from 9.5mm to 25mm.

Properties

- Creates a tight seal at low bolt loads
- Can be used where there is insufficient bolt load to seal spiral wound gaskets
- High and low operating temperatures from -200°C to 450°C
- Excellent chemical resistance – PH range 0 to 14
- Outstanding resistance to thermal cycling
- Safe to handle, fit and easy to remove after service
- Lowest emissions of any corrugated graphite gasket
- Tolerant to flange imperfections
- Pre-compressed graphite resistant to marking/damage during fitting
- Rigid design good for easy posting between flanges
- Moulded identification prevents incorrect gasket sizes being fitted



The world's only corrugated metal flange gasket individually moulded with exfoliated graphite.



Exaggerated cross section view



Clear moulded identification

SPIRAL WOUND GASKETS

Spiral wound gaskets are semi-metallic products designed for high pressure and temperature applications and where vibration or flow rates are beyond the capability of conventional gasket materials. They have the ability to recover under the action of fluctuating loads caused by process fluid pressure and temperature changes, flange rotation, bolt stress relaxation and creep.

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

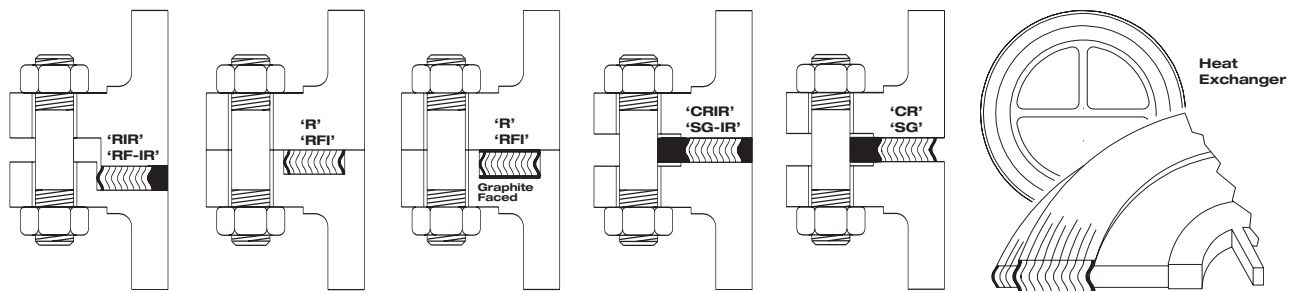
Spiral wound gaskets can be manufactured from various filler materials and assuming an appropriately rated metal winding strip is selected, the operating limits of available sealing materials are:

Sealing Layer Material	Minimum Temperature	Maximum Temperature	Maximum Pressure	Gas Tightness	Application
Graphite	-200°C	450°C	400 bar	Good	Aggressive Media
PTFE	-200°C	260°C	100 bar	Good	Aggressive Media
High Temp.	-200°C	1000°C	5 bar	Average	Gases
High Temp. + Graphite	-200°C	800°C	100 bar	Good	Gases

Pipeline gaskets are appropriately identified with pressure rating and size/specification of flanges.

When correctly sized and fitted to compatible flanges, non-standard gaskets will seal pressures up to 400 bar, although higher pressures can be considered.

Spiral wound gaskets are available in a wide range of metals/alloys; the majority, in one of the following configurations:



Whilst standard pipeline gaskets are available with a 4.5mm thick sealing element and 3.0mm thick inner and/or outer rings, other available sealing element thicknesses with guide diameters and recommended compression thicknesses are:

Sealing Element Thickness	Minimum Diameter	Maximum Diameter	Compressed Thickness
2.5mm	10mm	300mm	1.9/2.1mm
3.2mm	10mm	750mm	2.3/2.6mm
4.5mm	10mm	1550mm	3.2/3.5mm
7.3mm	1500mm	3550mm (+)	5.1/5.6mm



METALLIC GASKETS & RING TYPE JOINTS

Metallic ring type joints (RTJ's) are heavy duty, high pressure gaskets largely used in offshore and refining petrochemical applications. The precision engineered solid metal gasket provides an excellent mechanical joint, when used in conjunction with precision machined flanges of the appropriate material and hardness; the gasket material is typically about 30 Brinell less than the flange material. Ring joints can be manufactured to API 6A, ASME B16.20 and BS7076 pt 2 standards and to customers' own specifications.



Availability of standard specifications

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

The **type R oval** configuration is the original ring joint design and was followed by the **type R octagonal** which offers more specific contact sealing areas. Both types can be used with flanges having the standard ring joint flat bottom groove and hold off flanges by a specified amount, relying entirely on correctly applied initial bolt load for their proper operation in service.

