

COMIG MARINE

SEALS | PACKINGS | GASKETS | SEAT RINGS

X. & F. Andrikopoulos & Co.

High Quality & High Performance Sealing Solutions for Marine Applications



- Hydraulic Seals & "O" Rings
- Oil & Rotary Seals
- Packings & Tank Lid Seals

- Jointing Sheets
- Gaskets (SWG, Soft Cut, Envelope)
- Pipe & Valve Thermal Insulation

- PTFE (Teflon®) Seat Rings & Seals
 - PTFE Seat Rings for Valves
 - PTFE Wear/Mouth/Seal Rings for Pumps

- PTFE Gaskets/Packings/V-packings
- PTFE Piston Seals for Valve Actuators
- PTFE Sheets

www.comig.gr





COMIG (X. & F. Andrikopoulos & Co.) est. 1964, is a Greek company, distributing a vast range of high quality & high performance marine/industrial static & dynamic sealing products to every sector of the Greek, Cypriot & Balkans industry.

- Oil & Gas
- Marine
- Metallurgical & Mining
- Energy
- Construction
- Cement
- Pharmaceutical
- Food & Beverages
- Chemical
- Manufacturing et. al.

COMIG is the official distributor of European & Japanese worldwide leaders in sealing technology (Freudenberg Sealing Technologies, Merkel, NOK, Flexitallic, Hunger, FP, Frenzelit, FMI, Burgmann Packings et al.).

In addition, COMIG MARINE FABRICATION SERVICE can produce & deliver within 24hours, customised (non-standard) seals based on the FREUDENBERG XPRESS Solutions (CNC Manufactured Seals/Ultra-Modern Manufacturing Technologies).

COMIG PRODUCT PORTFOLIO: Hydraulic Seals & O-rings, Oil & Rotary Seals, PTFE (Teflon®) Seat Rings for Valves, PTFE Seals (Wear/Mouth Rings & Cargo Seals for Pumps, Piston Seals, Gaskets, Sheets), Compression Packings, Tank Lid Packings, Gaskets (Spiral Wound, Soft Cut, Envelope), Jointing Sheets, Pipe & Valve Thermal Insulation.

"Quality, Performance & Price you can rely on"

Flexitallic

 **FREUDENBERG**
INNOVATING TOGETHER

 **Frenzelit**

NOK

FMI
ITALIAN SEALING SOLUTIONS

Burgmann Packings



HUNGER
Dichtungen



DICHTOMATIK
Any seal. Any time.

a brand of  **FREUDENBERG**

"Global supply: An international network is under development"

MISSION: COMIG is committed to sealing integrated solutions for marine/industrial applications

Our products & services comprise

- Best quality & performance standards at competitive prices
- Innovation
- Flexibility
- Immediate response to industry needs (vast & diversified stock in our warehouses & Xpress service)
- Integrity under the toughest conditions
- Certifications for the quality & environmental management as per official regulations



Hydraulic Seals

From small actuators & cargo cranes to hatch covers & giant jacks

Our family of products provides the optimum sealing solutions for **all marine hydraulic applications**. Each product has been developed and proven to give:

- Optimum equipment performance
- Reduced leakage
- Low friction operation
- Long trouble-free operating life

Product types: Piston seals, Rod seals, Guides, Wipers, Static Seals, Seals for Rotating & Swiveling Movement, Back up rings, Special Seals.

Materials: NBR, Hydrogenated NBR (HNBR), Silicone (VMQ), Viton® (FKM), Ethylene propylene diene natural rubber (EPDM), Polyurethane, POM (Polyoxymethylene), PA (Polyamide), PTFE, TPE (Thermoplastic Polyester Elastomer), PE (Polyethylene), PEEK (Polyetheretherketone), Fabric-base laminate.

• **Sealing kits for HATCH COVERS, HOSE HANDLING CRANES, GRABS, HYDRAULIC CYLINDERS:** MacGREGOR, TTS, SMAG, OSAKA, MITSUBISHI, NORBRO, SAFCARD, WARTZILA, ROLLS-ROYCE, KAWASAKI et al.

• **Sealing kits for VALVE ACTUATORS:** SCANA SKARPENORD, BLOOMFOSS, NORDISK, DANFOSS et al.

