James Walker®

High Performance Sealing for all Marine Applications

Global supply of:

- *Gaskets & jointings*
- *Packings & tank lid seals*
- *Expansion joints & bellows*
- *Rotary & hydraulic seals*
- *Pipe supports & much more…*

High Performance Sealing Technology

James Walker

High performance sealing for all marine applications

Introduction

James Walker products are globally recognised by marine engineers for their quality and reliability. These are assets the James Walker name and Lion logo have fostered in the marine industry since the 1880s when our Scottish engineer founder, Mr James Walker, introduced his innovative compression packing for high-efficiency steam engines.

Since those early days, our products have increased beyond recognition in range and technical excellence to match the complex and demanding applications of today's hardworking marine equipment.

Today we manufacture and supply a highly diverse range of fluid sealing items and other specialised products to the world's commercial and naval fleets, as well as to shipyards and original equipment manufacturers. We also produce many specialised sealing items for marine diesels and associated equipment — and can often supply these against original part numbers.

In addition, we work closely with design engineers of marine equipment to develop sealing products that can be used with confidence in all areas of maritime activity.

Contents

Trademark acknowledgements

James Walker acknowledges the following trademarks as mentioned in this publication. All other names bearing the ® symbol are registered trademarks of James Walker.

GFO®	WL Gore & Associates
GORE™	WL Gore & Associates
Mylar®	EI du Pont de Nemours.

Meeting global demands

Global supply

Our role as a global supplier to the marine sector demands an international manufacturing base, plus highly efficient sales and distribution operations.

Our products and services are available through an international network of James Walker companies and official distributors at most principal ports worldwide *(see pages 30-31)*. We back this network with our highly developed logistics operation that gives customers the surety of supply they need.

Because most marine customers rely heavily on e-commerce and e-catalogues, we have invested significantly in IT infrastructure to meet efficiently global logistical demands with our fast-track *Express Service*.

Stocks of James Walker products are held worldwide for immediate despatch.

Partnering contracts

We also establish long-term partnering contracts with major marine operators for the global supply of products under fixed pricing structures.

This includes full support for ships at sea, ship builders, repairers and chandlers — as well as tank container cleaning stations, operators, manufacturers and repair depots.

These contracts are administered by dedicated managers with specialised teams of experts whose sole responsibility is to service the needs of that customer's sites across different countries and continents. In many cases we hold stocks of customer-specific products local to their sites for immediate delivery.

However, our service is not limited to the supply of items to meet planned maintenance and unscheduled shutdowns.

Our marine industry specialists work in close harmony with customers' engineers and scientists to solve their complex fluid sealing problems and generate best-value solutions. This leads to the development of new products that meet ever-increasing production demands, changing Health & Safety regimes and new environment legislation.

Our highly automated warehouse in the UK contains over eight million products for Express Service delivery to vessels across the globe.

James Walker

Quick Reference Chart

✔ Recommended ✔ Suitable ✗ Do not use

Service capabilities

	Supply details on page	Rotary duties		Reciprocating duties		Valve duties	Flange sealing or Static lid & door sealing	Temperature range		pH range	Ballast, bilge & cooling systems
Compression packings		Shaft speed (m/s)	Pressure (bar)	Rod speed (m/s)	Pressure (bar)	Pressure (bar)	Pressure (bar)	Min (°C)	Max (°C)		
Duracom	11	18	20	1.0	80	150	n/a	-100	+240	2-12	✔
Fluograf®	12	22	10	1.0	80	80	n/a	-100	+260	0-14	✔
Fluolion® Filament L	12	10	25	1.0	100	150	n/a	-100	+250	0-14	✔
Fluolion® Sturntite	14	9.0	25	1.0	100	100	n/a	-40	+95	5-10	n/a
Fortuna XA	13	20	15	n/a	n/a	20	n/a	-40	+315	4-10	✔
Fluolion® Emulsion 2XA	13	12	25	2.0	100	150	n/a	-50	+290	2-12	✔
Liongraf	16	17.5	20	2.0	80	120	n/a	-100	+260	0-14	✔
Ramiex	19	17.5	20	2.0	250	250	n/a	-30	+120	4-11	✔
Rover Medium Soft Cotton	18	7.0	10	1.0	50	50	n/a	-40	+90	6-8	✔
Sextant	16	3.0	10	1.0	100	100	n/a	-40	+90	6-10	✔
Supagraf® RibbonPak	17	25	25	n/a	n/a	250	n/a	-200	Steam +550	0-14	✔
Supagraf® RibbonPak M	17	n/a	n/a	n/a	n/a	300	n/a	-200	Steam +650	0-14	✔
Supagraf® Tape	17	n/a	n/a	n/a	n/a	70	n/a	-200	+500	0-14	✔
Supeta XA	18	10	10	1.0	70	70	n/a	-40	+350	4-10	✔
Flange sealing											
Centurion®	6	n/a	n/a	n/a	n/a	n/a	120	-200	+440	n/a	✔
Chieftain®	6	n/a	n/a	n/a	n/a	n/a	130	-200	+450	n/a	✔
Metaflex®	10	n/a	n/a	n/a	n/a	n/a	350	n/a	Steam +650	n/a	✔
Inca	7	n/a	n/a	n/a	n/a	n/a	100	-200	+350	n/a	✔
Sentinel®	6	n/a	n/a	n/a	n/a	n/a	100	-200	+400	n/a	✔
Nebar® Brown	7	n/a	n/a	n/a	n/a	n/a	n/a	-20	+110	n/a	✔
Neoprene rubber 264C	8	n/a	n/a	n/a	n/a	n/a	n/a	-20	+100	n/a	✔
Natural Rubber Insertion 332C	8	n/a	n/a	n/a	n/a	n/a	n/a	-30	+80	n/a	✔
Gaskoid	8	n/a	n/a	n/a	n/a	n/a	10	-20	+120	n/a	✔
Supagraf® Laminated S10 & N7	7	n/a	n/a	n/a	n/a	n/a	130	-200	+400	n/a	✔
Super Twilstele® XA/G	8	n/a	n/a	n/a	n/a	n/a	Not rated	n/a	+650	n/a	✗
Walflon Joint Sealant	9	n/a	n/a	n/a	n/a	n/a	Not rated	-200	+260	n/a	✔
Static sealing											
Tankatite® 440 tank lid seal	20	n/a	n/a	n/a	n/a	n/a	0.8	-50	+120	0-14	n/a
Tankatite® 660 tank lid seal	21	n/a	n/a	n/a	n/a	n/a	0.6	-50	+230	0-14	n/a
Valcor® Hi-Temp	19	n/a	n/a	n/a	n/a	n/a	Not rated	-50	+1000	0-10	n/a

James Walker's most popular marine products

Marine applications ✔ Recommended ✔ Suitable ✗ Do not use								Product description
Exhaust systems	Fuels - heavy, light, & lube oil	Cooling & heat transfer systems	LNG & LPG systems	Steam, condensate & feed systems	Chemicals (IMO Class 1)	Potable water systems	Sanitation systems	
								Compression packings
✗	✔	✔	✗	✔	✗	✔	✔	Cross-plaited aramid yarn impregnated with PTFE dispersion and thermally stable lubricant.
✗	✔	✔	✔	✔	✔	✔	✔	Cross-plait of highly-developed yarn comprising a blend of ePTFE, graphite, and inert high temperature lubricants.
✗	✔	✔	✔	✔	✔	✔	✔	Cross-plaited PTFE yarn, impregnated and densified with particles of PTFE, and containing an inert lubricant.
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Dense, robust packing of plaited flax yarn, treated with PTFE dispersion and petroleum-based grease.
✔	✔	✔	✗	✔	✗	✗	✔	Plaited in yarn blended from four synthetic fibres, impregnated with petroleum grease and coated in flake graphite.
✗	✔	✔	✗	✔	✗	✗	✔	Cross-plaited in a yarn of glass and three other fibres, and impregnated with PTFE dispersion.
✗	✔	✔	✔	✔	✔	✗	✔	Cross-plaited in graphite and PTFE yarn, thermally stabilised and lubricated with a silicon-free compound.
✗	✔	✗	✗	✗	✗	✗	✔	Cross-plaited in top quality bleached yarns of ramie natural fibre, impregnated with PTFE dispersion.
✗	✔	✗	✗	✗	✗	✗	✔	Plaited in fine cotton yarns, impregnated with petroleum-based grease and graphite.
✗	✗	✗	✗	✗	✗	✗	✔	Plaited from good quality flax yarns, impregnated with blended tallow lubricant and coated with mica.
✔	✔	✔	✔	✔	✔	✗	✔	Plaited from high-purity exfoliated graphite ribbons.
✔	✔	✔	✔	✔	✔	✗	✔	Plaited from high-purity exfoliated graphite ribbons, reinforced with fine Inconel wire.
✔	✔	✔	✔	✔	✔	✔	✔	Exfoliated graphite in textured tape form.
✔	✔	✔	✗	✔	✗	✗	✔	Plaited from texturised glass yarns coated with graphite, and lubricated with heat-resistant petroleum grease.
								Flange sealing
✔	✔	✔	✔	✔	✔	✗	✔	Compressed aramid and glass fibres, with a nitrile NBR rubber binder.
✔	✔	✔	✔	✔	✔	✗	✔	Advanced carbon-fibre jointing, with a nitrile NBR rubber binder.
✔	✔	✔	✔	✔	✔	✗	✗	Spiral-wound metallic gasket with a variety of filler materials.
✔	✔	✔	✔	✔	✗	✔	✔	Compressed inorganic and aramid fibres combined with a nitrile NBR rubber binder.
✔	✔	✔	✔	✔	✗	✔	✔	Compressed aramid fibres with a nitrile NBR rubber binder.
✗	✔	✗	✗	✗	✗	✔	✔	High quality cork-elastomer jointing.
✗	✔	✔	✗	✗	✗	✔	✔	Polychloroprene CR (neoprene) rubber jointing with a smooth finish.
✗	✗	✗	✗	✗	✗	✔	✔	Natural rubber NR jointing reinforced with polyester fibre.
✗	✔	✗	✗	✗	✗	✗	✔	Cellulose fibre-based sheet impregnated with plasticised gelatine.
✔	✔	✔	✔	✔	✔	✗	✔	98% pure exfoliated graphite sheet reinforced with stainless steel (S10) or nickel (N7) foil/s.
✔	✗	✗	✗	✗	✗	✗	✗	Glass fibre material reinforced with stainless steel wire and proofed with synthetic rubber.
✗	✔	✔	✔	✔	✔	✔	✔	Pliable rectangular cord of expanded PTFE with self-adhesive backing.
								Static sealing
n/a	n/a	n/a	n/a	n/a	✔	n/a	n/a	Tank lid packing with an ethylene-propylene core, spirally wound with PTFE tape, over-braided with polypropylene yarn jackets.
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Heat resistant tank lid packing with a synthetic rubber core, spirally wound with PTFE tape, and over-braided with glass yarn.
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Furnace door packing of exceptionally stable braided material that is non-irritating and non-hazardous to health.