Metallic gaskets of varying designs and materials are available from SEP on short lead times. These gaskets or seals can be as diverse as simple press cut soft iron washers, tight tolerance compressor head rings in aluminium to exotic copper valve seals.



RTJ with PTFE insert prevents build up of debris in the annular space between outer diameter of the ring and the bore of the flange. Also reduces turbulence as product flows past the gasket.



METAL JACKETED & SOFT FACED METAL GASKETS

Metal jacketed gaskets consist of a partial or full metal envelope, covering a soft pliable core. The sealing filler provides good resilience to aid sealing, while the metal jacket offers the suitable strength required for higher pressure applications, fluctuating temperatures and protection from corrosion of the core. Metal jacketed gaskets offer a relatively economical seal where sealing faces are narrow; they can be produced in a variety of shapes, making them a good option for heat exchangers with good, even flange surface finish (maximum 1.6um).

As well as **Heat Exchangers** metal jacketed gaskets are used in **Vessels, Valve Bonnets, Pumps, Autoclaves, Engines and Exhaust Systems**.

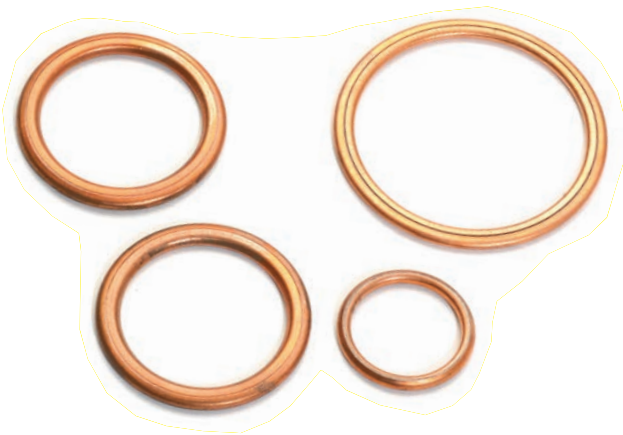
Metal jacketed heat exchanger gaskets often consist of a sealing outer ring with integral partition bars; SEP recommend (where possible) that the outer ring seals independently, with any partition bars welded in position and not fabricated in one piece. Typical heat exchanger configurations are generally 3mm thick.

Jacket Materials

Soft Iron	Aluminium	Titanium	Nickel
Copper	Stainless Steel	Inconel	Hastelloy
Brass	Monel	Incoloy	

Filler Materials

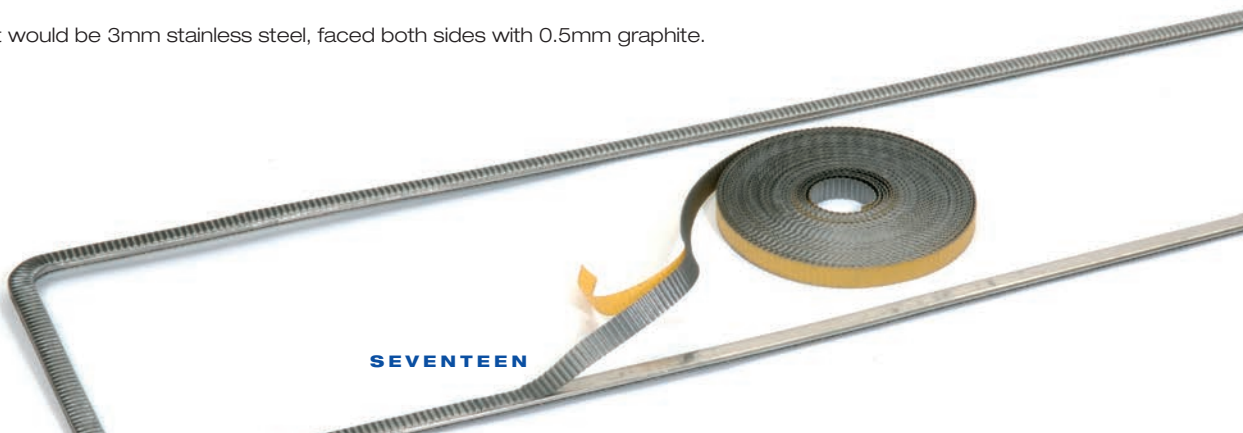
PTFE
Millboard
Graphite



Soft faced metal gaskets are an alternative to metal jacketed where the requirement is for softer, conforming sealing layers applied to the faces of a metal core. Whilst camprofile or corrugated gasket upgrades may be considered, the cost of machined serrations may not be necessary or machining/corrugating large rectangular shaped gaskets is impractical.

The cores are reusable after service, if appropriately cleaned, inspected and re-faced with new sealing material.