Xpress service available



Comig Marine is offering original German (FREUDENBERG), Japanese (NOK) Hydraulic & Pneumatic Seals

Pneumatic Seals

Product types: Piston seals, Rod seals, Guides, Wipers, Damper Seals, Special Seals

Materials: NBR, Viton® (FKM), EPDM, Polyurethane NR (AU), PA (Polyamide), PTFE

Xpress service available



Oil & Rotary Seals

For propulsion applications

Widely used in all types of marine system:

- Propeller shafts and stern tubes
- Azimuth and tunnel thrusters
- Rudders (Rudderstock Radial Lip Seals) in endless or split types
- Steering gear
- Stabilizers
- Gearboxes and associated plant

Each product of this service has been developed and proven to give:

- Bearing protection
- Lubricant retention
- Exclusion of contaminants
- Minimize the leakage of fluid media

Product types: Simmering & Radial Shaft Seals

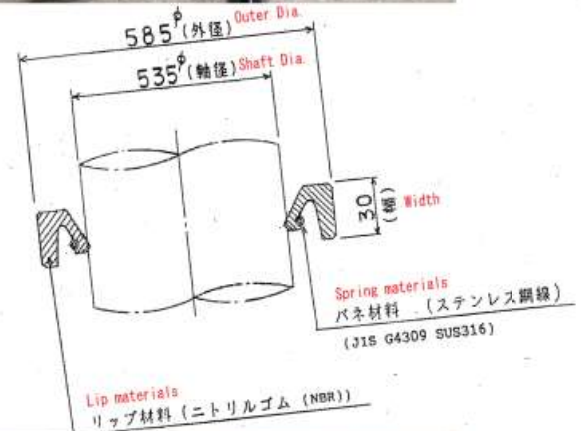
Materials: NBR, ACM, Viton® (FKM), HNBR, PTFE

Comig Marine is offering original
German (FREUDENBERG),
Japanese (NOK),
English (WALKERSELLE),
Italian (FP) Radial Lip Seals

Xpress service available



FREUDENBERG INNOVATING TOGETHER NOK FP



'O' Rings & Static Seals

The O-ring is the most popular form of seal

Product types: O-rings, Back up rings, Stirromatic, Multi seals, Quad rings

Materials: NBR, HNBR, Natural Rubber (NR), Silicone rubber (VMQ), Viton® (FKM), Viton® Extreme-ETP (FEPM), Ethylene propylene rubber (EPM), Ethylene propylene diene natural rubber (EPDM), Polyurethane natural rubber (AU), PTFE, Fluorosilicone natural rubber (FVQM), Perfluor-natural rubber (FFPM), Fluoro natural rubber (FPM), Chloroprene-natural rubber (CR), Butyl natural rubber (MR), Aflas® (FEPM), Fluorinated Ethylene Propylene (FEP)-Encapsulated O-rings, Perfluoroalkyl (PFA) - encapsulated O-rings

Xpress service available

Comig Marine is offering:

- For standard materials range, (i.e. NBR, EPDM, VMQ, FKM, PTFE),
Ex-stock delivery
- For non-standard materials/sizes, (i.e. FEPM, FEP, PFA, FFPM),
On short lead times
- For non-standard materials/sizes, (i.e. FKM, FEPM, FEP, PFA, FFPM),
Xpress delivery



FEP-encapsulated 'O' rings for PV valves:

These have an elastic & resilient core made from silicone (VMQ), which offers the required elasticity, while the fluoropolymer (FEP) coating offers outstanding resistance against a wide range of chemical media.

- Fully interchangeable with standard sizes of elastomeric or solid PTFE 'O' rings
- Excellent chemical resistance
- Offering better sealability than solid PTFE rings

Applications:

PV valve pressure side seals

Seal set for PV valve - PTFE profile ring + FKM 'O' ring

Footvalve seals

PV valve vacuum poppet seal





Additionally, Comig Marine is offering:

