

James Walker®

InsoLion® flange isolation kits



High Performance Sealing Technology



No compromise

Isolation gaskets are by their very nature a compromised product as they try to fulfil both sealing and isolating roles at a wide range of pressures and temperatures.

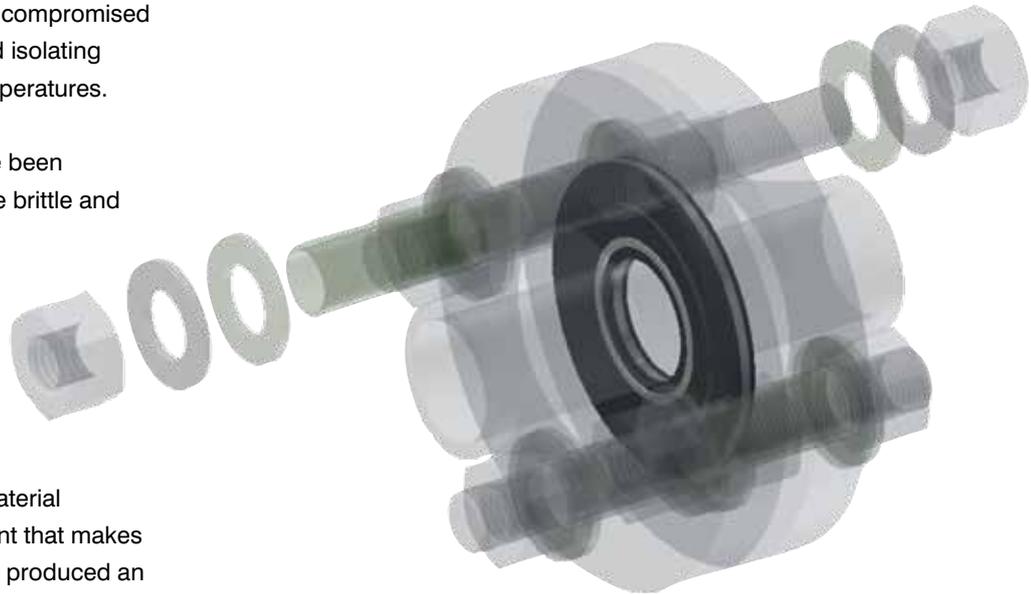
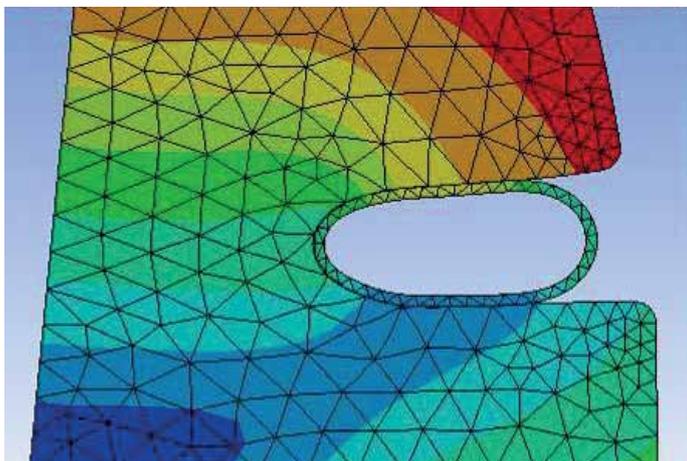
Materials such as phenolic resins that have been traditionally used for isolation duties can be brittle and easily damaged in handling or flange tightening operations.

Additionally, these materials are not suitable for applications involving higher temperatures or pressures.

However, by successfully optimising the material specification and design of each component that makes up its InsoLion® system, James Walker has produced an isolation gasket kit with the widest possible performance envelope.

By starting with the best possible materials, optimising component design and careful consideration of the positioning of the sealing element, InsoLion provides a single gasket design that can be specified for plant-wide use across the majority of flange types, saving on inventory costs and simplifying maintenance regimes.

The combination of materials used in the construction of InsoLion also provides a corrosion-resistant and maintenance-free solution that offers protection to flange faces from media-induced corrosion.



The benefits of InsoLion®

Construction

The InsoLion gasket consists of a Phynox® spring-energised U-shaped seal in modified PTFE chosen for its advanced mechanical properties and improved resistance to permeation. This element sits in a precision machined seal groove in the high strength G11 glass reinforced epoxy and UNS S3163 stainless steel composite core.

Improved sealing

The U-shaped PTFE sealing element has been optimised using finite element analysis (FEA) and is energised by a Phynox spring. The material combination provides almost unlimited media compatibility for critical service applications, whilst the spring-energised seal design provides a dynamic and reliable seal at all pressures.