A typical gasket would be 3mm stainless steel, faced both sides with 0.5mm graphite.



CAMPROFILE GASKETS

Camprofile gaskets consist of a metal core, with machined concentric grooves on each side, covered with a thin, bonded soft layer of sealing material. The serrated metallic core is very effective for sealing in applications where high temperatures, high pressures and fluctuating process conditions exist. They can be used without sealing layers, but there is a risk of flange surface damage, especially at high seating loads. The sealing layers protect flange surfaces from damage whilst offering excellent, conforming sealing properties when supported by the serrated metal core.

Camprofile gaskets are ideal for both standard pipe and heat exchanger applications; the metallic core and sealing material is dependant on the service duty.

SEP recommend the use of graphite as the sealing material where possible; only in cases where graphite may cause media pollution, is not chemically resistant or is outside recommended temperature limits should an alternative material be selected.

Assuming an appropriate metallic core material is selected, the operating limits of available sealing materials are:

Sealing Layer Material	Minimum Temperature	Maximum Temperature	Maximum Pressure	Gas Tightness	Application
Graphite	-200°C	450°C	400 bar	Good	Aggressive Media
PTFE	-200°C	260°C	150 bar	Good	Aggressive Media
High Temp.	-200°C	1000°C	20 bar	Average	Gases

Unless otherwise requested we recommend the core thickness is 3mm up to 1500mm diameter and 4mm above; available core materials are:

Stainless Steel 304,304L,316,316L,320,321,347,410

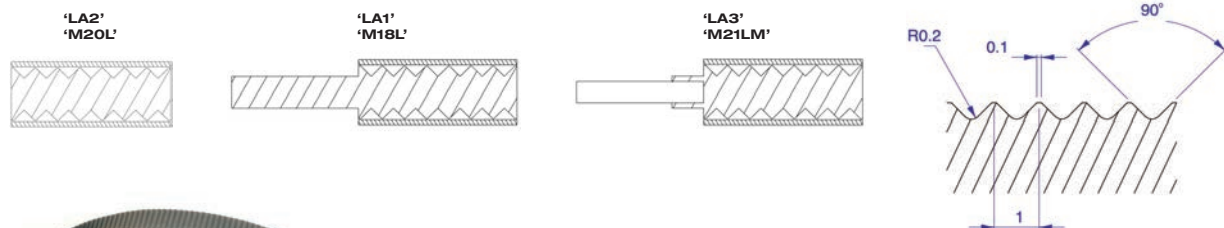
Monel - 400

Nickel - 200

Inconel - 600,625

Incoloy - 800,825

Camprofiles feature as standard a profile with a 1mm cam pitch and a maximum groove depth of 0.5mm, generally in one of the following configurations:



Camprofile cores are re-usable after service, if appropriately cleaned, inspected and re-faced with new sealing material. This is of particular advantage in the case of heat exchanger gaskets.