'O' ring kits

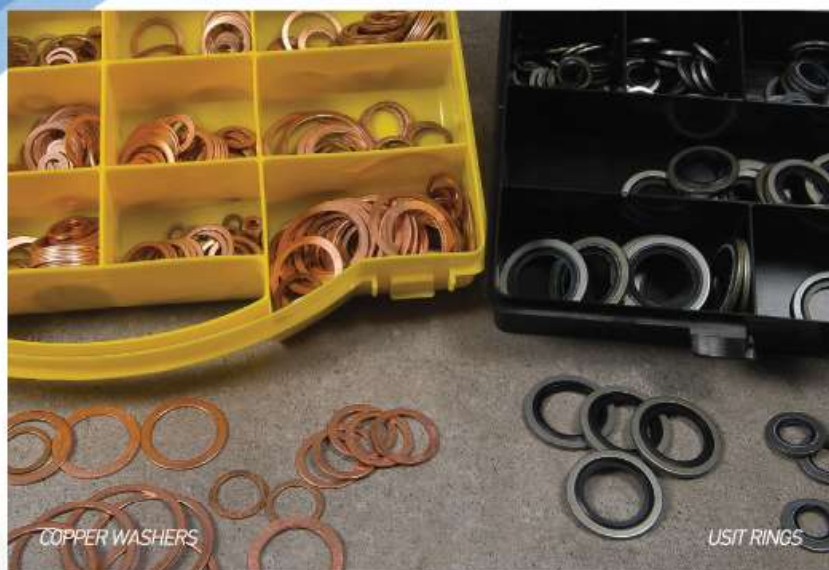
Usit rings & Multi seals kits

Copper washer kits

NBR, EPDM, Silicone (VMQ) & Viton® (FKM)

cords in various cross sectional diameters

together with suitable adhesives



COPPER WASHERS

USIT RINGS

Table 1. O-ring Materials, Standard duties & Temperature range

MATERIAL	STANDARD DUTIES	TEMP RANGE
NBR	GENERAL DUTIES: SEAWATER, LUBE OILS, REFRIGERATION APPLICATION etc	-30°C to +120°C
EPDM	GENERAL DUTIES, ESPECIALLY HOT WATER	-40°C to +145°C
Silicone (VMQ)	GENERAL DUTIES, OILS, NOT SUITABLE FOR AGGRESSIVE & OXIDIZING MEDIAS & DYNAMIC APPLICATIONS	-60°C to +200°C
FPM / FKM / DuPont™ Viton®	GENERAL CHEMICAL DUTIES, FUEL OILS etc	-30°C to +230°C
PTFE / DuPont™ Teflon®	NEAR UNIVERSAL CHEMICAL RESISTANCE. NOT SUITABLE ONLY FOR MOLTEN ALKALI METALS, ELEMENTAL FLUORINE & FLUORINE GAS	-200°C to +260°C
Aflas® (FEPM)	ENHANCED TEMPERATURE & CHEMICAL CAPACITY	-50°C to +250°C
FEP Encapsulated / PFA Encapsulated	NEAR UNIVERSAL CHEMICAL RESISTANCE	-60°C to +205/260°C
FFPM / FFKM / DuPont™ Kalrez®	HIGHEST CHEMICAL & TEMPERATURE CAPABILITIES	-50°C to +310°C

Freudenberg Xpress Solutions

Comig Marine Fabrication Service. Quality, Performance & Price you can rely on.






































































Fast results achieved thanks to rapid delivery. Have you run out of an urgently required seal, guide or rotating part?

Your problem can be solved with a phone call, e-mail or fax: The moment your order reaches us, we will expedite delivery or produce the required part to your specification in record time.

Quality and performance you can rely on. All Freudenberg Xpress products are made of **high-grade material compounds**. This ensures a **high level of safety and reliability**.

Tailor-made materials for a broad range of applications. We can supply the right compound (diameter limit 500mm) to meet your needs, no matter what your application. From polyurethane to plastomers and from elastomers to PTFE (Teflon®), **we have it in stock**.