James Walker

Gaskets & sheet jointings

Cut gaskets

Precision-cut gaskets are supplied to all international flange standards, and custom-made gaskets are swiftly produced to order. Sheet jointings include rubber, cork-elastomer, PTFE, compressed synthetic fibre jointings, expanded graphite and many others materials.

An *Express Service* for cut gaskets is available at many of our distribution outlets worldwide.

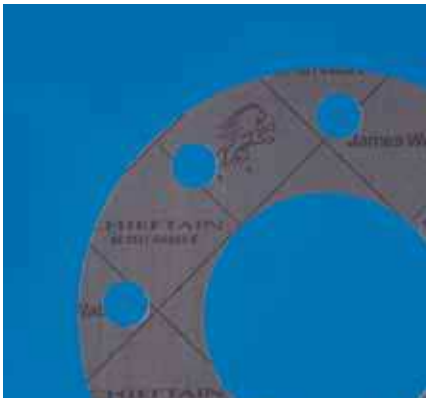
Precision-cut gaskets

Chieftain®

Our premium grade universal sheet jointing. Its formulation contains an advanced carbon fibre material and a nitrile (NBR) rubber binder. An anti-stick finish on both sides is standard.

- Carbon fibre for strength and stability.
- Multi-service marine flange sealing.
- Outstanding chemical and steam resistance.
- Service capabilities: 450°C maximum temperature, or 130bar maximum system pressure.
- User-friendly — easy to cut, handle and remove from flanges.

How supplied *(IMPA 81 12 80-85. ISSA 75.026.00/027.00)*
Precision cut gaskets to any shape, size and quantity. In sheets: 2.0m x 1.5m, 1.5m x 1.0m. Thicknesses: 0.5mm, 0.75mm, 1.0mm, 1.5mm, 2.0mm. Note: 3.0mm is also available, but is not recommended for gasket duties.



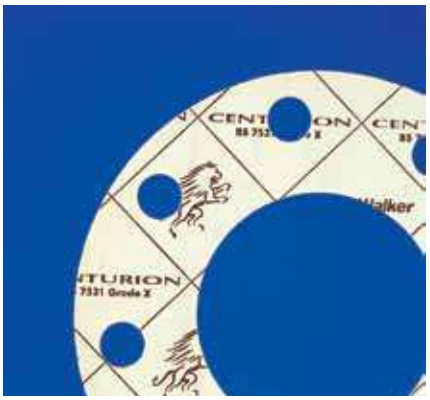
Chieftain®

Centurion®

This high-performance sheet jointing is based on glass and aramid fibres with a nitrile (NBR) rubber binder. An anti-stick finish on both sides is standard.

- Well proven on marine applications worldwide.
- Chemically and thermally stable for duties up to 440°C, or maximum system pressure of 120bar.
- Non-pigmented.

How supplied *(IMPA 81 12 80-85. ISSA 75.026.00/027.00)*
Sizes as for ***Chieftain®*** above.



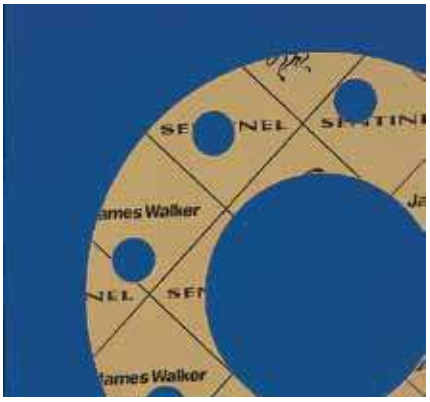
Centurion®

Sentinel®

Sentinel® is our general-purpose sheet jointing. It comprises glass and aramid fibres with a nitrile (NBR) rubber binder. An anti-stick finish on both sides is standard.

- Suitable for a wide range of duties up to 400°C, or maximum system pressure of 100bar.
- Offers outstanding performance for its class.

How supplied *(IMPA 81 10 71-76. ISSA 75.026.00/027.00)*
Sizes as for ***Chieftain®*** above.



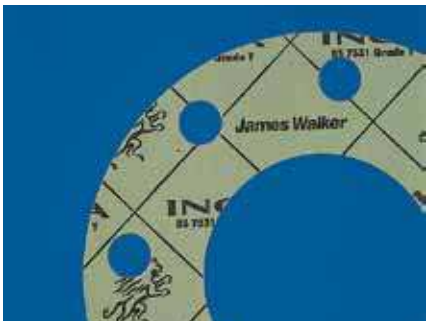
Sentinel®

Inca

A high quality, reliable, yet economically priced, jointing based on glass and aramid fibres with a nitrile (NBR) rubber binder. An anti-stick finish on both sides is standard.

- General-purpose jointing for medium duty marine applications.
- Suitable for steam, condensate, water, air, oils and solvents.
- Maximum duties: 350°C or 100bar system pressure.
- Value engineered to provide excellent value for money.
- Widely used in shipbuilding.

How supplied *(IMPA 81 10 91-96. ISSA 75.026.00/027.00)*
Sizes as for ***Chieftain***® on opposite page.



Inca

Supagraf® Expanded Graphite

Supagraf® is chemically expanded flake graphite that is calendered into sheets of controlled thickness. It is made without fillers or elastomeric content.

- Excellent chemical resistance.
- Wide temperature range — from cryogenic up to 400°C, and significantly higher under inert conditions.
- Excellent resistance to stress relaxation.
- Outstanding sealing integrity.
- Fire safe.


Supagraf® Plain

Available as:

- **Supagraf® Plain** jointing *(ISSA 75.032.00/033.00)* — pure expanded graphite.
- **Supagraf® Laminated S10** *(IMPA 81 10 25-29. ISSA 75.034.00/035.00)* — containing bonded layer/s of 50µm stainless steel for additional strength.
- **Supagraf® Laminated N7** — containing bonded layer/s of nickel foil for additional strength at high temperatures.
- **Supagraf® Tanged T10** — containing 0.1mm thick layer of tanged stainless steel to give a secure lock without adhesives. This provides exceptional resistance to blow-out and crushing.

Supagraf® Laminated S10

How supplied
Precision cut gaskets to any shape, size and quantity. In sheets: 0.5m x 1.0m, 1.0m x 1.0m, 1.0 x 1.5mm, and thicknesses from 1.0mm to 3.0mm — all dimensions dependent on specific grade.


Supagraf® Tanged T10

Nebar®

Nebar® is the generic name for our range of cork-elastomer jointings, which are available in a wide variety of material types for different applications. For marine duties we recommend:

- **Nebar® Brown** — for areas where vibration is present, such as main engine/generator inspection door joints, low duty pipelines, and access flanges in engine room and hull equipment. Maximum operating temperature in liquids is 110°C.

How supplied *(IMPA 81 11 01-04. ISSA 75.001.00)*
Precision cut gaskets to any shape, size and quantity. In sheets: 1.2m x 1.2m. Thicknesses from 0.75mm to 6.4mm.