GASKET CHEMICAL RESISTANCE CHARTS

	Klingsil C4324	Klingsil C4400	Klingsil C4430	Novus 30	Novus 48 - Acid Klingsil C8200	Novus 49 - Graftec Klingsil Topgraph 2000 SEP - ImperialGF	Novus 10 Klingsil C4500 SEP - PremierCF	Novus 34 SEP - UniversalAF	Graphite Products	Novus - Uniflon 50 Flexitallic - Sigma 500 Garlock - Gylon 3504	Novus - Uniflon 51	Novus - Uniflon 53	Klinger - TopChem 2000/2003 Gore - Gorotex PTFE	Klinger TopChem 2005	Klinger TopChem 2006
Acetaldehyde	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Acetamide	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Acetic Acid	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Acetic Ether	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Acetic Acid Glacial	A	A	A	B	A	B	B	B	B	A	A	A	A	A	A
Acetic Anhydride	C	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Acetone	B	B	B	B	A	B	B	B	A	A	A	A	A	A	A
Acetonitrile	A	A	A	C	B	B	B	C	A	A	A	A	A	A	A
Acetyl Chloride	C	C	C	C	B	C	C	C	A	A	A	A	A	A	A
Acetylene	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Acrylic Acid	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Acrylonitrile	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A
Adipic Acid	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Allyl Chloride	C	C	C	B	B	B	B	B	B	A	A	A	A	A	A
Alum	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Aluminium Acetate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Aluminium Chlorate	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A
Aluminium Chloride	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Aluminium Sulphate	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Ammonia	A	A	A	B	B	B	B	B	A	A	A	A	A	B	A
Ammonium Carbonate	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A
Ammonium Chloride	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Ammonium Diphosphate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Ammonium Hydroxide	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A
Ammonium Sulphate	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Amyl Acetate	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Amyl Alcohol	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Aniline	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A
Aqua Regia	C	C	C	C	C	C	C	C	C	A	A	A	A	A	A
Asphalt	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A
Aviation Fuel	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A
Barium Chloride	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Benzaldehyde	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Benzene	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Benzoic Acid	B	B	B	B	A	B	A	B	A	A	A	A	A	A	A
Benzonitrile	C	C	C	C	C	C	C	C	B	A	A	A	A	A	A
Benzyl Alcohol	A	A	A	B	B	B	B	B	A	A	A	A	A	A	A
Benzyl Chloride	C	C	C	B	B	B	B	B	B	A	A	A	A	A	A
Bleach	A	A	A	B	B	B	B	B	B	A	A	A	A	A	A
Borax	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Boric Acid	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Brine	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Bromine	C	C	C	C	C	C	C	C	B	A	A	A	A	A	A
Butadiene	A	A	A	B	B	B	B	B	A	A	A	A	A	A	A
Butane	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Butanol	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Butanone	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Butyl Acetate	B	B	B	B	B	A	B	B	A	A	A	A	A	A	A
Butyl Alcohol (Butanol)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Butyl Methacrylate	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A
Butyric Acid	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Calcium Chloride	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A
Calcium Hydroxide	A	A	A	A	A	B	A	A	B	A	A	A	A	B	A
Calcium Hypochlorite	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Calcium Sulphate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Carbolic Acid	C	C	C	C	B	C	C	C	A	A	A	A	A	A	A
Carbon Dioxide	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Carbon Disulphide	C	C	C	C	C	B	B	C	A	A	A	A	A	A	A
Carbon Tetrachloride	B	B	B	B	C	B	B	B	A	A	A	A	A	A	A
Castor Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Caustic Soda (less than 25%)	B	A	A	B	A	B	A	B	B	B	C	A	A	A	A
Caustic Soda (less than 50%)	B	B	B	B	B	B	B	B	B	B	C	A	A	A	A
Caustic Soda (greater than 50%)	C	C	C	C	B	B	B	C	B	B	C	A	A	A	A
Chlorine Dioxide	C	C	C	C	B	C	C	C	C	A	A	A	A	A	A
Chlorine (dry)	B	B	B	B	B	B	B	B	B	A	A	A	A	A	A
Chlorine (liquid)	C	B	B	B	B	B	B	B	B	A	A	A	A	A	A
Chlorine (wet)	C	C	C	C	C	C	C	C	B	A	A	A	A	A	A
Chloroacetic Acid	C	C	C	C	C	C	C	C	B	A	A	A	A	A	A

A = Suitable in most cases
 B = Check with SEP Technical Team
 C = Not suitable
 – = Insufficient data

The information on compatibility should only be used as a general guide to the selection of the most suitable material; customers must assure themselves that the parts supplied will be safe in use and have been appropriately tested. If in doubt contact the SEP Technical Team.