Table 2, Details of Freudenberg Xpress Materials

Description	Remark	Physical Properties			Approvals												
		Color	Temperature Operating range (°C)	Hardness DIN 53505 Shore A and Shore D at 23 °C	FDA compliant	EU Directive EG N° 1935/2004	EU Directive EG N° 2002/72/E	G	BIR 21. Recommend.	3-A Sanitary Standard	ADI free Animal Derived Ingredient	USP Class VI	KTW	W270	NSF 61	WRAS	
	Polyurethanes (PU)																
	92 AU 925	Original Freudenberg material		-30 ... +110	A 94 ±5												
	95 AU 21100	Original Freudenberg material, low temperature		-50 ... +110	A 92 ±5												
	95 AU 21730	Orig. Freudenberg material, FDA com., hydrolysis res.		-25 ... +110	A 94 ±5												
	95 AU 21420	Orig. Freudenberg material, FDA com., hydrolysis res.		-20 ... +110	A 95 ±5												
	93 AU V167	Orig. Freudenberg material, FDA com., hydrolysis res.		-20 ... +110	A 93 ±5												
	95 AU V142	Original Freudenberg material		-30 ... +110	A 95 ±5												
Elastomers																	
72 NBR 902	Original Freudenberg material		-40 ... +100	A 75 ±5													
75 FKM 585	Original Freudenberg material		-30 ... +200	A 75 ±5													
70 EPDM 291	Original Freudenberg material, FDA compliant		-40 ... +150	A 75 ±5													
85 EPDM 292	Original Freudenberg material, FDA/KTW compliant		-40 ... +150	A 85 ±5													
70 NBR 150	Original Freudenberg material, FDA compliant		-20 ... +100	A 70 ±5													
88 NBR 156	Original Freudenberg material, FDA compliant		-25 ... +100	A 88 ±5													
75 Fluoroprene XP40	Original Freudenberg material, FDA compliant		-15 ... +200	A 75 ±5													
85 N BR	Standard Freudenberg Xpress material		-30 ... +110	A 85 ±5													
85 FKM	Standard Freudenberg Xpress material		-20 ... +220	A 82 ±5													
85 E PDM	Standard Freudenberg Xpress material		-45 ... +130	A 85 ±5													
85 H NBR	Standard Freudenberg Xpress material		-20 ... +150	A 85 ±5													
Flouro-Plastics (PTFE)																	
W FLON	Virginal PTFE		-200 ... +260	D ≥58													
G FLON	Filler: 15% glass, 5% MoS ₂		-200 ... +260	D 55 ... 60													
B FLON	Filler: 40% bronze, 2% carbon		-200 ... +260	D 62 ... 67													
C FLON	Filler: 25% carbon		-200 ... +260	D 62 ... 67													
EF FLON	Filler: 10% econol, aromatic polyester, FDA compliant		-200 ... +260	D 57 ±3													
Resin-bonded Fabric																	
HG 517	Original Freudenberg material		-30 ... +120														



PTFE (Teflon®) Seat Rings & Seals

Our customers have been trusting & supplying us with relevant samples. Comig Marine has been fabricating & delivering PTFE Seat Rings & Seals exceeding their expectations.

Vessels Type: Oil Tanker, Chemical Tanker, LPG, LNG & for all vessels carrying aggressive & corrosive cargoes.

- **PTFE Wear/Mouth/Seal Rings for Cargo/Ballast/Slop Pumps et al.**
Makers: FRANK MOHN (FRAMO), MARFLEX, KOSAKA et al.

Comig Marine is additionally offering complete sealing kits for Cargo/Ballast/Slop pumps (including Cargo seals, Wear rings, Seal rings, Oil seals, O-rings, Ceramic sleeves et al.)



MARFLEX Cargo Seals

- **PTFE Gaskets/Packings/V-packings/Rings for Globe Valves, Emergency shut off Valves & other types of Valves.**

Makers: MIYAIRI VALVE et al.



MIYAIRI PTFE V-PACKING

- **PTFE Piston Seals (spring loaded) for Valve Actuators**

Makers: SCANA SKARPENORD et al.

- **PTFE Gaskets (Dresser Type) for Expansion Joints**

Makers: KWANG SAN CO. et al.



Frarno Cargo Pump Seals

Cargo Pump PTFE Wear Rings



MIYAIRI PTFE SEAT PACKINGS



SCANA SKARPENORD PISTON SEALS

PTFE (Teflon®) Seat Rings & Seals

Comig Marine Fabrication Service. Quality, Performance & Price you can rely on.