Nebar® Brown

James Walker

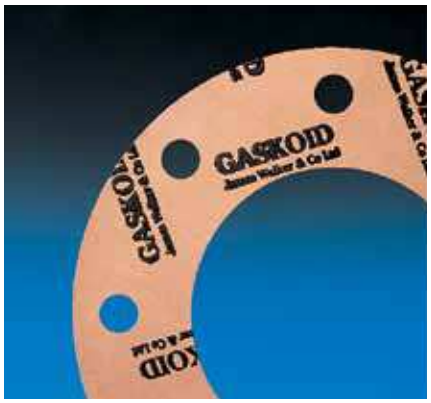
Gaskets & sheet jointings

Gaskoid

This is a cellulose-based vegetable fibre gasket material impregnated with gelatine. It is recommended for pump and gear casings where thin gaskets are desirable, and can be used with confidence in oil cargo pipeline and manifold flanges.

- Resistant to fuels, oils, and most organic solvents.
- Maximum operating pressure 10bar.
- Operating temperature range -20°C to +120°C.

How supplied *(IMPA 81 10 79-88)*
Precision cut gaskets to any shape, size and quantity. Sheets or rolls 1.0m wide to any length. Thicknesses 0.15mm to 3.2mm.



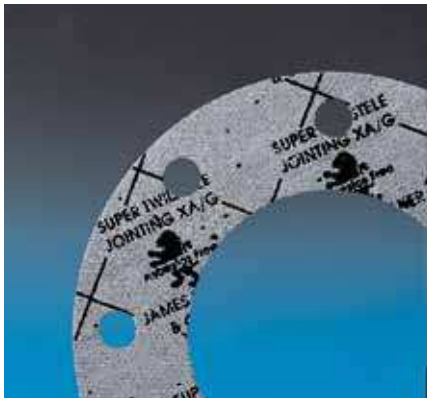
Gaskoid

Super Twilstele® XA/G

A glass-fibre based material reinforced with stainless steel wire and proofed with synthetic rubber. It is recommended for sealing exhaust flanges of diesel engines and gas turbines.

- For dry heat applications where working pressure is low.
- Maximum operating temperature 650°C.
- Tough and flexible material that can be cut with hand tools.

How supplied
Cut gaskets to any shape, size and quantity. Sheets 1.2m x 1.2m. Thicknesses in multiples of 1.3mm.


Super Twilstele® XA/G

Rubber sheeting

We offer a wide range of natural and synthetic rubber jointings, available with or without fabric reinforcement. The most popular grades for marine applications are:

- **Natural Rubber 263C** *(IMPA 81 11 11-22. ISSA 75.003.00)*
  — for use with hot and cold water, ethylene glycol, dilute acids and alkalis. Temperature range -30°C to +80°C.
- **Natural Rubber Insertion 332C** *(IMPA 81 11 51-66)*
  — natural rubber reinforced with polyester fibre. For use as flange gaskets with hot and cold water, ethylene glycol, dilute acids and alkalis, and silicone grease and oils. Temperature range -30°C to +80°C.
- **Neoprene 264C** *(IMPA 81 11 31-42. ISSA 75.005.00)*
  — for use with mineral-, silicone- and animal-based oils/ greases within temperature range -20°C to +100°C. Good resistance to ozone, sunlight and atmospheric ageing.
- **Neoprene Insertion 283C** — similar to 264C above, but contains a central layer of polyester scrim reinforcement.

How supplied
Cut gaskets to any shape size and quantity. Sheets 1.0m x 1.2m, 1.2m x 1.2m. Rolls 1.2m x 5m or 10m. Thicknesses from 1.5mm to 6mm, or to 25mm for Neoprene 264C.


Rubber sheeting

PTFE sheets & cut gaskets

Fluolion® is James Walker's trade name for its PTFE material grades and sealing products. Fluolion® is available in virgin form, and in many filled grades with enhanced mechanical qualities.

- **Fluolion® G25** — preferred grade for marine duties on cargo pipelines and manifolds. This contains 25% glass filler by weight to improve creep characteristics whilst maintaining outstanding chemical resistance. Temperature range -200°C to +260°C.

How supplied *(IMPA 81 25 31-47)*
Cut gaskets to any shape, size and quantity. Sheets 1.5m x 1.5m. Standard thicknesses 1.0mm, 1.5mm, 2.0mm, 3.0mm.

Fluolion® sheet gasket

Fluolion® Envelope Gaskets

Our Fluolion® Envelope Gaskets comprise a compressed non-asbestos fibre material encased in a thin cover of virgin PTFE.

- Gaskets combine the inertness of the PTFE with the mechanical properties of the resilient fibre material.
- Operational temperature range -80°C to +260°C.
- Maximum system pressure, typically 64bar.

How supplied
To fit all standard and non-standard flange designs.

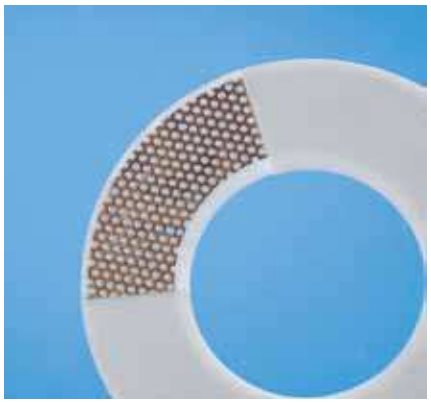
Fluolion® Envelope Gasket

PTFE Steel Lined Gaskets

These were designed in conjunction with ship owners operating chemical tankers where sealing performance on manifolds and cargo pipe lines is of the highest priority. They comprise stainless steel mesh moulded in PTFE.

- Superior sealing integrity over conventional PTFE gaskets.
- Outstanding chemical resistance — virtually inert.
- Re-usable, with extended service life.

How supplied
DIN and ASA sizes; for Classes 150 and 300 flanges.



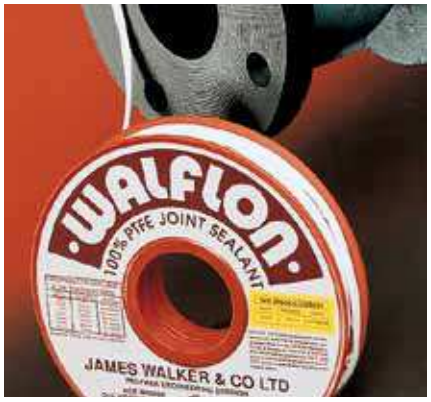
PTFE Steel Lined Gasket

Walflon Joint Sealant

Comprises 100% expanded PTFE rectangular cord with a self-adhesive backing to aid installation. This product is ideal for emergency flange sealing at modest temperatures and pressures when a standard gasket is unavailable.

- Forms 'instant' gasket when compressed between flanges.
- Conforms to irregular flange surfaces.
- Can be used with a very wide range of fluid media.

How supplied *(IMPA 81 25 61-66)*
Seven cross sections from 1.5mm x 3mm to 7mm x 20mm. Packs contain lengths of 5m to 30m, depending on section.



Walflon Joint Sealant

James Walker

Gaskets & insulation sets

Metaflex® Spiral Wound Gaskets

James Walker Metaflex® gaskets are designed to seal flanges where temperature, pressure, vibration or flow rates are beyond the capability of conventional jointing materials.

They are wound in V-section metal strip and a softer filler material so that flange surfaces are presented with a spiral of alternate metal/filler layers. Steel support rings on the inside or outside of the spiral wound element can be incorporated to permit the gasket to be used on flat or raised faced flanges under high system pressures.

- Marine applications include pipelines and pressure vessels on steam systems, hydraulic assemblies and heat exchangers.
- Recommended for boiler handhole and manhole assemblies.
- Standard materials — system pressures to over 350bar.
- Standard materials — temperatures with steam to 650°C.
- High temperature filler — temperatures to 1000°C.

How supplied
Available to all international flange standards. Profiles include circular, obround, square, oval and diamond. Gaskets for non-standard flanges are made to order.

Metaflex® Spiral Wound Gasket

Flange Insulation Sets

These sets comprise an electrically insulating flange gasket, plus insulating bolt sleeves and washers to prevent corrosion through bolts. They are used in cathodic protection systems and to eliminate galvanic corrosion. Our Flange Insulation Sets are a popular choice by shipyards for use in pipework systems where flange connections of dissimilar metals meet.

- Suitable for pipelines handling water, oil, steam or gas, operating at temperatures up to 200°C.
- Gaskets — neoprene-faced phenolic, or James Walker's Fluolion® Integra stabilised PTFE.
- Washers — reinforced phenolic or plated mild steel.
- Sleeves — polyester or DuPont Mylar®.

How supplied
Four designs of set that cater for many different flange sizes, specifications and arrangements — including those with 'O' ring grooves for handling very high pressures.

Flange Insulation Set

Introduction

Packed glands provide cost effective sealing for most valves, reciprocating and centrifugal pumps, and other rotary equipment. Our extensive range includes packings made from PTFE, aramid, glass fibres, graphite, metal foils, and natural fibres. Many contain advanced lubrication systems, and some are designed to work efficiently under poor mechanical conditions.