GASKET CHEMICAL RESISTANCE CHARTS

	Klingsil C4324	Klingsil C4400	Klingsil C4430	Novus 30	Novus 48 - Acid Klingsil C8200	Novus 49 - Graftec Klingsil Topgraph 2000 SEP - ImperialGF	Novus 10 Klingsil C4500 SEP - PremierCF	Novus 34 SEP - UniversalAF	Graphite Products	Novus - Uniflon 50 Flexitallic - Sigma 500 Garlock - Gylon 3504	Novus - Uniflon 51	Novus - Uniflon 53	Klinger - TopChem 2000/2003 Gore - Gorotex PTFE	Klinger TopChem 2005	Klinger TopChem 2006
Chlorobenzene	C	C	C	B	C	B	B	B	A	A	A	A	A	A	A
Chloroform	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Chloromethane	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Chlorotrifluoride	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Chromic Acid	C	B	B	C	B	B	B	C	C	A	A	A	A	A	A
Citric Acid	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Clophen	B	B	B	–	B	B	B	–	A	–	–	–	A	A	A
Copper Acetate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Copper Sulphate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Creosote	C	C	C	B	B	B	B	B	A	A	A	A	A	A	A
Cresol	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Cyclohexane	A	A	A	B	B	B	B	B	A	A	A	A	A	A	A
Cyclohexanol	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Cyclohexanone	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A
Dibenzyl Ether	C	C	C	C	C	B	C	C	A	A	A	A	A	A	A
Dibutyl Phthalate	A	A	A	B	B	B	B	B	A	A	A	A	A	A	A
Diesel Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Diethanolamine	A	A	A	B	B	B	B	B	A	A	A	A	A	A	A
Diethylamine	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Di-iso-Butyl Ketone	C	C	C	B	B	B	B	B	A	A	A	A	A	A	A
Dimethyl Formamide	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A
Dimethylamine	C	C	C	B	B	B	B	B	A	A	A	A	A	A	A
Dioxane	C	C	C	B	C	B	B	B	A	A	A	A	A	A	A
Diphyll (Dowtherm A)	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A
Ethane	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Ethyl Acetate	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Ethyl Acrylate	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A
Ethyl Alcohol (Ethanol)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Ethyl Chloride	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Ethyl Ether	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A
Ethylbenzene	A	A	A	B	B	B	B	B	A	A	A	A	A	A	A
Ethylene	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Ethylene Chloride	C	C	C	C	A	C	C	C	A	A	A	A	A	A	A
Ethylene Glycol	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Fluorine (Dioxide/Gas/Liquid)	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Formaldehyde	A	A	A	B	B	B	B	B	A	A	A	A	A	A	A
Formamide	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Formic Acid 10%	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Formic Acid 85%	B	B	B	B	A	B	B	B	B	A	A	A	A	A	A
Fuel Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Gas (LPG/Natural)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Gasoline	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Glucose	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Glycerine	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Glycol	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Heating Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Heptane	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Hexane	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Hydraulic Oil (Mineral/Glycol)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Hydraulic Oil (Phosphate Ester)	B	B	B	A	B	B	B	B	A	A	A	A	A	A	A
Hydrochloric Acid 20%	B	B	B	B	A	B	B	B	A	A	A	A	A	A	C
Hydrochloric Acid 30%	C	C	C	C	A	C	C	C	A	A	A	A	A	A	C
Hydrofluoric Acid 10%	C	C	C	C	B	C	C	C	B	C	C	A	A	C	C
Hydrofluoric Acid (up to 65%)	C	C	C	C	B	C	C	C	B	C	C	A	A	C	C
Hydrofluoric Acid (over 65%)	C	C	C	C	C	C	C	C	B	C	C	B	A	C	C
Hydrofluorosillic Acid	B	B	B	C	B	B	B	C	B	C	C	B	A	A	A
Hydrogen	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Hydrogen Chloride (dry)	B	B	B	B	B	B	B	B	B	A	A	A	A	A	A
Hydrogen Fluoride	C	C	C	C	C	C	C	C	B	C	C	C	A	A	A
Hydrogen Peroxide 6%	A	A	A	B	B	B	B	B	A	A	A	A	A	A	A
Hydrogen Sulphide	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Iso-octane	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Isopropyl Acetate	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A

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GASKET CHEMICAL RESISTANCE CHARTS

	Klingsil C4324	Klingsil C4400	Klingsil C4430	Novus 30	Novus 48 - Acid Klingsil C8200	Novus 49 - Graftec Klingsil Topgraph 2000 SEP - ImperialGF	Novus 10 Klingsil C4500 SEP - PremierCF	Novus 34 SEP - UniversalAF	Graphite Products	Novus - Uniflon 50 Flexitallic - Sigma 500 Garlock - Gylon 3504	Novus - Uniflon 51	Novus - Uniflon 53	Klinger - TopChem 2000/2003 Gore - Goretex PTFE	Klinger TopChem 2005	Klinger TopChem 2006
Isopropyl Alcohol	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Isopropyl Ether	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Kerosene (Petroleum)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Lactic Acid	A	A	A	B	A	B	B	B	B	A	A	A	A	A	A
Lead Acetate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Lead Arsenate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Linseed Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Lubricating Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Machine Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Magnesium Sulphate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Maleic Acid	C	C	C	B	B	B	B	B	A	A	A	A	A	A	A
Maleic Anhydride	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A
Methane	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Methanol	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Methyl Alcohol	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Methyl Chloride	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Methyl Ethyl Ketone	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Methyl Methacrylate	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A
Methylated Spirits	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Methylene Chloride	C	C	C	C	B	B	C	C	B	A	A	A	A	A	A
Mineral Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Molten Alkali Metals	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Motor Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Naptha	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Napthalene	B	B	B	B	B	B	B	B	B	A	A	A	A	A	A
Natural Gas	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Nickel Chloride	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Nickel Sulphate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Nitric Acid (less than 30%)	C	C	C	C	B	B	B	C	B	A	A	A	A	A	B
Nitric Acid (more than 30%)	C	C	C	C	B	C	C	C	B	A	A	A	A	A	B
Nitric Acid (Red Fuming)	C	C	C	C	C	C	C	C	C	A	A	A	A	A	A
Nitrogen	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Octane	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Oleic Acid	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Oleum (Fuming Sulphuric Acid)	C	C	C	C	C	C	C	C	C	A	A	C	A	A	C
Oxalic Acid	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Oxygen	A	A	A	A	B	B	B	A	A	A	A	A	A	A	A
Palmitic Acid	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Paraffin	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Pentane	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Perchloroethylene	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Perchloric Acid	A	A	A	C	B	B	B	C	B	A	A	A	A	A	A
Petroleum	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Phenol	C	C	C	C	B	C	C	C	A	A	A	A	A	A	A
Phosgene	C	C	C	C	B	C	C	C	A	A	A	A	A	A	A
Phosphoric Acid (less than 45%)	C	A	A	B	A	B	B	B	A	A	A	A	A	A	A
Phosphoric Acid (more than 45%)	C	A	A	C	A	B	B	C	B	B	B	A	A	A	A
Phthalic Acid	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Phthalic Anhydride	B	B	B	C	B	B	B	C	A	A	A	A	A	A	A
Potassium Acetate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Potassium Carbonate	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A
Potassium Chlorate	A	A	A	A	B	A	A	A	B	A	A	A	A	A	A
Potassium Chloride	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Potassium Cyanide	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Potassium Dichromate (less than 20%)	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Potassium Hydroxide (less than 50%)	B	B	B	B	B	B	B	B	A	C	C	A	A	C	A
Potassium Hydroxide (more than 50%)	B	B	B	C	B	B	B	C	A	C	C	A	A	C	A
Potassium Hypochlorite	B	A	A	B	B	B	B	B	B	A	A	A	A	A	A
Potassium Nitrate	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Potassium Permanganate	A	A	A	A	B	A	A	A	B	A	A	A	A	A	A
Propane	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Pyridine	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A