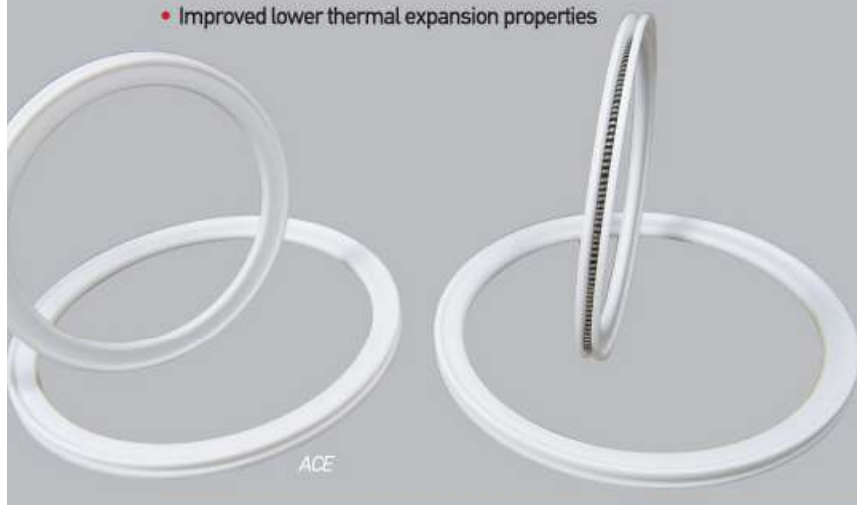
- PTFE Seat Rings for Cargo, Butterfly, Manifold, Ballast, Globe, Emergency Shut off Valves et al.

Comig Marine is offering a wide range of High Quality Seat Rings from

- Virgin PTFE or
- Reinforced (Glass, Graphite, Carbon, Bronze, MOS2 et al.) PTFE
- PTFE with special reinforcement compounds (PEEK, PPS, Polyimide, LCP, Molybdenum disulphide et al.)

Combining characteristics such as

- Excellent chemical resistance
- Low coefficient of friction
- Excellent working temperature coverage
- Improved thermal conductivity
- Excellent pressure resistance
- Improved lower thermal expansion properties



PTFE (Teflon®) Seat Rings & Seals

Our customers have been trusting & supplying us with relevant samples. Comig Marine has been fabricating & delivering PTFE Seat Rings & Seals exceeding their expectations.

Makers: Westad, Keystone, Ace, Somas Instruments AB, Meson, Eurovalve, Hogfors, Rongde, Misuzu, Miyairi et al.

Comig Marine is offering direct replacement for all types & profiles of PTFE seat rings.

- PTFE (virgin or reinforced)
- PTFE (virgin or reinforced), Spring loaded
- PTFE (virgin or reinforced), O-ring loaded
- PTFE (virgin or reinforced), Stainless Steel O-ring loaded
- PTFE (virgin or reinforced) with Backing Ring (POM, PA, PTFE et al.) & with Wire/Spring Backing

Comig Marine is offering direct replacement parts for all types of valves

- PTFE Chevron® packing sets
- Compression packings for valve stems
- Spring-loaded PTFE lip seals
- Non-metallic & semi-metallic body gaskets
- Ball valves seats
- Seals for PV valves



SOMAS



PTFE SEAT & BACKING RING & WIRE SEAT BACKING, KEYSTONE



RONGDE



MESON



Compression Packings

Comig Marine is offering a wide range of high quality packed glands in order to provide a cost effective sealing for most valves & rotary equipment as well as for reciprocating and centrifugal pumps.

Our extensive range combines:

- Low thermal expansion with excellent heat dissipation insulation
- Long service life
- Low friction
- High wear resistance and rot-resistance with soiled media
- Shaft-protecting natural fibers for longer service life
- High pressure resistance
- Easy fitting

Available sizes:

- Sections from 3mm to 40mm
- Customized sections
(i.e. COTTON GREASE PACKING FOR RUDDER STOCK)
- Economy boxes of 4 mtrs

Materials: Vegetable Hemp, Aramid, Carbon yarn, Graphite, Exfoliated Graphite, DIAPLEX® cotton, Acrylic yarn, PTFE yarn

Impregnation: PTFE, Silicone, Graphite, Mineral grease, Stainless wire reinforcement



Tank Lid Packings

TANK LID PACKING is a multi-functional special packing, the core of which is made of special high pressure-resilient elastomer and which is then wound with high-temperature resistant fiber, containing PTFE (Teflon®) and branded with protective corrosion-resistant made of PTFE (Teflon®) fiber, and is applicable for seal of important locations of oils and chemicals tanks such as manhole, filling hole and protective hole.