Significant advances in materials and lubricants, as well as packing design, means you will be able to select a packing to suit your application on board with the confidence that it will help to keep equipment operating reliably year-in and year-out.

Our Quick Reference Chart on pages 4 and 5 presents an overview of our products that are most suited to marine operations, with fuller details contained in this section.

James Walker has over 50 grades of packing

Duracom

This tough, yet economical, general purpose gland packing is cross-plaited from texturised aramid yarns. Each yarn is uniformly impregnated with PTFE dispersion and a silicone-based lubricant that resists chemical attack at high temperatures. It is designed for multi-service on pumps and valves in the marine sector.

- Excellent abrasion resistance.
- Long service life with minimal shaft wear.
- Resilient and responsive in operation.
- Compatible with media in the range pH 2-12 including water, oils, solvents, medium strength acids and alkalis.
- WRAS approved for hot and cold potable water duties to 85°C.

Duracom — aramid-based for abrasion resistance

Service capabilities

Valve stem duties
Temperature range: -100°C to +240°C
Maximum system pressure: 150bar
Centrifugal pumps & rotary equipment
Operating temperatures: As for valve stems
Maximum shaft speed: 18m/s *(refer to James Walker for higher speeds)*
Maximum system pressure: 20bar
Reciprocating pumps & rams
Operating temperatures: As for valve stems
Maximum rod speed: 1.0m/s
Maximum system pressure: 80bar.

How supplied *(IMPA 81 04 51-57/71-86. ISSA 75.214.00)*
All popular sections from 3mm to 25mm, boxed in 8m lengths.
Also supplied as preformed rings and sets.

James Walker

Compression packings

Fluograf®

Fluograf® is made totally from highly-developed GORE™ GFO® yarn that combines the benefits of ePTFE, graphite and high temperature lubricants.

- Applications cover most marine services — especially pumps and valves handling aggressive chemicals (IMO Class 1), steam up to 260°C, as well as high speed rotary duties.
- Extended service life — by up to 400% in harsh environments.
- High thermal conductivity for cool running.
- WRAS approved for hot and cold potable water duties to 85°C.

Service capabilities

Valve stem duties
Temperature range: -100°C to +260°C
Maximum system pressure: 80bar
Centrifugal pumps & rotary equipment
Operating temperatures: As for valve stems
Maximum shaft speed: 22m/s *(refer to James Walker for duties to 28m/s)*
Maximum system pressure: 10bar
Reciprocating pumps & rams
Operating temperatures: As for valve stems
Maximum rod speed: 1.0m/s
Maximum system pressure: 80bar *(refer to James Walker if duties are more severe)*

*Fluograf® compression packing — James Walker is the only UK manufacturer permitted to print **100% GFO®** on the product*

How supplied *(IMPA 81 03 81-95 + 81 05 21-35. ISSA 75.212.00)*
All popular sections from 3mm to 25mm, boxed in 8m lengths.
Also supplied as preformed rings and sets.

Fluolion® Filament L

This packing is cross-plaited from tough thermally stable PTFE yarn. It is impregnated and densified with particles of PTFE and contains an inert running-in lubricant.

- Chemically resistant high-performance packing for pumps and valves that handle IMO Class 1 cargoes.
- Chemically compatible with media in the range pH 0-14.
- Long life valve sealing with minimum maintenance.
- Clean and highly conformable for ease of fitting.

Service capabilities

Valve stem duties
Temperature range: -100°C to +250°C
Maximum system pressure: 150bar
Centrifugal pumps & rotary equipment
Operating temperatures: As for valve stems
Maximum shaft speed: 10m/s
Maximum system pressure: 25bar
Reciprocating pumps & rams
Operating temperatures: As for valve stems
Maximum rod speed: 1.0m/s
Maximum system pressure: 100bar

Fluolion® Filament L — high chemical resistance

How supplied *(IMPA 81 04 01-15. + 81 05 21-35. ISSA 75.210.00)*
All popular sections from 3mm to 25mm, boxed in 8m lengths.
Also supplied as preformed rings and sets.

Fluolion® Emulsion 2XA

A high performance packing, cross-plaited in a specially developed yarn that is spun from a blend of glass and other fibres, and impregnated with PTFE dispersion.

- Extremely cost effective in marine applications involving solvents, oils and petroleum products, water, effluent, dilute acids, and low pressure steam.
- Multi-service — can be used on many valves and pumps.
- Extended working life.
- Heat, wear and chemical resistant.

Service capabilities

Valve stem duties
Temperature range: -50°C to +290°C
Maximum system pressure: 150bar
Centrifugal pumps & rotary equipment
Operating temperatures: As for valve stems
Maximum shaft speed: 12m/s
Maximum system pressure: 25bar
Reciprocating pumps & rams
Operating temperatures: As for valve stems
Maximum rod speed: 2m/s
Maximum system pressure: 100bar

Fluolion® Emulsion 2XA — cost effective general purpose packing

How supplied *(IMPA 81 03 61-75. ISSA 75.204.00)*
All popular sections from 3mm to 25mm, boxed in 8m lengths.
Also supplied as preformed rings and sets.

Fortuna XA

This dense and flexible packing is plaited from a special spun yarn blended from four synthetic fibres, coated with graphite. The yarn is impregnated under controlled conditions of heat, pressure and vacuum, with a high viscosity petroleum-based lubricant, then coated with high purity graphite before plaiting.

- Recommended for high speed rotary pumps, boiler feed systems and other marine applications involving high temperatures with steam, oils and water.
- Well proven in boiler feed systems.
- Dense, flexible and responsive packing.
- Graphited yarns for low friction.
- Good thermal conductivity.

Service capabilities

Valve stem duties
Temperature range: -40°C to +315°C
Maximum system pressure: 20bar
Centrifugal pumps & rotary equipment
Operating temperatures: As for valve stems
Maximum shaft speed: 20m/s
Maximum system pressure: 15bar

Fortuna XA — high speeds and high temperature duties

How supplied *(IMPA 81 05 46-60. ISSA 75.202.00)*
All popular sections from 3mm to 25mm, boxed in 8m lengths.
Also supplied as preformed rings and sets.

James Walker

Compression packings

Fluolion® Sturntite

A dense, robust packing plaited from the finest quality flax yarns, impregnated with PTFE and petroleum-based grease. The flax yarns are selected for their strength, durability, rot resistance and lubricant retention properties.

- Designed for marine stern glands and rudder posts.
- Extremely well proven product.
- Long life with low leakage.
- Reduced shaft wear.
- Flexible for ease of fitting.

Service capabilities

Valve stem duties
Temperature range: -40°C to +95°C
Maximum system pressure: 100bar
Centrifugal pumps & rotary equipment
Operating temperatures: As for valve stems
Maximum shaft speed: 9m/s
Maximum system pressure: 25bar
Reciprocating pumps & rams
Operating temperatures: As for valve stems
Maximum rod speed: 1m/s
Maximum system pressure: 100bar

Fluolion® Sturntite — designed for marine duties

How supplied *(IMPA 81 07 01-12. ISSA 75.226.00)*
All popular square sections from 3mm to 22mm, boxed in 8m lengths; and 25mm to 50mm sections boxed in 9m lengths. Also supplied as split preformed rings and sets.

Fluocord

Resilient cord-type packing comprising a covering of PTFE tape spirally wrapped around a core of unsintered PTFE. This construction enables the packing to conform readily to any housing annulus whilst, at the same time, resisting extrusion.

This is a highly efficient maintenance expedient for the swift repacking of valves where temperatures and pressures are modest.

- Ideal for emergency application when the usual grade of packing material is unavailable.
- Often used for longer-term duties on non-critical services.
- Swift valve repacking — wrap several turns around a stem and tighten the gland follower.
- Each size readily deforms to fit a range of housings.
- Reduces the risk of valve stem corrosion.
- Can also be used to form emergency flange gaskets.

Service capabilities

Valve stem duties
Temperature range: -150°C to +250°C
Maximum system pressure: 35bar

Fluocord — for rapid valve packing

How supplied *(IMPA 81 25 51-54)*
Spools containing 2.5mm diameter cord by 24m length; 4mm x 12m; 5.5m x 6m; 7mm x 8m, or 10mm x 8m.

Graphite Filament Packing

A cross-plaited packing of high strength graphite yarn, impregnated with PTFE dispersion and graphite powder to increase density and sealing efficiency. It suits a very wide range of marine duties.

- Versatility with pumps, valve and reciprocating equipment, permits users to standardise on one packing for the majority of on board applications.
- Excellent resistance to chemical attack and high temperatures.
- Good thermal conductivity.
- Excellent lubricity.
- Dense and resilient for long operational life.

Graphite Filament Packing — highly versatile

Service capabilities

Valve stem duties
Temperature range: -50°C to +400°C
Maximum system pressure: 150bar
Centrifugal pumps & rotary equipment
Operating temperatures: As for valve stems
Maximum shaft speed: 20m/s
Maximum system pressure: 25bar
Reciprocating pumps & rams
Operating temperatures: As for valve stems
Maximum rod speed: 4m/s
Maximum system pressure: 50bar

How supplied
All popular square sections from 3mm upwards, boxed in 8m lengths. Also supplied as split preformed rings and sets.

