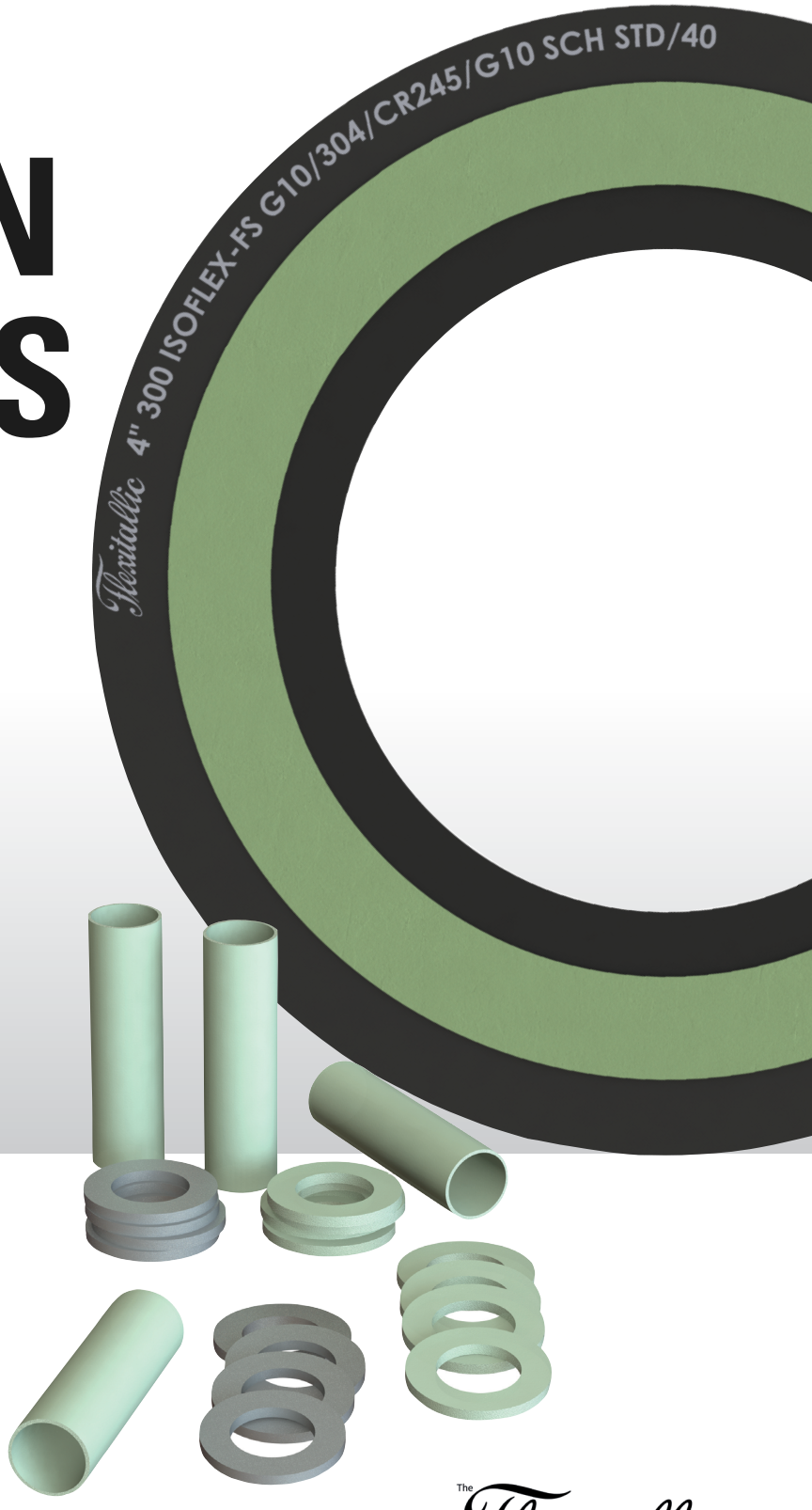
Flexitallic®

ISOLATION PRODUCTS

Bringing **innovation**
to cathodic protection.

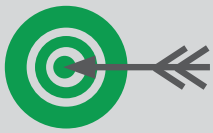


www.flexitallic.com

The Flexitallic Group

INTRODUCING:
ISOFLEX™ & ISOPRO

Comprehensive product range that addresses both industry and customer-specific requirements.



From economical options to best-in-class proprietary offerings and everything in between.

A new isolation gasket that will exceed dielectric & sealing capabilities of current market products.

Addressing *age-old methods* that focus on ***"gasket-to-flange"*** contact surfaces and asking, ***"Why not in between"?***

Boxed kit availability, including: gaskets, isolating sleeves & washers, metal backup washers.

World-Class Application Engineering Support Available via: phone, email & live chat.

Professional Grade training, workshops and seminars, which are centered on *"Best Practices"* approach to installation / bolt-up procedures. Sessions range from 2 - 6 hours, but are completely customizable to fit your specific needs.

GOOD, BETTER, BEST-IN-CLASS.

ISOFLEX™

- Exceeds the current market sealing performance.
- Flexitallic's proprietary and patented designs that incorporate proven technology and proprietary materials.
- A product platform consisting of two best-in-class designs and will evolve over time.

ISOPRO

- Equals performance of products that are currently available within the market.
- Meets difficult-to-change and long-standing written specifications.
- For use in non-critical service and low(er) temperature applications.

ISOPRO - NEO
Neoprene

ISOPRO - NFP
Nitrile Faced Phenolic

ISOPRO - IP
Inclined Plane

ISOFLEX™ - LT
Superior Alternative to Inclined Plane

ISOFLEX™ - FS
Best of Sealing. Best of Isolation. Fire Safe.