Color: White with black filament

Size: From 20mm to 60mm, supplied in length form (OPEN TYPE) or as endless rings (CLOSED TYPE) to fit specific tank lid recesses.

Technical Properties

Temp Range: - 50°C / +260°C

Appearance: Flat & Uniform

Size tolerance < 30: - 0 / + 2 mm

Size tolerance from 30 to 60: - 0 / + 4 mm

Bulk density: From 0,55 to 0,75g/m

Ignition loss (250oC): < 3,0 %

pH: 0 - 14

Hot oil content: From 5 to 10 %



PTFE (Teflon®) Products

In Virgin form & in many filled grades with enhanced mechanical qualities.

Temp Range: - 240°C / +260°C

Available forms:

- Sheets & Cut gaskets
- Envelope gaskets
- Seat rings
- Wear rings
- Packings
- Rolls
- Rods
- Tubes
- Cords
- Adhesive sealing tapes

PTFE (Teflon®) & Expanded PTFE Cords & Tapes

• **ADHEFLON** - 100% pure expanded PTFE (Teflon®) cord with one side self-adhesive. ADHEFLON is inert and resistant to chemicals and corrosive environments (range pH 0 : 14).

Range Temperature: - 240°C / +260°C

Max pressure: 240 bar (depending from temperature and application)

Availability: In various spools (Multiple thicknesses & widths)

• Other **PTFE tapes** with an adhesive backing strip for quick and simple installation. Used on glass flanges, large flanges, pressure vessels, heat exchangers, suction filters, strainers, etc. Easy to install & easy to remove.

Range Temperature: - 240°C / +260°C

Max pressure: 200 bar

Availability: In various spools (Multiple thicknesses & widths)



Rubber Products

Natural (NR), Styrene Butadiene (SBR), Nitrile (NBR), Neoprene (CR), Ethylene-Propylene (EPDM), Silicone (VMQ), Viton® (FKM) and other types of rubber.

Temp Range: - 50°C / +200°C

Available forms:

- Sheets & Cut gaskets
- Gaskets for Expansion Joints (Dresser Type)
- Gaskets for Expansion Couplings
- Lube Oil Cooler D/G Gaskets
- Seat rings & Valve liners
- Packings
- Rolls
- Cords



Joining Sheets & Soft Cut Gaskets

Precision-soft cut gaskets are supplied according to all international standards to any shape, size or quantity. Additionally, customized gaskets can be cut & offered.

- **Compressed Fiber Sheets** (combination of aramid, NBR, glass, carbon) with or without metal reinforcement. Temp $-40^{\circ}/+440^{\circ}\text{C}$.
- **Graphite**, with or without metal reinforcement. Max Temp 550° , available also for cryogenic application
- **Virgin PTFE (Teflon[®])**, Max Temp 260° , available also for cryogenic application
- **Expanded PTFE (Teflon[®])** with or without glass filler. Preferred grade for marine duties on cargo pipelines & manifolds. The glass filler (15-25%), is expanding the creep characteristics of PTFE & is offering outstanding chemical resistance. Wide temperature range from $-200^{\circ}\text{C} / 260^{\circ}\text{C}$
- **Modified PTFE with silica filler** (**Frenzelit Novafion / Flexitallic Sigma / Flexseals Sichem**),
 - Excellent media resistance to most lyes and acids throughout the pH range (pH levels 0-14)
 - High residual stress
 - Resistant to cold flow
 - High mechanical resistance
 - Wide temperature range from $-210^{\circ}\text{C} / 260^{\circ}\text{C}$
 - Unlimited shelf life
 - Excellent leakage properties: Meets German fugitive emission regulation TA Luft [leakage rate $< 10^{-4} \text{ mbar}\cdot\text{l}/(\text{s}\cdot\text{m})$]

Marine applications: CARGO TANK ACCESS GASKETS, GASKETS FOR RELIEF VALVES, GASKETS FOR CARGO MANIFOLDS for LPG Vessels