Grafpak

A dense, high strength packing of cross-plaited premier quality graphite filament yarns. It is treated with pure graphite before and after plaiting, and further treated with special corrosion inhibitors.

- Recommended for control valves and stop valves on high temperature/pressure marine steam installations.
- Also used for duties with water, condensate, alkalis, acids, solvents and most chemicals.
- Suitable for a wide range of valve sealing duties.
- Low friction for low torque operation.
- Tough and resilient to fretting and extrusion.
- Chemically inert within the range pH 0-14.

Grafpak — for high temperature/pressure steam

Service capabilities

Valve stem duties
Maximum temperatures
Steam & oxidising conditions: +550°C
Non-oxidising: *(significantly higher; refer to James Walker)*
Minimum temperature: -50°C
Maximum system pressure: 150bar typical *(refer to James Walker for higher pressures)*

How supplied
All popular square sections from 3mm upwards, boxed in 8m lengths. Also supplied as split preformed rings and sets.

James Walker

Compression packings

Liongraf

A highly reliable pump and valve packing of cross-plaited construction, based on graphite and PTFE yarn that is thermally stabilised then lubricated with a silicone-free compound.

- Applications cover most marine pump and valve duties.
- Reduces on-board stock holding requirements, as it is very reliable and can be used on a wide range of equipment.
- Strong, durable and extrusion resistant.
- Excellent chemical resistance — pH 0-14.
- Low friction with high thermal conductivity.

Service capabilities

Valve stem duties
Temperature range: -100°C to +260°C
Maximum system pressure: 120bar
Centrifugal pumps & rotary equipment
Operating temperatures: As for valve stems
Maximum shaft speed: 17.5m/s
Maximum system pressure: 20bar
Reciprocating pumps & rams
Operating temperatures: As for valve stems
Maximum rod speed: 2m/s
Maximum system pressure: 80bar

Liongraf — the universal, economical packing

How supplied *(IMPA 81 03 81-95 + 81 05 21-35. ISSA 75.212.00)*
All popular square sections from 3mm to 25mm, boxed in 8m lengths. Also supplied as split preformed rings and sets.

Sextant

A firm yet flexible and compressible packing, plaited from good quality flax yarns impregnated with blended tallow lubricant then coated with mica. The flax yarns are selected for their strength, durability, rot resistance and lubrication retention properties.

- Reliable packing for marine stern glands and rudder posts.
- Also a general purpose pump and valve packing for sea water service.
- Graphite-free construction.
- Flexible and easy to fit.
- Lubricates and protects surfaces in aqueous duties.

Service capabilities

Valve stem duties
Temperature range: -40°C to +90°C
Maximum system pressure: 100bar
Centrifugal pumps & rotary equipment
Operating temperatures: As for valve stems
Maximum shaft speed: 3m/s
Maximum system pressure: 10bar
Reciprocating pumps & rams
Operating temperatures: As for valve stems
Maximum rod speed: 1m/s
Maximum system pressure: 100bar

Sextant — economical packing for marine duties

How supplied *(IMPA 81 07 01-12. ISSA 75.226.00)*
All popular square sections from 3mm to 32mm, boxed in 8m lengths, with larger cross sections available. Also supplied as split preformed rings and sets.

Supagraf® RibbonPak

Made from high purity graphite ribbons, plaited into a flexible length-form packing for convenient on-board maintenance.

- Marine applications include high-speed centrifugal pumps and rotary equipment.
- Excellent valve packing for steam and chemical duties, including IMO Class 1 cargoes.
- High chemical resistance across a wide temperature range.
- Flexible and compressible.
- Reduces inventories — suitable for many marine applications.

Service capabilities

Valve stem duties
Maximum temperatures
Steam: +550°C
Oxidising conditions: +450°C
Non-oxidising: +850°C
Minimum temperature: -200°C
Maximum system pressure: 250bar
Centrifugal pumps & rotary equipment
Operating temperatures: As for valve stems
Maximum shaft speed: 25m/s
Maximum system pressure: 25bar

Supagraf® RibbonPak — high speed rotary duties

How supplied *(IMPA 81 01 21-35 + 81 05 46-60)*
All popular square sections from 3mm upwards, boxed in 8m lengths. Also supplied as split preformed rings and sets.

Supagraf® RibbonPak M

Similar to Supagraf® RibbonPak *(above)*, but made with Inconel wire reinforced graphite ribbons, to provide additional strength plus resistance to pressure and extrusion.

- Marine applications include valves handling steam, condensate, fuels, oils, gases and chemicals.
- High chemical resistance across a wide temperature range.
- Chemically inert within the range pH 0-14.
- Low friction and high thermal conductivity.
- Reduces inventories for valve stem packing.

Service capabilities

Valve stem duties
Maximum temperatures
Steam: +650°C
Oxidising conditions: +450°C
Non-oxidising: +1000°C
Minimum temperature: -200°C
Maximum system pressure: 300bar

How supplied *(IMPA 81 05 81-95. ISSA 75.219.00)*
All popular square sections from 3mm upwards, boxed in 8m lengths. Also supplied as split preformed rings and sets.

Supagraf® Tape

Supagraf® exfoliated graphite in easy-to-use textured tape form. Can be supplied with a self-adhesive backing.

This widely used maintenance expedient is usually wound round a valve stem then compressed into the stuffing box.

- Suitable for valves handling high temperature steam, potable water, heat transfer media, petroleum products, hot waxes and oils, inorganic and organic acids, and alkalis.
- WRAS approved for hot and cold potable water duties to 85°C.
- Version with self-adhesive backing can also be used as emergency gasket replacement.

Service capabilities

Valve stem duties
Temperature range: -200°C to +500°C
Maximum system pressure: 70bar

How supplied *(IMPA 81 01 51/52. ISSA 75.221.00)*
Cassettes containing 0.5mm thick tape: 10mm wide x 10m long, 15mm x 10m, 20mm x 15m, 25mm x 15m. Also available with self-adhesive backing.

James Walker

Compression packings

Supeta XA

A dense, resilient packing plaited from high quality texturised glass yarns. Each fibre of the yarn is coated with a special graphite lubricant to reduce fretting when compressed. The graphited glass yarns are further lubricated with a heat-resistant petroleum based compound, then finally coated with high purity flake graphite prior to braiding.

- Marine applications include pumps and valves handling steam, water, oils or gases.
- Economical general purpose packing.
- Temperatures up to 350°C including steam.
- Multi-service capability — reduces inventories.

Supeta XA — economical and versatile

Service capabilities

Valve stem duties
Temperature range: -40°C to +350°C
Maximum system pressure: 70bar
Centrifugal pumps & rotary equipment
Operating temperatures: As for valve stems
Maximum shaft speed: 10m/s
Maximum system pressure: 10bar
Reciprocating pumps & rams
Operating temperatures: As for valve stems
Maximum rod speed: 1m/s
Maximum system pressure: 70bar

How supplied *(IMPA 81 13 21-32)*
All popular square sections from 3mm to 25mm, boxed in 8m lengths. Also supplied as split preformed rings and sets.

Rover Medium Soft Cotton

A superior quality packing, plaited from fine cotton yarns of soft texture. Each yarn is uniformly impregnated under heat and pressure with a petroleum-based grease and graphite prior to plaiting.

- Recommended marine applications include pumps and valves handling cold water or oil.
- Good flexibility.
- Economical.
- Easy to cut and fit.

Rover Medium Soft Cotton — for oil and water

Service capabilities

Valve stem duties
Temperature range: -40°C to +90°C
Maximum system pressure: 50bar
Centrifugal pumps & rotary equipment
Operating temperatures: As for valve stems
Maximum shaft speed: 7m/s
Maximum system pressure: 10bar
Reciprocating pumps & rams
Operating temperatures: As for valve stems
Maximum rod speed: 1m/s
Maximum system pressure: 50bar

How supplied *(ISSA 75.223.00)*
All popular square sections from 3mm to 25mm, boxed in 8m lengths. Also supplied as split preformed rings and sets.

Ramiex

A versatile high-performance packing, cross-plaited from top quality bleached ramie fibres that are impregnated with PTFE dispersion. Ramie, a tropical nettle plant, produces fibres of extreme durability and greater strength than flax, cotton or hemp.

- Recommended for high pressure reciprocating pumps working with water containing highly abrasive particles.
- Also cooling water systems and sea water systems.
- Excellent resistance to extrusion, abrasion and rot.

Service capabilities

Valve stem duties
Temperature range: -30°C to +120°C
Maximum system pressure: 250bar
Centrifugal pumps & rotary equipment
Operating temperatures: As for valve stems
Maximum shaft speed: 17.5m/s
Maximum system pressure: 20bar
Reciprocating pumps & rams
Operating temperatures: As for valve stems
Maximum rod speed: 2m/s
Maximum system pressure: 250bar *(can be extended to 700bar with special support rings on some applications)*

Ramiex — our strongest natural fibre packing

How supplied *(IMPA 81 02 21-35. ISSA 75.228.00)*
All popular square sections from 3mm to 25mm, boxed in 8m lengths. Also supplied as split preformed rings and sets.