GOOD **BETTER** **BEST-IN-CLASS**

COMMON INDUSTRY PITFALLS

- Sole emphasis on the isolating properties at the expense of overall sealability.
- Emphasis exclusively on dielectric strength rather than resistance under compression representative of bolted connection.
- Several high-end designs rely on narrow line seals which are more vulnerable to surface imperfections.
- Positioning of the narrow line seal is towards the inner diameter (ID) of the flange which is not ideal.
- Consequences of metal protrusion on isolating properties, as seen in spring energized seals.
- Creep relaxation of soft sealing components like elastomers and PTFE.
- Reliance (upon compression) on the non-metallic GRE for compressive & mechanical strength can lead to long term problems & failure.
- Possible drawbacks of glass reinforced epoxy (GRE), such as permeation, chemical attack, strength and creep.
- Sleeve length not specific to washers, flanges and gasket thickness combination.

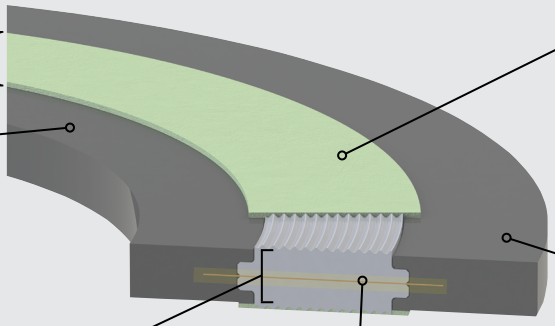
ISOFLEX™ - FS
BEST OF SEALING. BEST OF ISOLATION.

THE ISOFLEX™- FS DESIGN IS AIMED AT ELIMINATING THE CONCERNS AND PITFALLS OF EXISTING MARKET OFFERINGS.

ISOFLEX™-FS is a fire safe isolation gasket that is ideal for high pressure & critical service applications utilizing:

- Dual serrated metallic cores (Flexpro®) halves
- Faced with Corriculite®, a fire safe non-conductive sealing material
- Separated by polyimide isolating film. Dielectric Strength of 3000 V/mil
- Complete with NEMA grade glass reinforced epoxy (GRE) inner and outer rings
- ISOFLEX™-FS is API 6FB Fire Safe. One gasket satisfies both general & fire safe services.

A CLOSER LOOK AT ISOFLEX™ - FS



Seal location is engineered to ideally position the sealing area more closely to the fasteners.

INNER RING: NEMA GRADE GRE

GRE components are auxiliary and are not part of primary seal.

Sealing is exclusively accomplished by faced serrations & polyimide isolation barrier.

DUAL Flexpro® SEAL DESIGN (304SS KAMMPROFILE).

4X Wider Seal with Flexpro® than Spring Energized Seals. Less susceptible to localized flange damage.

Compressive load rests on the Flexpro® (Kammprofile) to affect excellent tightness.

GASKET CORE: POLYIMIDE ISOLATION BARRIER

Excellent electrical resistance. Boasts a strong combination of thermal, chemical and mechanical properties.

Dielectric Strength (ASTM D149): 3000 V/mil.

Facings & Polyimide Isolating Barrier extend beyond the metal acting as a protective shield.

CORRICULITE® FACINGS

Prevents the onset of galvanic corrosion and provides gas tight sealing performance with wide range of fluid compatibility.

- API 6FB Fire Safe.
- Inherently non-conductive.