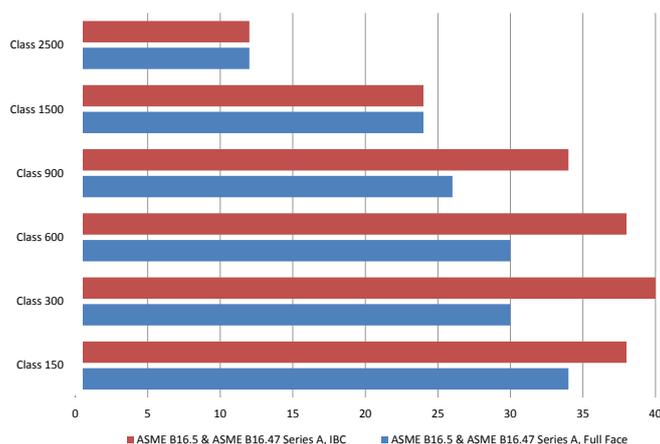
Improved isolation

InsoLion is a complete flange isolation kit including bolt sleeves and isolation washers. The gasket faces, bolt sleeves and washers are supplied in superior G11 glass reinforced epoxy (GRE) as standard and will offer extremely high levels of electrical isolation even at elevated temperatures.

Phynox® is a registered trademark of Aperam Alloys Imphy

Performance

Maximum sizes available for Flange NPS Vs Class Rating (ASME B16.5 & B16.47 Series A), IBC & Full Face



Note: Minimum InsoLion® IBC and Full face gasket size is 0.5 NPS. ASME B16.47 Series B flange size limits will vary.

Information required for enquiries and orders

When looking to order or place an enquiry for InsoLion® products, the following information should be made available.

- Pipe Size (NB)
- Flange Class / Pressure rating (DIN, BS)
- Gasket Type
E – Full Face or F – Inside Bolt Circle (IBC) Ideally a drawing of the flange should be provided.
- Type of Flanges making up the joint Weld Neck, Slip-On, RTJ etc...
- Bolt size and number of bolts
- Application
 - + Media
 - + Max operating temp
 - + Min operating temp
 - + Thermal cycling frequency
- Quantity required
- Delivery Requirement
- Contact Name
- Contact Number

InsoLion performance characteristics

- Max operating temperature: 180°C (356°F)
- Media compatibility with Natural Gas, Oils and other hydrocarbon media
- Suitable for corrosive applications including media such as CO₂ and sour (H₂S)

Phynox® spring element

Phynox is a Cobalt-Chromium-Nickel alloy offering a combination of high strength, ductility and good mechanical properties. The alloy also has excellent fatigue life and corrosion resistance and is non-magnetic.

G11 Glass-Reinforced Epoxy

The G11 grade of glass reinforced epoxy material was specifically chosen by James Walker for its superior retention of mechanical properties at elevated temperatures (180°C max operational temperature) compared with the G10 variant (150°C max operational temperature).

Max. Continuous Operating Temp: 180°C (356°F)

Min. Continuous Operating Temp: -45°C (-50°F)

Dielectric Strength: 500 V/Mil

Compressive Strength: 345 MPa min

Impact Strength: 10ft.lb/inch min

Tensile Strength: 283 MPa min

Shear Strength: 152 MPa min

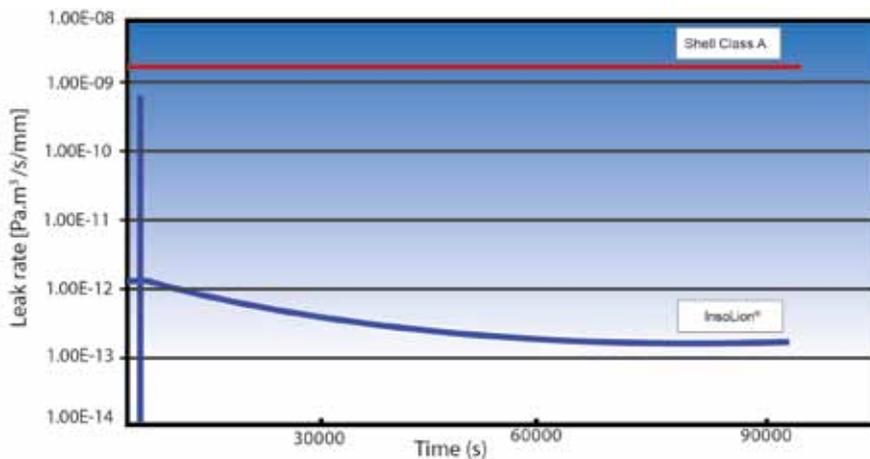
Water Absorption: 0.1% max

Hot Operational Tightness Testing (HOTT) was carried out at 200°C, which is 20°C above our recommended maximum operational temperature for InsoLion. No adverse effects were observed on the material or its performance, even at this elevated temperature.



