

Flexitallic[®]

POWER TO THE FUTURE

FLANGE RESCUE GASKET

FRG

Proactive and reactive
sealing solutions that
save you time and money.

SHUT DOWNS COST INDUSTRY MILLIONS

When corrosion or damage occurs to flange faces, impact on operating costs due to downtime repairs can be significant. So what if you could fit a product to new assets, that not only extends the life of equipment, but also offers additional corrosion inhibiting properties?

The Flange Rescue Gasket (FRG) can be used for **remedial repairs** on corroded equipment AND as a **preventative solution** on new equipment to prolong its life and avoid costly shutdowns. The FRG is also easy to install.

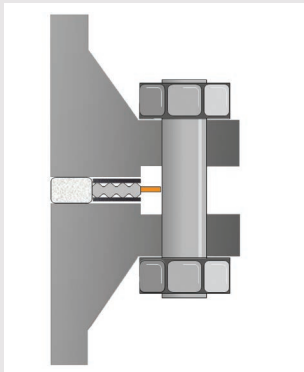
COST EFFECTIVE SOLUTIONS FOR FLANGE CORROSION

A direct response to the oil and gas industry's requirement for effective closure on damaged flange faces, a full range of cost-effective FRG products is available for a wide range of hostile environments for use in:

- Oil and gas
- Chemical
- Power generation
- Petrochemical



THE WORLDS ONLY FLANGE RESCUE GASKET



The FRG enables bolted joints to be easily and effectively sealed to prevent internal corrosion. The soft SIGMA inner ring of the FRGs conform seamlessly to the flange face, even if already damaged to:

- Save you time and reduce lost production
- Provide a major cost saving when compared with replacing flanges, welding and machining
- Gets you back up and running within a day.



FLANGE RESCUE GASKET



FIRE SAFE. GUARANTEED

FRG-FS

The FRG-FS is a fire-safe gasket that uses our exclusive, insulating, fire resistant material, **Thermiculite®**, to effectively seal damaged flanges even at high temperatures.

Thermiculite® is certified to the API 6FB fire test which means it is ideal for use on Hydrocarbon systems. Unlike graphite, Thermiculite® is inert and inorganic so doesn't promote corrosion especially in offshore environments.

FRG gaskets are sized to suit standard ASME B16.5 flanges, therefore there is no need for alterations or special adaptations, however if you have a bespoke application we can design and manufacture to suit your requirements.

IDEAL FOR:

- Topside & subsea applications
- Seawater pipework
- Vessel & equipment nozzle connections
- Hydrocarbon systems
- Cooling water applications
- Raised face to RTJ connections



We can also provide a Subsea FRG which features a unique identification handle for easy and safe installation.



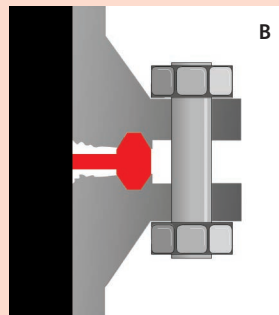
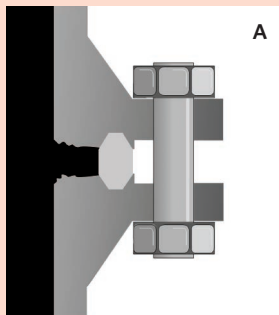
RING JOINT



SPECIALIST SEALING AT HIGH PRESSURE

FRG-RJ

Ring type joints are used extensively in the oil and gas industry or where very high pressures are used. Traditional RTJ flanges corrode and erode due to the stand-off between the flanges creating a crevice. The FRG-RJ fills this gap so preventing and repairing leaking flanges. The design is matched to the pipe bore to ensure a smooth internal diameter even at the flange.



A: Standard Octagonal RTJ

- liquid can get in between flanges and cause erosion/corrosion in this area.

B: FRG-RJ - inboard of the RTJ is filled with SIGMA PTFE on an integral metal support - fills the gap thus eliminating the problem.

IDEAL FOR:

- High pressure applications
- Topside & subsea pipework
- Hydrocarbon & seawater systems
- Matched to pipe bore to:
 - Ensure successful pigging operations
 - Minimise turbulent flow

HF ALKYLATION



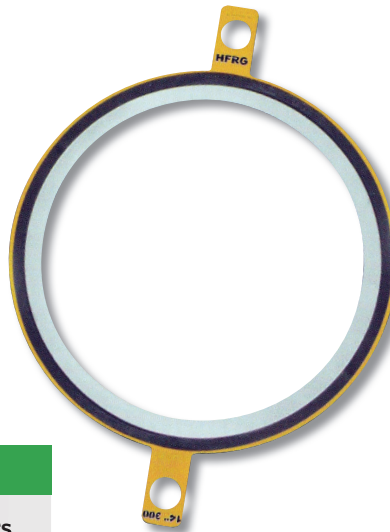
ULTIMATE SEALING FOR CRITICAL SERVICES

FRG-HF

Typical refinery HF Alkylation units are plagued with flange corrosion because traditional gasket solutions leave crevices and gaps. The FRG-HF is designed to eliminate all crevices and prevent the onset of corrosion ensuring reliable and leak free operations. Alternative materials can be selected to suit other chemical applications if required.