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Refrigerants:															
R113, R114, R114B2, R115, R12	B	B	B	A	A	B	B	A	A	A	A	A	A	A	A
R13, R13B1	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
R11, R134A, R141A, R141B, R152A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A
R112	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A
R123, R125, R22	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
R402A, R402B, R404A, R502, R507	B	B	B	A	B	B	B	A	A	A	A	A	A	A	A
Salicylic Acid	A	A	A	B	A	B	B	B	B	A	A	A	A	A	A
Sea Water	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Silicone Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Silver Nitrate	B	B	B	A	A	B	B	A	A	A	A	A	A	A	A
Soda	A	A	A	A	A	A	A	A	A	A	A	A	A	C	A
Sodium Aluminate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium Bicarbonate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium Bisulphate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium Chloride	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Sodium Cyanide	A	A	A	—	B	B	B	—	B	—	—	—	A	A	A
Sodium Hydroxide (less than 25%)	B	B	B	B	A	B	A	B	B	B	C	A	A	C	A
Sodium Hydroxide (less than 50%)	B	B	B	B	B	B	B	B	B	B	C	A	A	C	A
Sodium Hydroxide (more than 50%)	B	B	B	C	B	B	B	C	B	B	C	A	A	C	A
Sodium Silicate (Water Glass)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium Sulphate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Sodium Sulphide	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Starch	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Steam	B	B	B	B	B	A	B	A	A	A	A	A	B	B	B
Stearic Acid	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A
Styrene	B	B	B	C	B	B	B	C	A	A	A	A	A	A	A
Sugar	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Sulphur	A	A	A	B	B	B	B	B	A	A	A	A	A	A	A
Sulphur Dioxide	C	C	C	B	A	B	B	B	A	A	A	A	A	A	A
Sulphur Trioxide	C	C	C	C	C	C	C	C	B	A	A	A	A	A	B
Sulphuric Acid (Fuming)	C	C	C	C	B	C	C	C	C	A	A	C	A	A	C
Sulphuric Acid (less than 30%)	C	C	C	C	A	C	C	C	B	A	A	A	A	A	C
Sulphuric Acid (more than 50%)	C	C	C	C	B	C	C	C	C	A	A	A	A	A	C
Sulphurous Acid	B	B	B	B	A	B	B	B	B	A	A	A	A	A	A
Tannic Acid	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Tar	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A
Tartaric Acid	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Tetrachloroethylene	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Tetraline	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Thermal Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Toluene	A	A	A	B	B	B	B	B	A	A	A	A	A	A	A
Transformer Oil	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A
Transmission Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Trichloroethylene	B	B	B	B	B	B	B	B	A	A	A	A	A	A	A
Triethanolamine	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Turpentine	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Urea	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Vegetable Oil	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Vinyl Acetate	A	A	A	B	B	B	B	B	A	A	A	A	A	A	A
Vinyl Bromide	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A
Vinyl Chloride	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A
Water	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
White Spirit	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Xylene	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A
Xylol	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Zinc Chloride	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A
Zinc Sulphate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A