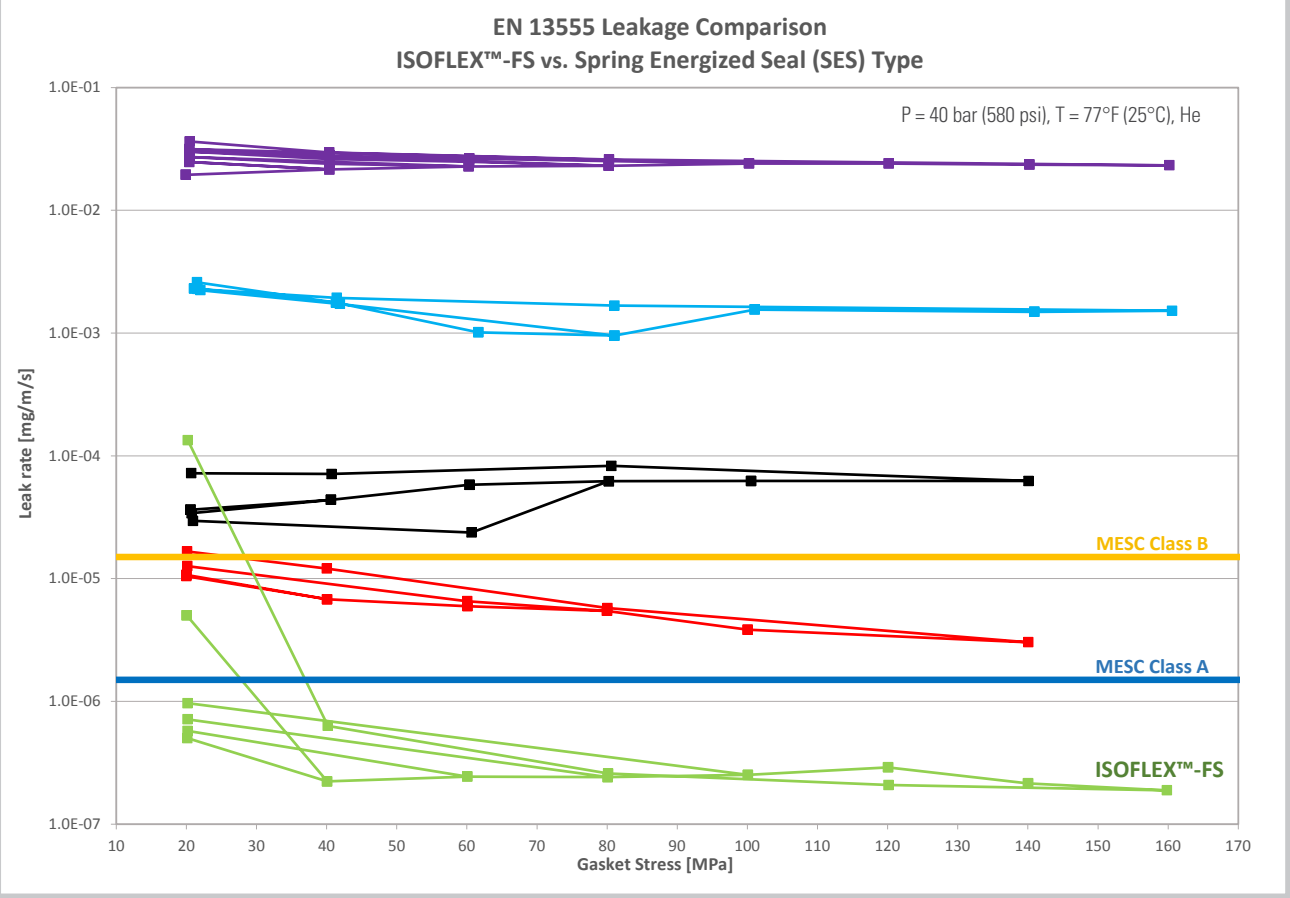
OUTER RING: NEMA GRADE GRE

GRE components are auxiliary and are not part of primary seal.

Sealing is exclusively accomplished by faced serrations & polyimide isolation barrier.

ISOFLEX™ -FS

LEAKAGE COMPARISON: ISOFLEX™ -FS & SPRING ENERGIZED SEAL TYPES



- Spring Energized Seal (SES) Type Isolation Gaskets that are currently in the market from the competition.
- ISOFLEX™-FS

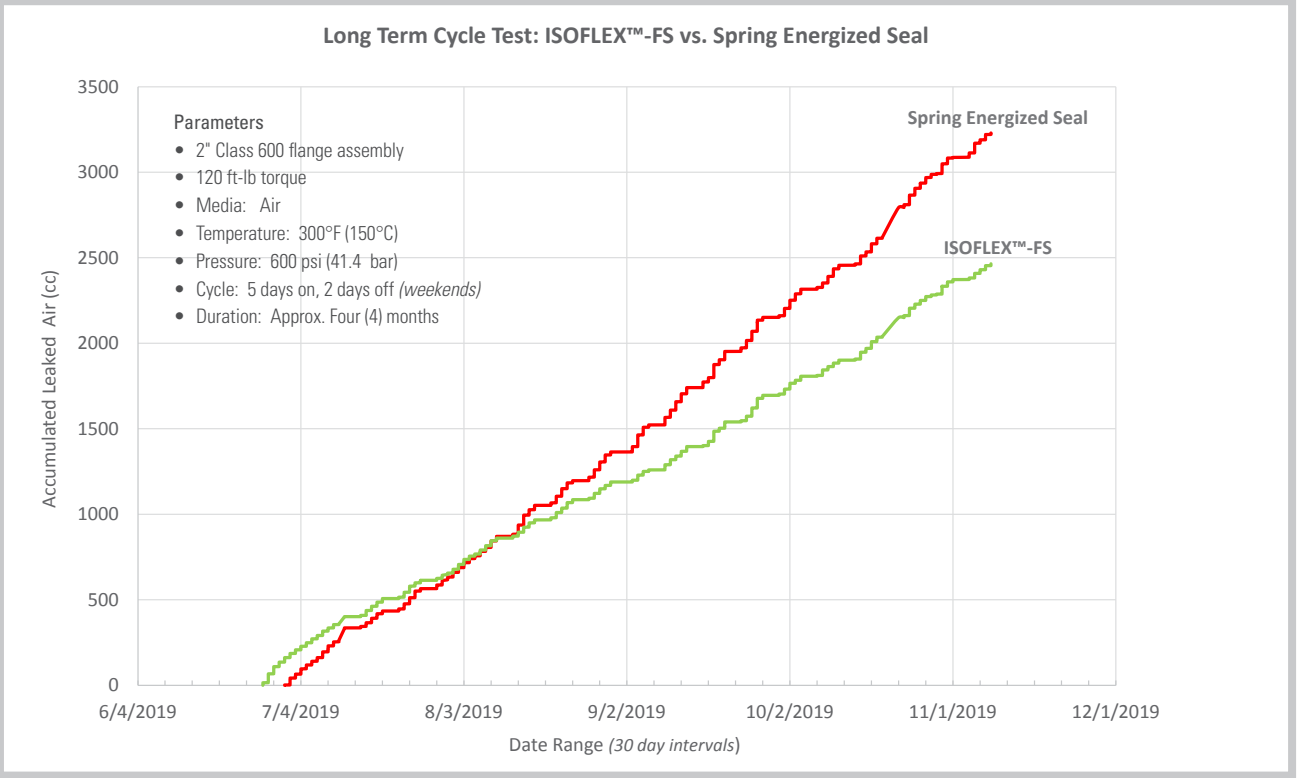
SPRING ENERGIZED SEAL (SES) TYPE ISOLATION GASKETS ARE INCONSISTENT IN SEALING PERFORMANCE.