BENEFITS:

- Eliminates costly, time consuming repairs
- Avoid the use of sealing clamps
- Capable of sealing against partial existing corrosion



FRG-HF SUCCESS STORY

UOP Licensed HF Alkylation Unit

- Flanges that chronically develop leaks after start-up requiring subsequent clamps have sealed with the FRG-HF with no leaks or clamps to date since January 2012.
- Most FRG-HF gaskets are in the most difficult service - the Depropanizer.
- Most FRG-HF is sealing against repaired as well as damaged surfaces.
- No changes or Improvements were made to installation procedures. Success is truly from the gasket as opposed to improved installation or controlled torquing.

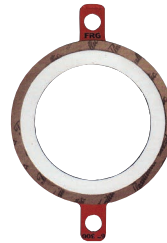
"Maintenance and Operations love the new gasket and want to use it everywhere."

UNCOMPROMISING SOLUTIONS FOR UNCOMPROMISING CONDITIONS THE FRG PRODUCT RANGE



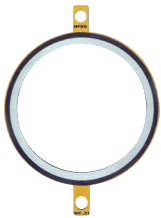
FLANGE RESCUE GASKET - ORIGINAL

- Restructured Sigma® PTFE bonded to high integrity metal core
- Leak-free seal and blow out resistance
- Bright & easily identifiable for inspection
- Corrosion resistant coating.



FIRE SAFE

- Thermiculite® high temperature insulating corrosion resistant material
- Certified to API 6FB for fire-safe applications.



HF ALKYLATION

- Low stress sealing Sigma® - a tighter seal
- Fire-safe graphite faced serrated metal core
- Designed for ease of identification with problematic connections on HF Acid Plants.



HIGH PRESSURE

- Stops turbulent media flow to prevent erosion, corrosion and flange degradation
- Available in Style R Oval, R Octag, RX and SRX
- Ideal for topside or sub-sea applications.



CRYOGENIC

- Aluminium core as standard
- Core material can be adapted to match the flange materials
- PTFE ring performs in temperatures from cryogenic to 260°C.

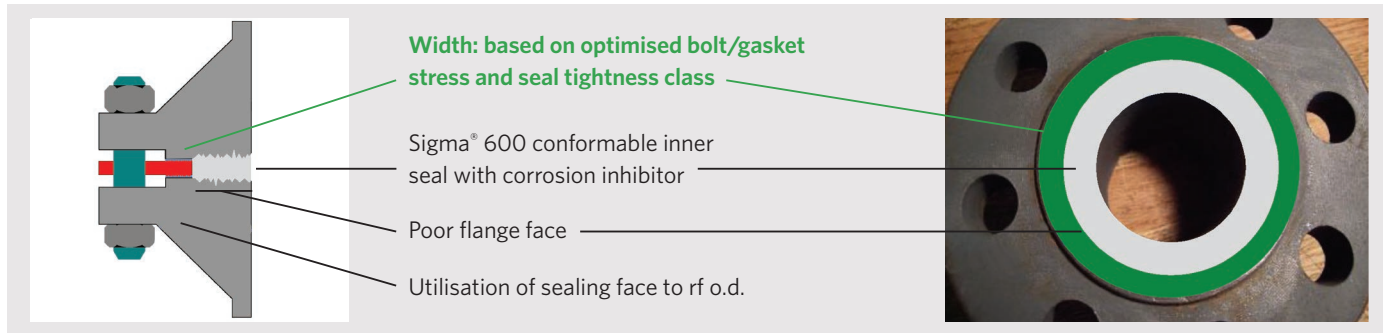


FRG SUBSEA

- Easy sub-sea installation with integrated removable handle
- Use to connect RTJ & RF flanges.

FRG CORROSION ASSESSMENT GUIDELINES

Below is a reference guide to the suitable allowance of clean surface required to allow the Flange Rescue Gasket to maintain a seal, outbound of the corroded area.