Valcor® Hi-Temp

This innovative non-hazardous product is braided as a gland packing for high efficiency sealing at up to 1000°C constant on static and slow rotary duties. The material also fulfils other high temperature duties in various forms of construction.

- Applications include seals for Class 60 fire doors and furnace doors.
- Also gland packing for stems of valves controlling hot gas flow at low pressures.
- Non-hazardous alternative to normal ceramic fibre packings.

Health & Safety considerations
Average diameter of the silica fibre used in Valcor® Hi-Temp is 9µm, which is considered ***non-hazardous to health***. No protection is required for breathing, eye, hand or body by the World Health Organisation or European Union during the material's normal handling, storage and use.

Normal hard ceramic fibres, as often used in the manufacture of gland packings for duties at very high temperatures, are around 3µm diameter. These are now considered ***hazardous to health***, with WHO and EU restrictions applied to the products that contain them.

Valcor® Hi-Temp — 1000°C with non-hazardous fibre

Service capabilities

Static duties — door seals
Temperature range: -50°C to +1000°C constant, with excursions to +1100°C
Maximum pressure: Not rated
Valve stem duties
Temperature range: -50°C to +1000°C constant, with excursions to +1100°C
Maximum system pressure: Not rated

How supplied
Densely braided compression packing (square, round or rectangular) from 3mm to 100mm sections to any length. Also available as braided insulation sleeves, webbing tapes, ladder tapes, twisted ropes, lagging ropes, blanket and paper.

James Walker

Tank lid seals

Tankatite® 440

This product has a resilient ethylene-propylene (EPDM) core, spirally wrapped with PTFE tape and surrounded by successive braided jackets of inert polypropylene yarn. The braided structure is spirally wrapped with further layers of PTFE tape to provide an impermeable barrier to liquids and gases, then finally enclosed in a robust, abrasion resistant braid of PTFE yarns.

It is recommended for sealing tank lids, main hatches, inspection and cleaning covers of tankers carrying all known bulk liquid cargoes in all IMO Classes.

Tankatite® 440 — for bulk liquid cargoes in all IMO Classes

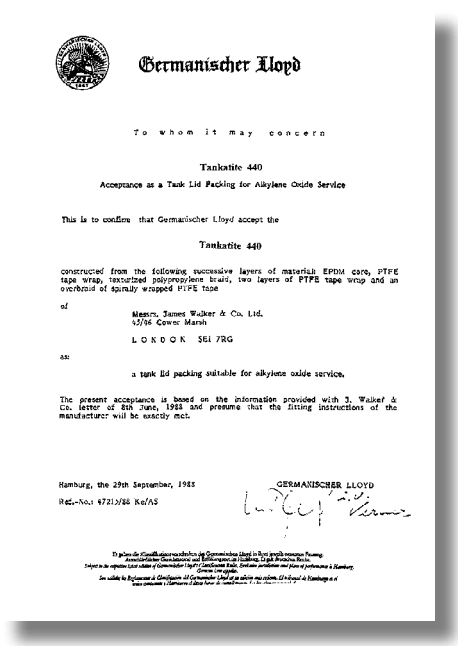
- Meets US Coast Guard requirements for lid sealing of hazardous cargoes.
- Germanischer Lloyd certificated for alkylene oxide services — ethylene-propylene core is resistant to alkylene oxides.
- Pressure tight beyond Lloyd's and DNV test criteria.
- Provides gas-tight environmental seal.
- Protects cargo from ingress of sea water.
- Withstands repeated opening/closing cycles.
- Unaffected by steam and other tank cleaning systems.
- Suitable for smooth or rougher recesses in stainless steel lids.
- Chemically inert to media in the range pH 0-14.

How supplied *(IMPA 81 07 21-29. ISSA 75.209.00)*
Any square or rectangular section of 12.5mm upwards, supplied in length form or as endless rings to fit specific tank lid recesses.

Service capabilities

Static duties — tank lids
Temperature range: -50°C to +120°C
Maximum tank pressure: 0.8bar

US Coastguard acceptance for alkylene oxide services



Germanischer Lloyd

To whom it may concern

Tankatite 440

Acceptance as a Tank Lid Packing for Alkylene Oxide Service

This is to confirm that Germanischer Lloyd accept the

Tankatite 440

constructed from the following successive layers of materials EPDM core, PTFE tape wrap, texturized polypropylene braid, two layers of PTFE tape wrap and an overbraid of spirally wrapped PTFE tape

of

Messrs. James Walker & Co. Ltd.
43/86 Cower Marsh
LONDON SE1 7RG

as

a tank lid packing suitable for alkylene oxide service.

The present acceptance is based on the information provided with J. Walker & Co. letter of 8th June, 1988 and presume that the fitting instructions of the manufacturer will be exactly met.

Hamburg, the 29th September, 1988
Ref.-No.: 6721/88 Ke/AS

GERMANISCHER LLOYD

Germanischer Lloyd certificated for alkylene oxide services

Lloyd's Register

Lloyd's Register certificated for LR classed chemical tankers

Tankatite® 660

This heat resistant grade of Tankatite® is similar in construction to Tankatite® 440 *(page 20)*, but has braided jackets of high quality glass yarns instead of polypropylene.

It is recommended for sealing tank lids that cover heated cargoes, such as sulphur or molten bitumen/asphalt, that need to be transported at elevated temperatures to prevent solidification in the tank.

- Gas tight environmental seal for heated cargoes.
- Suitable for all known bulk liquid cargoes in all IMO Classes.
- Protects cargo from ingress of sea water.
- Withstands repeated opening/closing cycles.
- Unaffected by steam and other tank cleaning systems.
- Suitable for smooth or rougher recesses in stainless steel lids.
- Chemically inert to media in the range pH 0-14.

Tankatite® 660 — for heated cargoes

Service capabilities

Static duties — tank lids
Temperature range: -50°C to +230°C
Maximum tank pressure: 0.6bar

How supplied
Any square or rectangular section of 12.5mm upwards, supplied in length form or as endless rings to fit specific tank lid recesses.

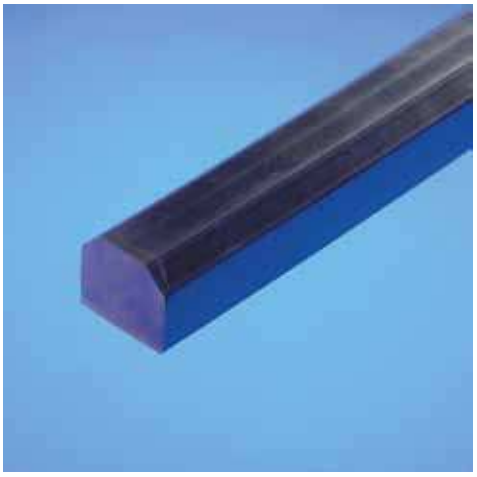
Hachsele

A very durable seal, developed originally for cargo covers and access hatches of seagoing tankers. It is also recommended for watertight doors, ullage plugs, skylights and other comparable marine duties.

This product features a construction of solid nitrile/chloroprene (NBR/CR) synthetic rubber, with chamfered corners to assist installation and cater for troublesome welds at the base of the fabricated recess.

- Resistant to oils and hydrocarbons for IMO Class 3 cargoes.
- Suitable for the majority of IMO Class 2 cargoes.
- Ready response to clamping pressure.
- Impressive recovery from clamping loads.
- Chemically compatible with fluid media in the range pH 4-12.

How supplied
Available in square or rectangular cross sections from 12mm square to 63mm square, in lengths up to 45m depending on cross section. Also supplied as moulded rings to fit specific recesses.



Hachsele — solid synthetic rubber seal for cargo covers, access hatches, watertight doors…

James Walker

Expansion joints & bellows

Expansion joints

These are made entirely of non-asbestos materials. Their composite construction provides durability with increased flex fatigue life over comparable systems, and avoids loss of insulation due to shake down or compaction.

Comflex® Gas Turbine exhaust expansion joint
- Accepts high temperatures, large movements, pulsations and vibration. Grades rated at up to 1000°C.

Comflex® Gas Turbine inlet expansion joint
- For long life, with excellent sound attenuation and particulate free inner surface.

Comflex® multi-layer fabric wrap (Speedwrap)
- An emergency measure for failed expansion joints that often becomes the permanent solution.

How supplied
Comflex® Gas Turbine exhaust and inlet expansion joints — made to order to any shape and size. Comflex® multi-layer fabric wrap (Speedwrap) — ex-stock UK in widths 250mm, 375mm, 500mm, to any length.

Flexible bellows

Fabric reinforced bellows
- Vulcanised construction in heavy duty elastomer-proofed fabric. Used as heavy duty protectors on hydraulic rams and other dynamic systems.

Metallic bellows
- Highly engineered products in many alloys — contain system pressure in pipes and absorb thermal movement and vibration.