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STANDARD FLANGE - GASKET DIMENSIONS

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
15mm BST	D	22	95	4	14	67	52
	E	22	95	4	14	67	52
	F	22	95	4	14	67	52
	H	22	114	4	19	83	64
15mm ASA	150	22	89	4	16	60	47
	300	22	95	4	16	67	54
	600	22	95	4	16	67	54
15mm NP	6	22	80	4	11	55	44
	10	22	95	4	14	65	51
	16	22	95	4	14	65	51
	25	22	95	4	14	65	51

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
20mm BST	D	27	102	4	14	73	59
	E	27	102	4	14	73	59
	F	27	102	4	14	73	59
	H	27	114	4	19	83	64
20mm ASA	150	27	98	4	16	70	57
	300	27	117	4	19	83	66
	600	27	117	4	19	83	66
20mm NP	6	27	90	4	11	65	54
	10	27	105	4	14	75	61
	16	27	105	4	14	75	61
	25	27	105	4	14	75	61

Nominal Bore		Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
			Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
25mm BST	D	34	114	4	14	83	68	
	E	34	114	4	14	83	68	
	F	34	121	4	19	87	68	
	H	34	121	4	19	87	68	
25mm ASA	150	34	108	4	16	79	66	
	300	34	124	4	19	89	73	
	600	34	124	4	19	89	73	
25mm NP	6	34	100	4	11	75	64	
	10	34	115	4	14	85	71	
	16	34	115	4	14	85	71	
	25	34	115	4	14	85	71	

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
32mm BST	D	43	121	4	14	87	73
	E	43	121	4	14	87	73
	F	43	133	4	19	98	79
	H	43	133	4	19	98	79
32mm ASA	150	42	117	4	16	89	76
	300	42	133	4	19	98	82
	600	42	133	4	19	98	82
32mm NP	6	43	120	4	14	90	76
	10	43	140	4	18	100	82
	16	43	140	4	18	100	82
	25	43	140	4	18	100	82

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
80mm BST	D	89	184	4	19	146	127
	E	89	184	4	19	146	127
	F	89	203	8	19	165	146
	H	89	203	8	19	165	146
80mm ASA	150	89	190	4	19	152	136
	300	89	210	8	22	168	149
	600	89	210	8	22	168	149
80mm NP	6	89	190	4	18	150	132
	10	89	200	8	18	160	142
	16	89	200	8	18	160	142
	25	89	200	8	18	160	142

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
100mm BST	D	115	216	4	19	178	159
	E	115	216	8	19	178	159
	F	115	229	8	19	191	171
	H	115	229	8	19	191	171
100mm ASA	150	115	229	8	19	191	174
	300	115	254	8	22	200	181
	600	115	273	8	26	216	193
100mm NP	6	115	210	4	18	170	152
	10	115	220	8	18	180	162
	16	115	220	8	18	180	162
	25	115	235	8	22	190	168

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
125mm BST	D	140	254	8	19	210	191
	E	140	254	8	19	210	191
	F	140	279	8	22	235	213
	H	140	279	8	22	235	213
125mm ASA	150	142	254	8	22	216	197
	300	142	279	8	22	235	216
	600	142	330	8	29	267	241
125mm NP	6	141	240	8	18	200	182
	10	141	250	8	18	210	192
	16	141	250	8	18	210	192
	25	141	270	8	26	220	194

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
150mm BST	D	168	279	8	19	235	216
	E	168	279	8	22	235	213
	F	168	305	12	22	260	238
	H	168	305	12	22	260	238
150mm ASA	150	169	279	8	22	241	222
	300	169	318	12	22	270	251
	600	169	356	12	29	292	266
150mm NP	6	169	265	8	18	225	207
	10	169	285	8	22	240	218
	16	169	285	8	22	240	218
	25	169	300	8	26	250	224

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
350mm BST	D	381	527	12	26	470	445
	E	381	527	12	26	470	445
	F	381	552	16	29	495	467
	H	381	552	16	29	495	467
350mm ASA	150	356	533	12	29	476	451
	300	356	584	20	32	514	486
	600	356	603	20	38	527	492
350mm NP	6	356	490	12	22	445	423
	10	356	505	16	22	460	438
	16	356	520	16	26	470	444
	25	356	555	16	33	490	457

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
400mm BST	D	432	578	12	26	521	495
	E	432	578	12	26	521	495
	F	432	610	20	29	552	524
	H	432	610	20	29	552	524
400mm ASA	150	407	597	16	29	540	514
	300	407	648	20	35	572	540
	600	407	686	20	41	603	565
400mm NP	6	407	540	16	22	495	473
	10	407	565	16	26	515	489
	16	407	580	16	30	525	495
	25	407	620	16	36	550	514