- **Thermiculite (chemically & thermally exfoliated vermiculite)**. Main advantage is that it will not oxidize at high temperatures, Max Temp 982°C
- **Vegetable fibre gasket material**, cellulose-based impregnated with gelatine. Operating temperature range from -20°C to 120°C . Maximum operating pressure 1 MPa/10 bar.
- **Cork-elastomer jointings**. Maximum operating temperature in liquids is up to 110°C .
- **Rubber Sheeting (with or without insertion)**. Comig Marine is offering many specification grades of elastomer as sheet jointings & precision cut gaskets. Natural (NR), Styrene Butadiene (SBR), Nitrile (NBR), Neoprene (CR), Ethylene-Propylene (EPDM), Silicone (VMQ), Viton[®] (FKM) et. al. Maximum operating temperature 200°C .

Availability: In various sheet & roll sizes,

How supplied: Based on IMPA codes, characteristics, descriptions, drawings, dimensions, applications etc.



PTFE (Teflon®) Envelope Gaskets

The covering, called "envelope", is supplied in high quality virgin PTFE, thickness 0,6mm (this can change on customer's needs).

- Excellent resistance to acids with protections of inserts
- Does not left residue on flanged surfaces so it can be substituted quickly
- Resistance to changes of temperatures (-200 /+260°C)
- Excellent dielectric characteristics
- Low porosity

How supplied: To suit all standard and non-standard flange sizes.

Flange Insulation Sets (I-Flex Isolation System - Flexitallic)

We provide a complete product range to limit corrosion in pipeline systems, utilizing modified PTFE material Sigma® and Flexitallic's unique high temperature material Thermiculite® - both giving unrivalled performance. **The insulating sets are designed to electrically isolate flanges and bolts in cathodically protected piping systems or whatever dissimilar metals are present.**

The specially engineered materials used in the "I-Flex isolation system" are also able to extend traditional operating temperature pressures and chemical compatibility, seen with current insulation technology.

- Suitable for pipelines handling water, oil, steam or gas
- Engineered & Manufactured in UK
- Available as individual gaskets and full isolation set
- Widest possible temperature range -200° to 1000°C
- Service pressure range from vacuum, to class 2500
- Fire-safe
- Can be used on all types of flanges
- Used for both cathodic & galvanic corrosion

Availability: For diverse flange sizes, specifications and arrangements



Spiral Wound Gaskets - SWG

Flexitallic invented the Spiral Wound Gasket in 1912

Comig Marine is offering SWG for sealing flanges that conventional jointing materials are not applicable. SWG can meet the most exacting conditions of both temperature & pressure in flanged joints and similar assemblies and against virtually every known corrosive and toxic media.

Marine applications examples

Pipelines & pressure vessels on steam systems
Heat exchangers
Hydraulic assemblies
Boiler handhole & manhole assemblies

Key Features

- **Pressure:** From high vacuum to 35MPa/350bar
- **Temperature:** From cryogenic up to +1000oC
- **Sizes:** In a great variety of sizes & shapes. Available to all international standards. Non-standard sizes & shapes also available.
- **Profiles:** Circular, obround, square, oblong, diamond et.al.
Support rings, outside and/or inside of spiral winding, make the gasket suitable for high line pressure on flat or raised faced flange faces.

Available Gasket materials

Metal Winding Strip

Standard: Stainless Steel 316L or 304

Others: Stainless Steel 304L, 309, 310, 316Ti, 317L, 321, 347, 430, 17-7PH, Alloy 20, Monel, Titanium, Nickel, Inconel 600, 625, X-750, Hastelloy B2, C276, Incoloy 800, 825, Duplex, Zirconium, Tantalum, Copper, Phos-Bronze, Carbon Steel

Filler Material

Graphite, PTFE (Teflon®), Thermiculite, Mica, Ceramic, Non-sintered PTFE

Guide Ring Material

Standard: Carbon Steel

Others: Stainless Steel 304, 304L, 316, 316L, 316Ti, 321, 347, 410, Inconel 600, 625, Monel, Titanium, Nickel, Alloy 20, Hastelloy B2, C276, Incoloy 800, 825

SWG with PTFE filler for LPG vessels

Flexitallic®

Spiral Wound Gaskets - SWG

Comig is the official distributor of Flexitallic Group in Greece since 1985

How to order

1. **Flange rating:** ASME/ANSI or DIN or JIS flanges

2. Design/Style:

- **Type OR** → Spiral Sealing area + Outer ring only,
- **Type IOR** → Inner Ring + Spiral sealing area + Outer ring,
- **Or other** (e.g. R, RIR et al.)