POLYIMIDE FILM TYPICAL PROPERTIES

Properties	Test Standard	Typical Value	Unit
Dielectric Strength	ASTM D149	3000	V/mil
Volume Resistivity	ASTM D257	1.0×10^{15}	Ohm cm
Tensile Strength	ASTM D882	24	ksi

CORRICULITE®-FACED FLEXPRO® OUTPERFORMS THE SPRING ENERGIZED SEAL IN CYCLING APPLICATIONS

LONG TERM CYCLE TEST: ISOFLEX™-FS vs. SPRING ENERGIZED SEAL



ISOFLEX™-FS | **SPRING ENERGIZED**

Post Test Observations

- With the Spring Energized Seal Type - Load rests on GRE surface and is not concentrated on the SES
- Both load & heat cause the GRE to creep into the flange bore
- ISOFLEX™-FS has no issues as zero load rests on GRE
- Also corroborated by EN13555 Pqr testing (0.99 @ 150°C).

ISOFLEX™ -FS

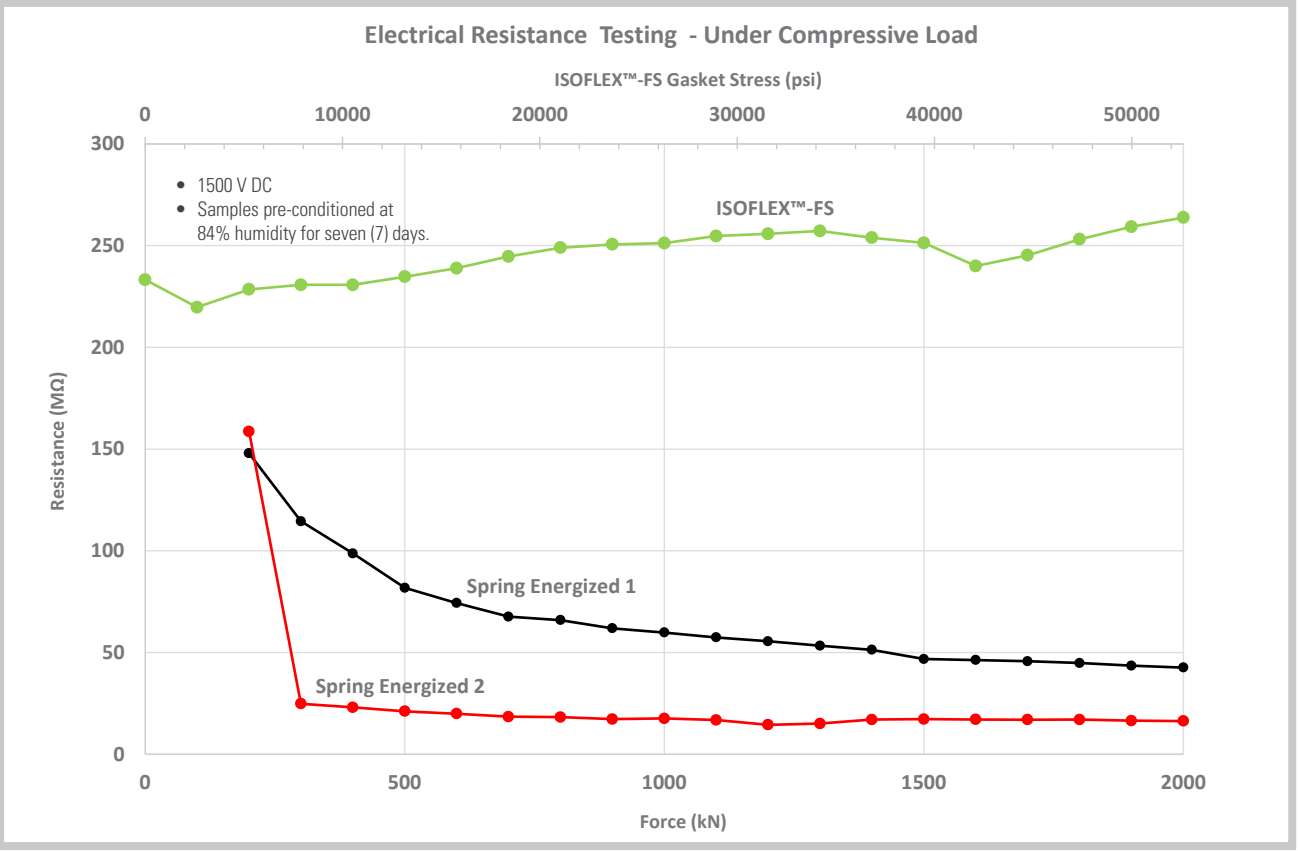
BEST OF SEALING.
BEST OF ISOLATION.

ELECTRICAL RESISTANCE TESTING – UNDER COMPRESSIVE LOAD

Testing performed at the elevated humidity level of 84%.

Increased relative humidity can lead to more moisture being present. Moisture reduces electrical resistance & isolation properties.

Achieving a high level of electrical resistance with high humidity is a significant result, even more so while under increasing compressive load.



SPRING ENERGIZED 1

Diminishing electrical resistance is seen as a result of the spring moving closer towards the flange under compressive load.

SPRING ENERGIZED 2

A rapid drop in resistivity is experienced as a result of the spring cutting through the PTFE.

ISOFLEX™ -FS

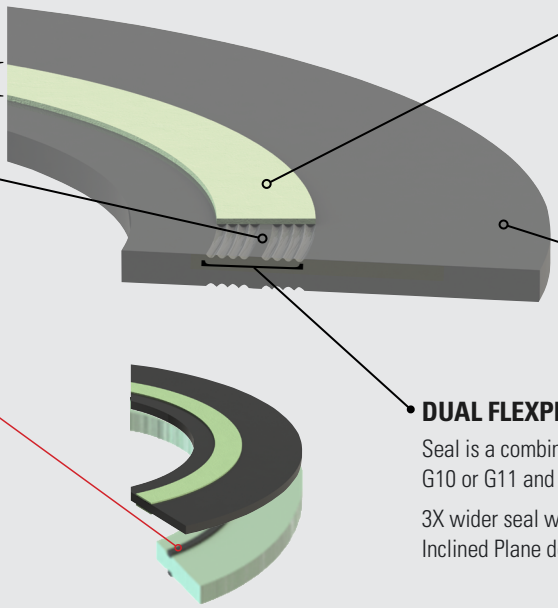
Electrical resistance of the ISOFLEX™-FS remains constant at the extreme gasket stress of 52,620 psi.