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
450mm BST	D	483	641	12	26	584	559
	E	483	641	16	26	584	559
	F	483	673	20	32	610	578
	H	483	673	20	32	610	578
450mm ASA	150	457	635	16	32	578	549
	300	457	711	24	35	629	597
	600	457	743	20	45	654	613
450mm NP	6	458	595	16	22	550	528
	10	458	615	20	26	565	539
	16	458	640	20	30	585	555
	25	458	670	20	36	600	564

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
500mm BST	D	533	705	16	26	641	616
	E	533	705	16	26	641	616
	F	533	737	24	32	673	641
	H	533	737	24	32	673	641
500mm ASA	150	508	698	20	32	635	606
	300	508	775	24	35	686	654
	600	508	813	24	45	724	682
500mm NP	6	508	645	20	22	600	578
	10	508	670	20	26	620	594
	16	508	715	20	33	650	617
	25	508	730	20	36	660	624

Dimensions in millimetres. For all other Flange Table Dimensions, please contact the SEP Technical Team or visit our website: www.specialisedengineering.co.uk

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
40mm BST	D	49	133	4	14	98	84
	E	49	133	4	14	98	84
	F	49	140	4	19	105	86
	H	49	140	4	19	105	86
40mm ASA	150	49	127	4	16	98	85
	300	49	156	4	22	114	95
	600	49	156	4	22	114	95
40mm NP	6	49	130	4	14	100	86
	10	49	150	4	18	110	92
	16	49	150	4	18	110	92
	25	49	150	4	18	110	92

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
50mm BST	D	61	152	4	19	114	95
	E	61	152	4	19	114	95
	F	61	165	4	19	127	108
	H	61	165	4	19	127	108
50mm ASA	150	61	152	4	19	121	105
	300	61	165	8	19	127	111
	600	61	165	8	19	127	111
50mm NP	6	61	140	4	14	110	96
	10	61	165	4	18	125	107
	16	61	165	4	18	125	107
	25	61	165	4	18	125	107

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
65mm BST	D	76	165	4	19	127	108
	E	76	165	4	19	127	108
	F	76	184	8	19	146	127
	H	76	184	8	19	146	127
65mm ASA	150	73	178	4	19	140	124
	300	73	190	8	22	149	130
	600	73	190	8	22	149	130
65mm NP	6	77	160	4	14	130	116
	10	77	185	8	18	145	127
	16	77	185	8	18	145	127
	25	77	185	8	18	145	127

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
200mm BST	D	219	337	8	19	292	273
	E	219	337	8	22	292	273
	F	219	368	12	22	324	302
	H	219	368	12	22	324	302
200mm ASA	150	219	343	8	22	298	279
	300	219	381	12	26	330	308
	600	219	419	12	32	349	320
200mm NP	6	220	320	8	18	280	262
	10	220	340	8	22	295	273
	10	220	340	12	22	295	273
	25	220	360	12	26	310	284

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
250mm BST	D	273	406	8	22	356	333
	E	273	406	12	22	356	333
	F	273	432	12	26	381	356
	H	273	432	12	26	381	356
250mm ASA	150	273	406	12	26	362	339
	300	273	444	16	29	387	362
	600	273	508	16	35	432	400
250mm NP	6	273	375	12	18	335	317
	10	273	395	12	22	350	328
	16	273	405	12	26	355	329
	25	273	425	12	30	370	340

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
300mm BST	D	324	457	12	22	406	384
	E	324	457	12	26	406	381
	F	324	489	16	26	438	413
	H	324	489	16	26	438	413
300mm ASA	150	324	483	12	26	432	409
	300	324	521	16	32	451	422
	600	324	559	20	35	489	457
300mm NP	6	324	440	12	22	395	373
	10	324	445	12	22	400	378
	16	324	460	12	26	410	384
	25	324	485	16	30	430	400

Nominal Bore	Flange Table	FULL FACE GASKET					I.B.C. Gasket O.D.
		Gasket I.D.	Gasket O.D.	Number of Bolt Holes	Bolt Hole Diameter	P.C.D.	
600mm BST	D	635	826	16	29	756	727
	E	635	826	16	32	756	724
	F	635	851	24	35	781	746
	H	635	851	24	35	781	746
600mm ASA	150	610	813	20	35	749	717
	300	610	914	24	41	813	774
	600	610	940	24	51	838	790
600mm NP	6	610	755	20	26	705	679
	10	610	780	20	30	725	695
	16	610	840	20	36	770	734
	25	610	845	20	39	770	731



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