3. **Nominal pipe size** (NPS - e.g. 1" or DN25 or NOM25A)

4. **Pressure rating** (e.g. Class 150 or PN16 or 10K)

5. Materials:

- **Inner ring:** SS 316L or other
- **Spiral sealing material:** SS 316L + GRAPHITE, SS 316L + PTFE or other
- **Outer ring:** Carbon Steel, SS 316L or other

SWG types IOR, OR



SWG type R (oval shape)



JIS B2404 250A 10K/20K 304 304/FG CS
FLEXCOM JIS 200A 10K 304/FG CS
FLEXCOM JIS 200A 10K 304/FG CS

Pipe & Valve Thermal insulation Frenzelt

Comig Marine is offering high quality technical textiles for use in thermal insulation.

Product lines

- isoGLAS® - Temp Limit: 550°C
- isoTHERM® - Temp Limit: 800°C
- isoKERAM® - Temp Limit: 1100°C

Product range

- Cords
- Packings
- Twisted ropes
- Knitted rope
- Needlemats
- Tapes

HEAT PROTECTION SOLUTION FOR HIGH PRESSURE PIPES isoTHERM® MIS - Multi Insulation System

For the replacement of traditional heat insulation materials & metal foils either tapped or tied together with wires on **HOT PIPES & COMPENSATORS** with a **LONG LASTING & MULTI-USE HEAT PROTECTION SYSTEM**.

Approved & Recommended by Wärtsilä for:

- All RT-flex and W-X engines with double walled high pressure fuel pipes.*
- Exhaust gas compensators after cylinder of all Wärtsilä RTA, RT-flex and W-X engines.*

*Wärtsilä Spare Parts Notice RT-156, Issue 1, 27 November 2013

Product characteristics

- Maximum possible operating temperature: 250°C
- Maximum surface temperature: 60°C (hand guard!) at a medium temperature of 180°C.
- Resistance of all materials of the insulation system: Diesel/Petrol
- In the case of fire, no toxic gas can be developed in the insulation system.
- The insulation material is shock and vibration resistant.
- The insulation jacket is resistant against mechanical destruction due to friction.
- The insulation system has Velcro fasteners to guarantee an easy installation or removal.

Typical application areas

- Insulation of hydraulic and fuel lines in large diesel engines

Standard products

- Available with diameters starting at 1"

Tabel 3, Kit order number per engine type

Engine type*	Parts code number	
	Standard injection pipes	Star tube injection pipes
RT-flex48T-D	EF 87363	—
RT-flex50	IF 87363	IF 87364
RT-flex50-B	IF 87363	IF 87364
RT-flex58T-B	OF 87397	OF 87398
RT-flex58T-D	OF 87397	OF 87398
RT-flex60C	NF 87397	NF 87399
RT-flex60C-B	NF 87397	NF 87399
RT-flex68-B	MF 87397	MF 87398
RT-flex68-D_V0	MF 87397	MF 87398
RT-flex82C	LF 87363	—
RT-flex82T	VF 87363	—
RTA82C	L 87363	—
RTA82T	V 87363	—
RT-flex84T-D	BF 87363	BF 87364
RT-flex96C-B	DF 87363	DF 87363
W-X35	—	RF 87553
W-X40	—	SF 87340
W-X62	—	AX 87380
W-X72	—	BX 87380

Example of effectiveness

- Ambient temp: 32°C
- Medium temp: 94°C
- Temp measured on the insulation: 37°C

Quality Management

- ISO 9001
- ISO/TS 16949

Environmental management

- ISO 14001

ORDERING

The MIS can be ordered by quoting the parts code number as listed in TABLE 3. Besides the parts code number the number of cylinders is required if the MIS shall be applied to all cylinder units.

The ordered kit as listed in Table 3 is for the fuel injection pipes of one cylinder unit.

ISO THERM MIS







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