ISOFLEX™ -LT

THE ISOFLEX™- LT DESIGN IS LESS SUSCEPTABLE TO LOCALIZED FLANGE DAMAGE.

- Base ring is made with NEMA Grade glass reinforced epoxy (GRE).
- Seal design based on trusted Flexpro® (*Kammprofile*) style serrations in the GRE base ring.
- Faced with Corriculite®, to provide a reliable seal.
- The combination of the seal design and Corriculite® creates a ring of highly compressed facing material to aid in sealing small molecules.

A CLOSER LOOK AT ISOFLEX™ -LT



Seal location is engineered to ideally position the sealing area more closely to the fasteners.

The blank space creates a ring of highly compressed facing material to aid sealing small molecules.

CORRICULITE® FACINGS

Prevents the onset of galvanic corrosion and provides gas tight sealing performance with wide range of fluid compatibility.

Corriculite® facing is inert and enherently non-conductive.

BASE RING: NEMA GRADE GRE

(Glass reinforced epoxy).

INCLINED PLANE DESIGN

Seal is made from soft material like: Nitrile, Viton or PTFE.

Reliance on narrow seal (.1") is not ideal.

Susceptable to localized flange damage.

DUAL FLEXPRO® STYLE SEAL DESIGN

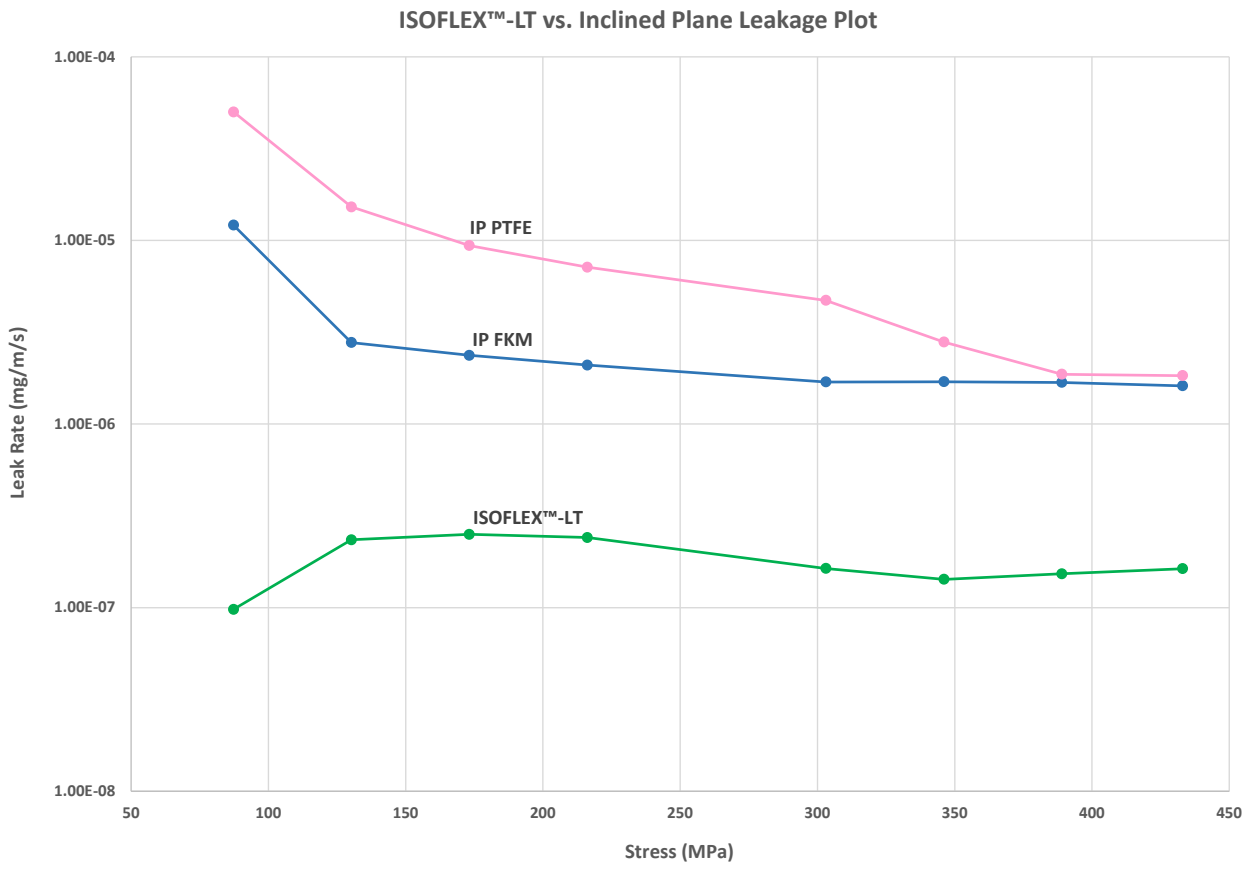
Seal is a combination of Flexpro® Style serrated G10 or G11 and faced with Corriculite® material.

3X wider seal with Flexpro® (.35") than the Inclined Plane design.

ISOFLEX™ -LT

ISOFLEX™-LT SEALS BETTER THAN THE INCLINED PLANE STYLE GASKETS.

PROVEN TECHNOLOGY. RESULTS DRIVEN.



ARE YOU FLEXITALLIC SAFE?