Rubber bellows
- Absorb displacement and motion between flanges.

PTFE lined rubber bellows
- For chemical environments.

How supplied
Fabric reinforced bellows and PTFE-lined rubber bellows — made to order. Metallic bellows — standard axial, lateral and angular ranges; plus custom-designed. Rubber bellows in nitrile (NBR) or ethylene-propylene (EPDM) synthetic rubber— stock sizes from 25NB to 400NB; plus custom built to 2500NB.

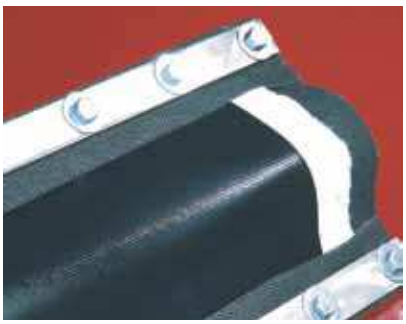
Bulkhead penetration seals

- Comflex® penetration seals — kit form items for fitting to an existing pipe penetrating a boiler casing wall or bulkhead.

How supplied
Special designs to accommodate banks of pipes. Available in fabric, or metallic materials for demanding duties.

Comflex® GT exhaust expansion joint

Comflex® GT inlet expansion joint



Comflex® multilayer fabric wrap

Fabric reinforced bellows

Metallic bellows

Radial lip seals

Walkersele® radial lip seals

- James Walker's family of high efficiency lip seals for rotary applications is extensively proven worldwide for cost effective bearing protection.
- Marine applications for these highly proven rotary seals include stabilisers, tunnel thrusters, gear boxes, bow thrusters, stern glands, shaft bearings and distribution boxes.

Walkersele® radial lip seals

Walkersele® OSJ-2

- James Walker's patented OSJ® technique for On-Site Joining minimises downtime by allowing seals to be installed without stripping down the housing. This can save days of dry docking for vessels on tight schedules — without compromising seal efficiency or operational life. Installation service and customer training are available.

Walkersele® OSJ-2

How supplied

Walkersele® radial lip seals — in 10,000 type/size combinations, available on *Express Service* for vessels around the world. Walkersele® OSJ-2 — kits supplied for shaft sizes from 60mm to 2000mm in D6, D6/DL and D7 designs for marine applications, with *Express Service* available worldwide.

Hydraulic sealing products

- A complete family of well-proven seals for all hydraulic applications — from small actuators to giant jacks — backed with full technical support.
- Offering low friction with reduced leakage.
- Designed for optimum performance and long trouble-free life — with mineral-based or fire-resistant fluids.
- Also ranges of wipers, scrapers and bearing strips.
- Customised sealing kits produced for the manufacture or maintenance of any specific hydraulic system. Kits contain all sealing items required — bagged and branded, or in blister packs with installation details.

Hydraulic seal range

How supplied

Seven designs of rod/gland seal and five designs of piston seal, supplied to industry and international standard sizes. *Express Service* available worldwide.

'O' rings

- Precision moulded in over 100 elastomer grades.
- All sizes to industry and international standards, including BS 1806 and SAE AS 568 inch sizes; BS 4518, ISO 3601-1 and DIN 3771 metric sizes; and Japanese industry sizes.
- Commercial grade rings and kits for non-critical duties.
- Special grades available for cylinder liner sealing applications.

'O' rings

How supplied

Vast stocks held for immediate despatch worldwide, with non-stocked rings on short lead times.

James Walker

Pipe supports & decking

Tico® Pipe Grips

This design of pipe grip fully isolates the pipe from the structure to prevent wear, as well as accepting vibration and thermal movement. The serrated inner face on the grip-type design provides an unrivalled level of cushioning and support.

- Safe, reliable and easy to install.
- Approved for marine, offshore and land-based applications.
- Rubber parts in fire retardant material that will not support the surface spread of flame, and has low evolution of toxic gases.
- Operational temperature range -50°C to +120°C continuous or +150°C intermittent.
- Designed for use with stainless steel and Cu/Ni pipes.
- Help to prevent electrolytic corrosion.

How supplied
Available in a wide range of standard sizes.

Tico® Pipe Grips

Tico® Clip Strip

A range of products that provides the highest levels of isolation from shock and vibration between pipework and hanger.

- Effective and economical pipe isolation.
- Approved for marine, offshore and land-based applications.
- Cork-elastomer strip with raised shoulders for positive location.
- Helps prevent electrolytic action between dissimilar metals.
- Three grades rated for use at continuous temperatures — S/CL to 100°C; HT/CL to 150°C; VHT/CL to 300°C.

How supplied
Wide range of sizes to suit most strap widths. Special types are available, including versions with increased fire retardancy.

Tico® Clip Strip

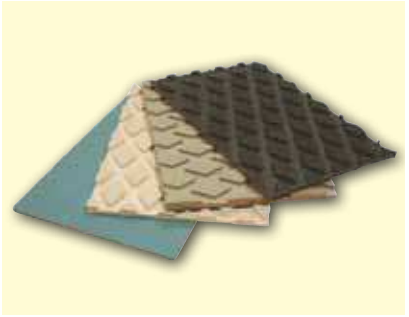
Flooring & decking

Treadmaster® Original anti-slip decking
- Excellent slip resistance with durability and comfort in wet and dry conditions.
- Unaffected by exposure to sea water.
- Easily bonded to metal, wood and fibreglass surfaces.

Treadmaster® ER (engine room grade)
- Enhanced resistance to mineral oils — for engine rooms and other below deck areas where machinery is used.

Treadmaster AF/DB (diving board grade)
- Anti-slip in wet or dry, anti-fungal and non-abrasive to skin.
- For diving boards, steps, stairs and lifeguard chair platforms.

How supplied
Treadmaster® Original and ER grades in sheets 1200mm x 900mm. AF/DB in sheets 1600mm x 1000mm. Treadmaster® Original available as diamond pattern (DP) or smooth pattern (SP), in a range of restrained colours. AF/DB has a range of restrained colours. Treadmaster® ER is coloured black.



Treadmaster® Original anti-slip decking

Treadmaster® ER anti-slip decking

General maintenance items

Molyon Grease

A product of soft consistency, comprising a blend of non-melting petroleum greases (bentone type) and fine particles of pure high quality molybdenum disulphide.

- For lubricating compression packing and seals prior to installation for duties with non-corrosive media or environments.
- Also a high quality general lubricant with good adhesion and spread on metal surfaces.
- MoS_2 film remains on surface when grease carrier has gone.
- Compatible with most engineering materials, ***excluding*** items made from natural rubber, butyl or ethylene-propylene.
- Temperature range: -20°C to +150°C.

Molyon Grease

How supplied
Packs of 10 x 175g tubes, or 1kg tubs.

Graphite Grease

A thick paste of non-melting petroleum grease (bentone type) blended with a lubricating grade of natural fine graphite particles.

- For lubricating compression packing and seals prior to installation for duties with non-corrosive media or environments.
- Also a reliable general lubricant and anti-seize compound, with good tack/adhesion on metal surfaces.
- Contains 50% graphite by weight.
- Temperature range: -20°C to +150°C.

Graphite Grease

How supplied
Packs of 10 x 200g tubes, or 1kg tubs.

Silicone Grease

Translucent gel that combines the properties of silicone fluid with a degree of structure to provide a stiff consistency.

- A versatile grease with excellent lubricating performance.
- For lubricating packings and seals prior to installation.
- WRAS listed for cold potable water duties — suitable lubricant for water taps and valves.
- Safe to use with most rubbers and plastics, ***excluding*** items made from silicone or fluorosilicone.
- Temperature range: -50°C to +200°C.

Silicone Grease

How supplied
Packs of 10 x 175g tubes or 1kg tubs.

Copper Anti-Seize Compound

High purity anti-seize lubricant in paste form. Comprises copper and graphite particles in a high melting point petroleum carrier. Contains no lead.

- Helps to prevent seizing, galling, thread damage and high friction problems on bolts, valve stems, pipe fittings, press fits…
- Good adhesion and easy to apply by brush — excess can be wiped free.
- Maximum temperature: 1000°C.
- Flash point of carrier: 240°C.

Copper Anti-Seize Compound

How supplied
Packs of 10 x 200g tubes or 500g tubs.

James Walker

General maintenance items

Replacement seals & gaskets

For customers' convenience, we maintain a library of charts that give details of James Walker items against original part numbers for a wide range of marine equipment. Our charts include:

- Marine diesels
- Compressors
- Purifiers

How supplied
Please state equipment and original part number for items required.

'O' ring kits

Three boxed kits that represent excellent value for money in terms of quantity, quality and convenience. With these kits, an engineer has a good selection of 'O' rings constantly available for many on-board applications. The boxes readily show when supplies are running low of a particular ring or cord size.