NPS	CLASS 150	CLASS 300	CLASS 600	CLASS 900	CLASS 1500	CLASS 2500
0.5	6.0	6.0	6.0	8.0	8.0	8.0
0.75	6.0	6.0	7.0	6.0	6.0	6.0
1	5.0	6.0	6.0	7.0	7.0	7.0
1.25	5.0	5.0	6.0	5.0	5.0	7.0
1.5	5.0	6.0	6.0	6.0	6.0	8.0
2	6.0	6.0	6.0	7.0	7.0	10.0
2.5	5.0	8.0	8.0	8.0	8.0	11.0
3	7.0	7.0	7.0	6.0	9.0	11.0
4	7.0	6.0	7.0	7.0	9.0	14.0
5	6.0	7.0	8.0	8.0	11.0	16.0
6	8.0	8.0	10.0	8.0	12.0	19.0
8	8.0	8.0	11.0	10.0	14.0	22.0
10	9.0	10.0	15.0	11.0	16.0	30.0
12	9.0	10.0	16.0	11.0	21.0	31.0
14	9.0	12.0	19.0	12.0	25.0	
16	7.0	13.0	22.0	13.0	27.0	
18	8.0	14.0	21.0	16.0	29.0	
20	10.0	13.0	23.0	16.0	32.0	
24	10.0	17.0	26.0	22.0	37.0	



NOTE:

- The radial width dimensions are in millimetres (mm).
- No corrosion is allowed in the green zone. The surface finish on the green zone should be standard 3.2-6.3µm Ra.
- Please contact the Flexitallic team if the un-corroded area does not meet the above mentioned green zone dimensions.
- The maximum allowable pitting corrosion depth on the flange faces is nominally 1.5mm inbound of the green zone. Corrosion any deeper than that should be subject to review by Flexitallic.

If in doubt please contact Flexitallic.

UNITED KINGDOM

Flexitallic UK Ltd.

Scandinavia Mill
Hunsworth Lane
Cleckheaton
West Yorkshire, BD19 4LN
UK
Tel. +44 1274 851273
www.flexitallic.com

*Branches also in Aberdeen,
Middlesbrough, Ellesmere Port
and South West.*

ITALY

Flexitallic Italy Sr.l

Via Leonardo Da Vinci 6B
26020 Ticengo CR
ITALY
Tel. +39 0374 71006
Fax. +39 0374 71277
www.flexitallic.com

THAILAND

Flexitallic Sealing Technology Co. Ltd.

No. 7/456, Moo 6,
Amata City Rayong Industrial Estate
Mabyangporn Sub-district
Pluak Daeng District,
Rayong Province
THAILAND
Tel. +66 (0)33017561 ~ 3
Fax. +66 (0)33017564
www.flexitallic.com

FRANCE

Siem Supranite

a Flexitallic Company

31-33 Rue de Mogador 75009
Paris
FRANCE
Tel. +33 (0)1 48 88 88 88
Fax. +33 (0)1 47 66 88 44
www.siem.fr

UNITED ARAB EMIRATES

Flexitallic LLC

PO Box No. 6591-Al Jazeera
Plot 108, Road E
Al Hamra Industrial Area
Ras Al Khaimah
UNITED ARAB EMIRATES
Tel. +971 7 202 5300
www.flexitallic.com

Branch also in Abu Dhabi.

AUSTRALIA

Flexitallic Australia Pty Ltd.

13-15 Vinnicombe Drive
Canning Vale
Perth, WA 6112
AUSTRALIA
Tel. +61 (0)8 9455 2155
www.flexitallic.au
Branch also in Melbourne, Victoria.

GERMANY

Flexitallic GmbH

Halskestr. 4a
47877 Willich
GERMANY
Tel. +49 (0) 2154 95363-0
Fax. +49 (0) 2154 95363-29
www.flexitallic.com

CHINA

Flexitallic Gasket Technology (Suzhou) Co. Ltd.

Building A, 1868 Guangming Rd
Technological Development Zone
Wujiang Economic 215200
CHINA
Tel. +86 512 6303 2839
Fax. +86 512 6303 2879
www.flexitallic.com

UNITED STATES

Flexitallic US LLC

6915 Highway 225
Deer Park
Texas 77536
USA
Tel. +1 281 604 2400
Fax. +1 281 604 2415
www.flexitallic.com

About The Flexitallic Group

The Flexitallic Group is a global leader in specialised sealing solutions and products serving the oil and gas, power generation, chemical and petrochemical industries in emerging and developed markets. Focused on the upstream, downstream and power generation sectors, it has operations in France, the United States, Canada, Mexico, the United Kingdom, Germany, Italy, Belgium, the United Arab Emirates, Thailand, Australia and China plus a network of worldwide licensing partners and distributors.

BENELUX

Flexitallic Benelux BVBA

Smallandlaan 21
2660 Hoboken
BELGIUM
Tel. +32 3 369 19 68
www.flexitallic.com

SINGAPORE

Flexitallic Ltd.

Singapore Branch

Level 42 Suntec Tower Three
8 Temasek Boulevard
SINGAPORE
038988
Tel. +65 68663638
www.flexitallic.com

CANADA

Flexitallic Canada Ltd.

4340 - 78 Avenue
Edmonton
Alberta, T6B 3J5
CANADA
Tel. +780 466 5050
Fax. +780 465 1177
www.flexitallic.com