Interested in having a technical conversation about Flexitallic's ISOFLEX™ or ISOPRO Products?

Our team of World-Class Application Engineers are available to answer any of your technical questions via: phone, email or live chat.

Phone: +1 281.604.2400

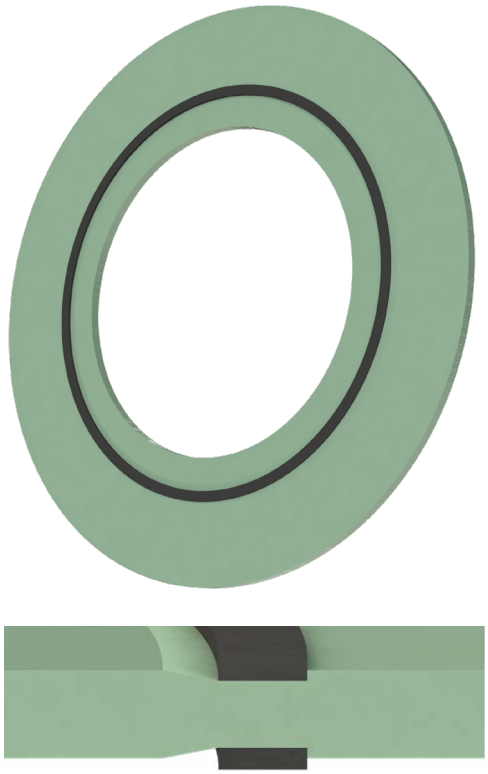
Email: dpengineering@flexitallic.com

Live Chat: https://www.flexitallic.com/us/

ISOPRO - IP

ISOPRO-IP IS A FLANGE ISOLATION GASKET UTILIZING NEMA GRADE GLASS REINFORCED EPOXY (GRE) THAT IS MACHINE-GROOVED WITH A RECESS AND INCLINED PLANE IN WHICH CONTAINS A SOFT SEALING ELEMENT.

- A better alternative to neoprene or nitrile faced phenolic. Available in G10 or G11.
- The engineered groove geometry enables the internal pressure to energize the sealing element.
- Ideal for low to medium pressure classes and general service use.
- Choice of sealing elements available: Nitrile, Viton, or PTFE.



ISOPRO - NFP

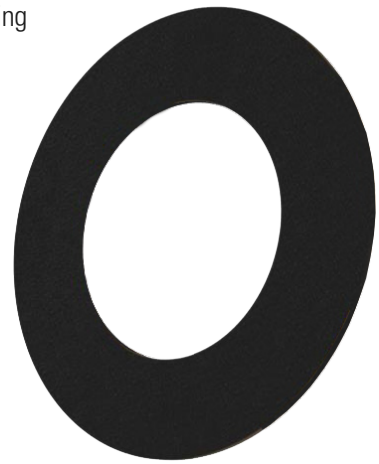
ISOPRO-NFP IS A FLANGE ISOLATION GASKET MADE WITH A PHENOLIC CORE AND NITRILE FACINGS.

- A good alternative to neoprene based material, the ISOPRO-NFP isolation gasket offers a more broad temperature range.
- Available as a cut ring (Style F) or full face (Style E).
- Gasket OD is sized to the bolt hole's edge to allow adequate room for the sleeves.

ISOPRO - NEO

ISOPRO-NEO IS A NEOPRENE BASED SHEET SEALING MATERIAL.

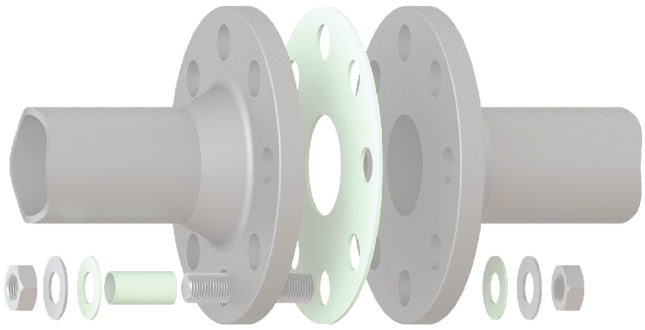
- An economical gasket option in applications or services where temperature and pressure are non-demanding.
- Available as a cut ring (Style F) or full face Style E).
- Gasket OD is sized to the bolt hole's edge to allow adequate room for the sleeves.



KIT COMPONENTS

FULL KIT AVAILABILITY, INCLUDING:

- ISOLATING SLEEVES & WASHERS
- METALLIC BACK-UP WASHERS
- NON-CONDUCTIVE ANTI-SEIZE



ISOLATING SLEEVES AND WASHERS

Isolating Sleeves - Typical Temperature Limits

	Mylar	Nylon	Phenolic	PTFE	G10	G11
Max Temp °F (°C)	302 (150)	150 (65)	250 (121)	500 (260)	302 (150)	392 (200)
Min Temp °F (°C)	-94 (-70)	-20 (-29)	-65 (-54)	-400 (-240)	-200 (-129)	-200 (-129)

Note: Sleeves are cut to length accounting for double washer (DW) or single washer (SW) use, flange thickness including raised face height, and gasket thickness.

Isolating Washers - Typical Temperature Limits

	Phenolic	G10	G11	Mica Faced CS Flexpro®**
Max Temp °F (°C)	250 (121)	302 (150)	392 (200)	1000 (538)
Min Temp °F (°C)	-65 (-54)	-200 (-129)	-200 (-129)	-58 (-50)

Note: Standard metallic washer offering is Zinc Plated Carbon Steel. Stainless Steel available upon request. ** Provided when Fire Safety is required.

WHAT IS CORRICULITE®?