Service kit — 'O' ring cord *(JW order code ZL000275)*
- Contains 14 off 2m lengths of 70 IRHD nitrile NBR rubber cord: 1.78mm (0.070 inch) diameter, 2.0mm, 2.4mm, 2.62mm (0.103 inch), 3.0mm, 3.5mm (0.138 inch), 4.0mm, 4.5mm, 5.0mm, 5.33mm (0.210 inch), 5.7mm, 6.0mm, 6.99mm (0.275 inch), 8.0mm.
- Tape measure, retractable blade knife, splicing aid, adhesive for forming 'O' rings, and full instructions.

'O' ring sealing kit — metric sizes *(JW order code ZL000186)*
- Contains 404 total of 70 IRHD nitrile NBR rubber 'O' rings.
- In 30 sizes ranging from 3mm ID x 2mm section, to 45mm ID x 4mm section.

'O' ring sealing kit — inch sizes *(JW order code ZL000097)*
- Contains 382 total of 70 IRHD nitrile NBR rubber 'O' rings.
- In 30 sizes ranging from 1/8 inch ID x 1/16 inch section, to 1¾ inch ID x 3/16 inch section.

(Note: Hardness values quoted are nominal)

Packing extractors

These highly effective extraction tools have long flexible shanks to gain access to glands in difficult positions. The cork-screw tips are designed to embed firmly in all types of length-form packing, including badly worn and hardened products. T-handle provides good grip for both screw action and efficient removal of packing.

Service capabilities

- Size 1 — 5mm and 6.5mm packings.
- Size 2 — 8mm and 10mm packings.
- Size 3 — 11mm, 12.5mm and 16mm packings.
- Size 4 — 20mm packings and larger.

How supplied
Fixed-tip extractors — individual sizes, or as full set Sizes 1-4.
Replaceable-tip extractors — individual sizes, or as full set of Sizes 1-4.
Replacement tips — supplied individually.

General maintenance items

Compact Gasket Cutter

A precision made hand tool for efficient on-board cutting of circular flange gaskets from compressed fibre jointings, rubber and cork-elastomer sheet.

- Readily adjustable for diameters from 20mm (3/4 inch) to 600mm (24 inch).
- Longer extension bar available for cutting diameters up to 900mm (35 inch).
- Dual metric/inch calibration.
- Cuts compressed fibre jointings up to 5mm thickness.
- Cuts rubber and cork-elastomer sheets up to 12mm thickness.

How supplied
Boxed kit containing main body assembly, extension bar, ten cutting blades and operating instructions. Cutting board, longer extension bar and straight edges are available as optional extras.

Compact gasket cutter

Pipe & valve insulation

A practical range of glass fibre lagging products to reduce heat loss from pipe and valve surfaces.

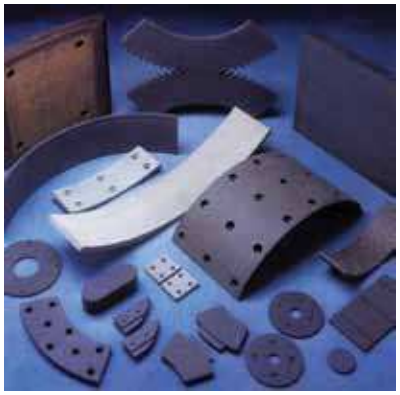
- **Glass fibre valve bonnet covers** — pre-formed valve covers complete with fasteners, in standard sizes.
- **Glass fibre lagging cloth 491GL** — 1m width, in lengths of 2.5m, 10m, 25m and 50m.
- **Glass fibre lagging rope 312GL** — to suit maximum marine service temperatures. 12.5mm to 50mm diameter in 30m coils; 3.2mm, 6.5mm and 10mm diameter in 3kg spools.
- **Glass fibre pre-formed lengths** — pipe insulation in length form complete with fasteners to suit required pipe diameters.

How supplied
As stated dimensions, or to fit specific pipes diameters and standard valves.

Miscellaneous

Brake linings
- Ranges of non-asbestos brake linings to fit the majority of marine winches and other equipment that requires a friction lining.

Washers
- Red fibre washers 197RF — in assorted sizes.
- Copper washers 197SC — in assorted sizes.



Brake linings

James Walker

Plant refurbishment & engineering

Plant services

We have provided equipment refurbishment and re-engineering services to the marine industry since the early 1980s. Our highly trained engineers will expertly refurbish customers' equipment, either in workshops or on-board.

We offer a 24-hour/seven-day week service through our sites in:
- Netherlands
- Australia
- New Zealand
- Singapore

(See pages 30-31 for contact addresses.)

Refurbishment services cover:
- Pumps — all makes and types.
- Mechanical seals — all makes and types.
- Valves — all makes and types.
- Safety relief valves.

Pump reconditioning

Pumps are fully reconditioned by our workshops in Singapore and the Netherlands. This includes manufacturing replacement components when the originals are obsolescent, and modifications to pumps and rotary equipment when requested.

- Application of *best engineering practice* to plant reconditioning.
- Metal spraying and coating.
- Operations undertaken on board and in our own workshops.
- Expert advice on improved sealing and products for your plant.
- Balancing of rotary assemblies.
- Hydrostatic testing of reconditioned units.

Mechanical seal refurbishment

Many of our companies around the world supply specialised reconditioning services to keep mechanical seals in prime condition. We also supply new units at competitive prices to fit pumps of Asian, American or European manufacture.

- All types, sizes and makes expertly refurbished.
- Stocks held of spare parts and face materials, enabling a number of seals to be reconditioned in 24 hours and returned to your vessel to avoid delays in port.
- We use OEM spares or James Walker items of same or improved specification.
- Seals can be boxed and coded for on-board identification.
- We also undertake seal failure analysis, and re-engineering for improved performance.

Our experience with pumps and mechanical seals enables us to provide sealing solutions for every marine application — from boiler pumps and cargo pumps, to the upgrading of seawater pumps from compression packings to mechanical seals.

Plant refurbishment & engineering

Valve reconditioning

At our workshops in the Netherlands and Singapore we recondition all makes of valves — often during a vessel's time in port. Our skills and equipment cover ball valves, butterfly valves, globe valves, gate valves, control valves and safety valves.

Ball valves — expert services
- Grinding and polishing of stainless steel balls to roundness within 0.01mm, and surface finish to 0.02μm RA.
- In-house manufacture and coating of stainless steel balls.
- Valve modifications.

Butterfly valves — expert services
- Manufacture of new seats in various grades of filled PTFE.
- Work on fire safe valves.
- In-house machining of parts and reconditioning of valve discs.
- Valve modifications.

Plug valves — expert services
- Manufacture of new PTFE sleeves.
- Manufacture of new plugs.
- Valve sizes from ½-inch to 12-inch NB.

Safety valves — expert services
- Reconditioning and testing to classification authority requirements.
- Resetting of opening pressure.
- Witness and certification of correct functioning by classification authority inspectors, carried out at our workshops.

Valve testing — expert services
In the Netherlands we have certified equipment for pressure testing from vacuum to 200bar with air, and to 1000bar with hydraulics.

James Walker

James Walker — International marine contacts

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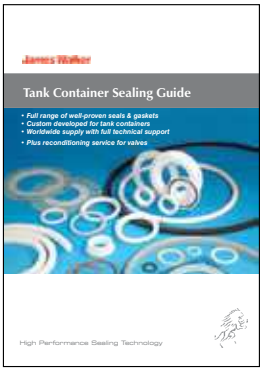
Information

Health warning: *If PTFE or fluoroelastomer (eg, FKM, FFKM, FEPM) products are heated to elevated temperatures, fumes will be produced which may give unpleasant effects, if inhaled. Whilst some fumes are emitted below 250°C from fluoroelastomers or below 300°C from PTFE, the effect at these temperatures is negligible. Care should be taken to avoid contaminating tobacco with particles of PTFE or fluoroelastomer, or with PTFE dispersion, which may remain on hands or clothing. Material Safety Data Sheets (MSDS) are available on request.*

Information in this publication and otherwise supplied to users is based on our general experience and is given in good faith, but because of factors which are outside our knowledge and control and affect the use of products, no warranty is given or is to be implied with respect to such information. Specifications are subject to change without notice. Statements of operating limits quoted in this publication are not an indication that these values can be applied simultaneously.

James Walker®

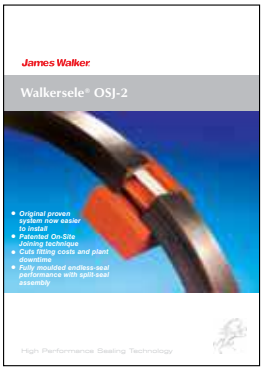
Please ask for these free guides. Many of them can be downloaded in pdf format from www.jameswalker.biz.



Tank containers

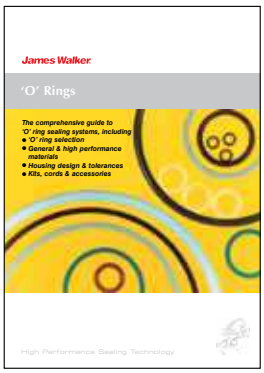
Compression packings

Gaskets & jointings



On-Site Jointing of Walkersele® radial lip seals

Hydraulic sealing products



'O' rings

Comflex® expansion joints & bellows

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