Testing

Ultra-low fugitive emissions



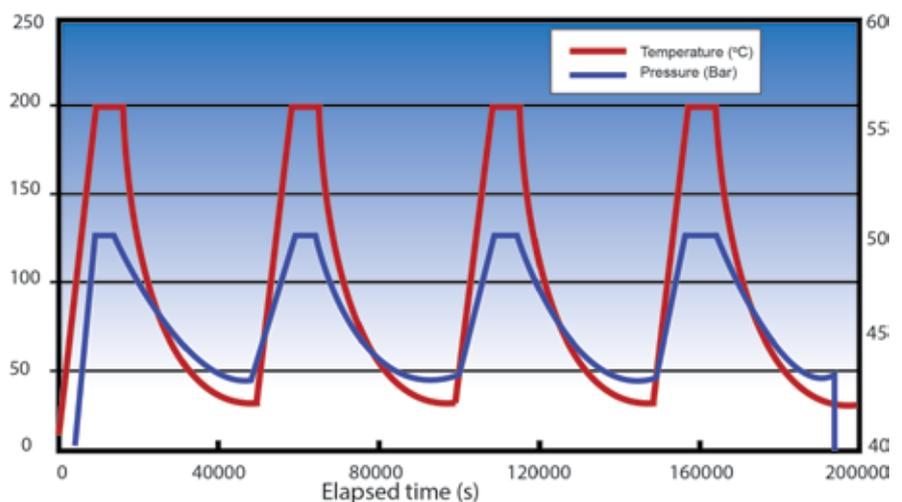
Emissions levels significantly lower than Shell Tightness Class A

Shell Tightness Class A - MESG SPE 85/300 Class A(HS)

Testing carried out on Amtec TEMES fl.ai1 test rig using helium at a constant system pressure of 52bar and a gasket loading of 52MPa at 20°C for a period in excess of 26 hours.

Hot Operational Tightness Test

No detrimental effect on sealability observed during thermal cycling



Shell MESG SPE 85/300 3.3.5

Temperature raised from ambient to 200°C/min at a rate of 100°C/min, maintained at 200°C (this is 20°C in excess of our recommended operational maximum) for a period of 1 hour before being allowed to cool back to ambient.

InsoLion®

Precision engineering and stringent quality regimes ensure the highest possible standards of product performance.

Shell MESC standard

Specifically designed from the outset to meet the industry's most stringent requirements, InsoLion® is Shell MESC approved, exceeding the requirements of both Shell MESC SPE 85/300 3.3.2 Sep 2012 Class A (HS) for fugitive emissions and Shell MESC SPE 85/300 3.3.5 Sep 2012 requirements under the Hot Operational Tightness Test (HOTT).

Shell TAT approved

InsoLion has received approval through Shell's Type Approval Test and as a result will now be listed in Shell's Technically Accepted Manufacturers & Products (TAMAP) database.

Ultra-low fugitive emissions

In pre-launch testing on an Amtec TEMES fl.a1 test rig, InsoLion achieved outstanding fugitive emissions levels of just 4.3 E-13 Pa.m³/s/mm, well within the parameters of Shell Tightness Class A - MESC SPE 85/300 Class A(HS).



How supplied

Each InsoLion gasket is supplied as a kit, complete with the requisite number of bolt isolation sleeves and washers also manufactured in G11 GRE as standard specification.

InsoLion can be supplied in sizes from 1/2" to match the majority of flange specifications including ANSI, API, ASME, EN, BS, ISO and DIN. (See chart on page 3 for maximum sizes available in each flange Class)

Custom dimensions and sizing options, as well as alternative materials and full face flange options are available upon request.

The design of the InsoLion gasket and location of the spring-energised sealing element ensures that the product will seal all major flange types including RTJ (ring type joint) and raised face, and can provide an effective sealing option where mismatched flange faces are in existence.

Typical applications

- Flange insulation and electrical isolation in conjunction with cathodic protection systems.
- Insulation between dissimilar metals/flanges to prevent galvanic corrosion.
- Offers a high performance seal where temperatures or pressures are unsuited to the use of Phenolic gaskets.
- Capable of providing an effective seal between mismatched ring-joint and raised-face flanges.

InsoLion® has been accepted by
Shell Global Solutions
for the requirements of both
Shell MESC SPE 85/300 3.3.2
Class A (HS) and
Shell MESC SPE 85/300 3.3.5

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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. Safety Data Sheets (SDS) are available on request.

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To ensure you are working with the very latest product specifications, please consult the relevant section of the James Walker website: www.jameswalker.biz.

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