THE NEW STANDARD FOR SEALING SOLUTIONS IN CORROSIVE ENVIRONMENTS

THE BENEFITS OF CORRICULITE® ARE CLEAR

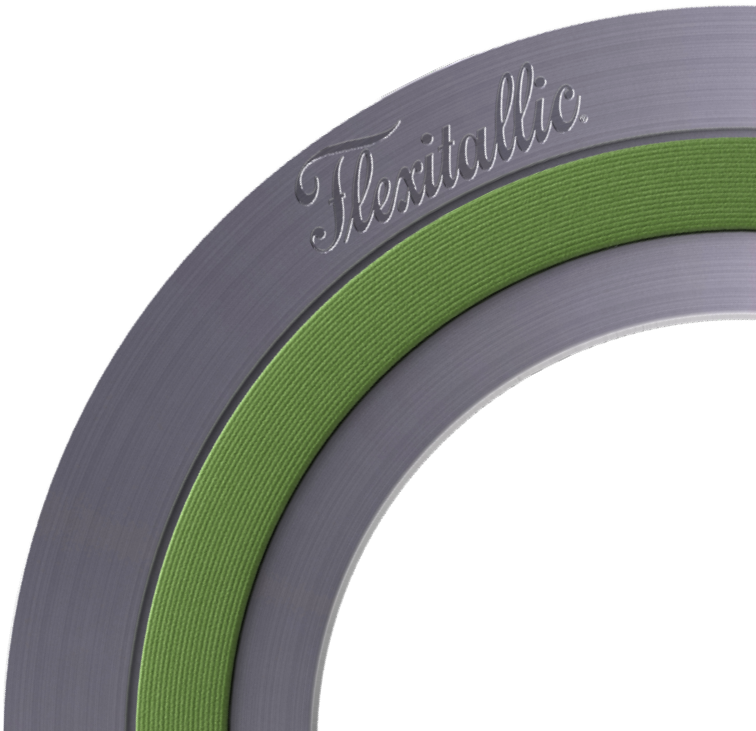
FIRE SAFE - PASSES API 6FB FIRE TEST	PROVIDES GAS TIGHT SEALING PERFORMANCE	WIDE RANGE OF CHEMICAL COMPATIBILITY
MATERIAL IS INERT AND INHERENTLY NON CONDUCTIVE	PREVENTS THE ONSET OF GALVANIC CORROSION	NOT SUSCEPTIBLE TO COLD FLOW LIKE PTFE OR ELASTOMERS
TEMPERATURE RANGE -49°F (-45°C) TO +440°F (225°C)	SEALS TIGHTER THAN GRAPHITE	COST EFFECTIVE, FLANGE CORROSION PROTECTION

Responding to customer demands for an improved material with strong anti-corrosion characteristics.

Flexitallic created Corriculite® - a filler material for spiral wounds and facing for Isolation gaskets.

Corriculite® was specifically designed for use in corrosion-sensitive environments, such as seawater and hydrocarbon services.

To date, our proprietary material is widely utilized across a number of industries, including oil and gas, power and marine.



A WINNING COMBINATION OF OPTIMUM SEALING AND ANTI-CORROSION PROPERTIES.

A PROVEN SOLUTION

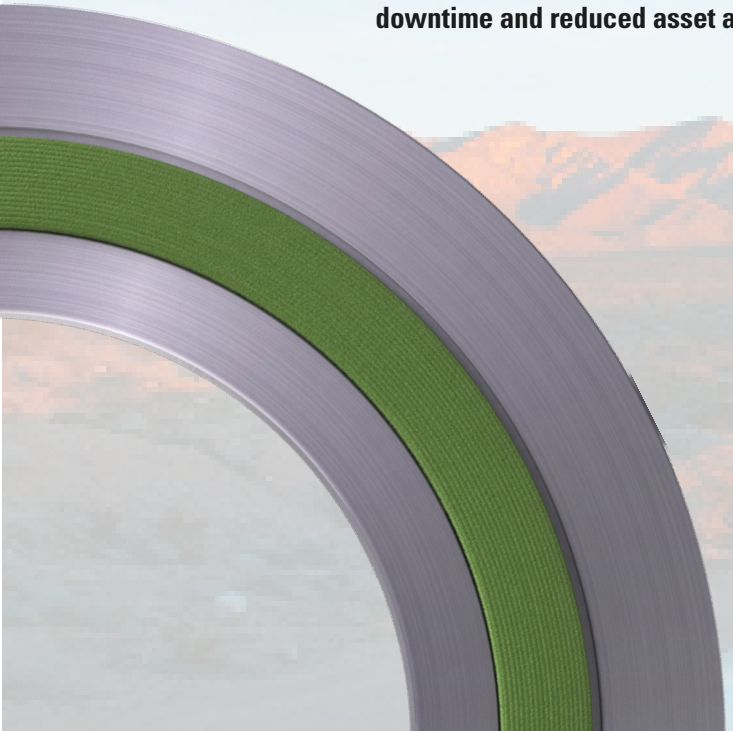
A number of benchmark tests have been carried out to validate the performance of Corriculite® as sealing material in corrosion sensitive conditions.

For more information visit: Corriculite.com

An example of corrosion caused by use of conventional graphite gaskets.

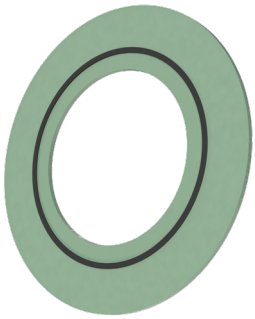
CORRICULITE
Protection / Sealed in

Joints in hydrocarbon and seawater services are vulnerable to gasket degradation and flange face corrosion, which results in increased costs, lost production as well as safety and environmental concerns, unscheduled downtime and reduced asset availablity.



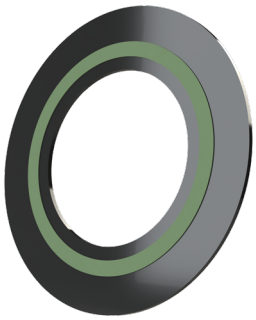
ISOLATION OFFERING CHART

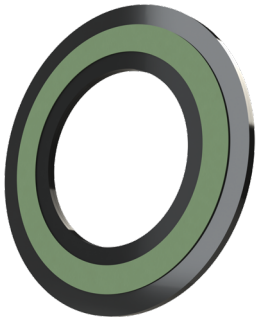
ISOPRO



	ISOPRO-NEO	ISOPRO-NFP	ISOPRO-IP
GASKET OVERVIEW	Neoprene cut gasket	Nitrile faced phenolic cut gasket	"Inclined Plane" type - Glass Reinforced Epoxy (GRE) with machined recess & soft sealing element.
PRIMARY ISOLATION	Neoprene (polychloroprene) material	Phenolic Core with nitrile facings	NEMA Grade GRE (glass-reinforced epoxy) G10 or G11
PRIMARY SEALING			Nitrile, Viton, PTFE
FACING MATERIAL(S)	N/A	Nitrile	No additonal facing
THICKNESS (in.)	1/8" (.0125")	1/8" (.0125")	1/8" (.0125")
TEMPERATURE RANGE	-20°F (-29°C) to 170°F (77°C)	-65°F (-54°C) to 250°F (121°C)	*Refer to datasheet.*
PRESSURE CLASS RANGE	Class 150 to 300	Class 150 to 300	Class 150 to 900
COLOR	Black	Black	Green
CERTIFICATIONS & APPROVALS			
KIT OVERVIEW			
ISOLATION SLEEVE MATERIALS	Mylar, Nylon, Phenolic, PTFE, G10 or G11	Mylar, Nylon, Phenolic, PTFE, G10 or G11	Mylar, Nylon, Phenolic, PTFE, G10 or G11
ISOLATION WASHER MATERIALS	Phenolic, G10 or G11	Phenolic, G10 or G11	Phenolic, G10 or G11
METALLIC WASHER MATERIAL	Zinc Plated Carbon Steel	Zinc Plated Carbon Steel	Zinc Plated Carbon Steel
REQUIRED FOR ORDERING			
STYLE TYPE	Style "F" (Ring) or Style "E" (Full Face)		
PIPE SCHEDULE	Pipe Schedule (Gasket ID matches bore). *When not supplied, standard schedule is assumed.*		
WASHER SPECIFICATION	Double Washer (DW) or Single Washer (SW). *Sleeves are sized to extend thru washers to both hex nuts.*		

ISOFLEX™





ISOFLEX™-LT	ISOFLEX™-FS
Glass Reinforced Epoxy (GRE) with Flexpro® (kammprofile) serrations and Corriculite® facing	Flexpro® (kammprofile) halves with Corriculite® facing separated by polyimide film. GRE inner and outer rings. Fire Safe design.
NEMA Grade GRE (glass-reinforced epoxy) G10 or G11	Polyimide film
Corriculite® faced serrations precision-machined for concentrated load. *(Alternative facing available upon request.)*	Two 304SS Flexpro®s with Corriculite® facing. *(Alternative materials available upon request.)*
Corriculite®	Corriculite® or Thermiculite® Facing
1/8" (.0125")	1/4" (.25")
Refer to datasheet.	*Refer to datasheet.*
Class 150 - 900	Class 150 to 2500
Black & Green	Black & Green
	Fire Safety API 6FB • Exceeds MESC SPE 85/300-2017 Fugitive Emissions Class A Requirements
KIT OVERVIEW	
Mylar, Nylon, Phenolic, PTFE, G10 or G11	Mylar, Nylon, Phenolic, PTFE, G10 or G11
Phenolic, G10 or G11	**Fire Safe Applications:** Mica faced CS Flexpro® **Non-fire Safe Applications:** G10 or G11
Zinc Plated Carbon Steel	Zinc Plated Carbon Steel
REQUIRED FOR ORDERING	
Style "F" (Ring) or Style "E" (Full Face)	
Pipe Schedule (Gasket ID matches bore). *When not supplied, standard schedule is assumed.*	
Double Washer (DW) or Single Washer (SW). *Sleeves are sized to extend thru washers to both hex nuts.*	

Flexitallic®

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

UNITED STATES
Geismar Service Center

35238 E. Hwy 30
Geismar
Louisiana 70734
USA
Tel. +1 225 442 3580
Fax. +1 225 424 6895
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

UNITED STATES
Custom Rubber Products

2625 Bennington
Houston
Texas 77093
USA
Tel. +1 713 691 2211
Fax. +1 713 691 3005
www.customrubber.com

UNITED KINGDOM
Flexitallic UK Ltd

Scandinavia Mill
Hunsworth Lane
Cleckheaton
West Yorkshire, BD19 4LN
UK
Tel. +44 1274 851273
Fax. +44 1274 300303
www.flexitallic.com

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

GERMANY
Flexitallic GmbH

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

FRANCE
Siem Supranite
a Flexitallic Company

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

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

BENELUX
Flexitallic Benelux BVBA

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

UNITED ARAB EMIRATES
Flexitallic LLC

PO Box No. 6591-Al Jazeera
Plot 108, Road E, Al Hamra
Industrial Estate
Ras Al Khaimah
United Arab Emirates
Tel. +971 (0)7 243 4305
Fax. +971 (0)7 243 4306
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

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

SINGAPORE
Flexitallic Ltd
Singapore Branch

Level 42 Suntec Tower Three
8 Temasek Boulevard
SINGAPORE
038988
Tel: +65 68663638
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 and China plus a network of worldwide licensing partners and distributors.