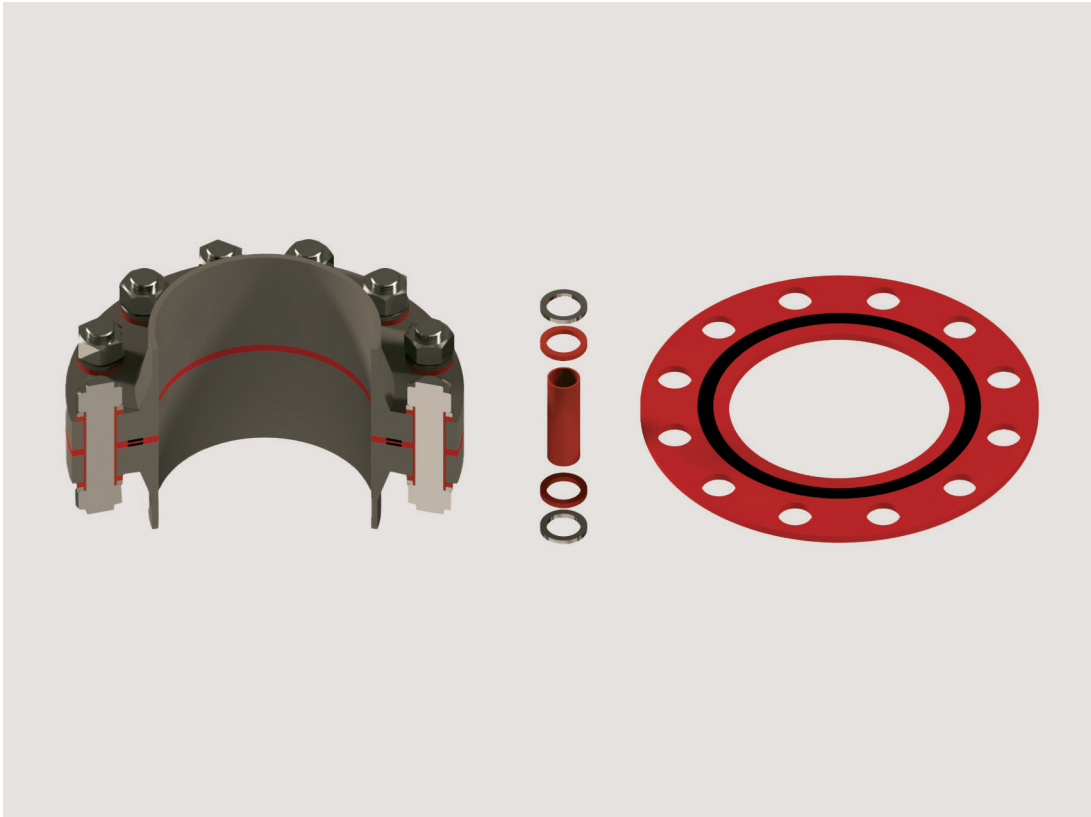


INSULATION KIT

Technical information



FUNCTION

As well as being used to insulate pipes against electrostatic charge, insulation kits also help to prevent contact corrosion. When these kits are used, the electrochemical corrosion process is interrupted thanks to the interruption of the flow of current between neighbouring flanges or flange components with different electrical potentials.

STRUCTURE

Insulation kits consist of gasket carrier with a gasket, sleeves and washers made from an insulating material. In order to avoid damaging the insulating washers when tightening the nuts, the kit also includes washers made from a metallic material.

General notes:

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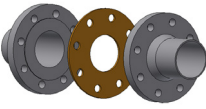
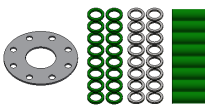
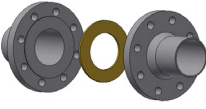
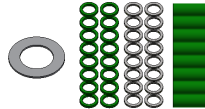
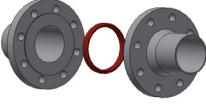
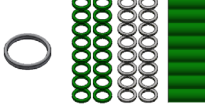
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VARIANTS

TYPE	SEAL INSTALLATION SITUATION	COMPONENTS	DESCRIPTION
E Flat-face [FF] application			The insulation kit consists of a gasket carrier with gasket [flat-face application], an insulating sleeve, two insulating washers and two steel washers for each screw.
F Raised-face [RF] application			The insulation kit consists of a gasket carrier with seal [raised-face application], an insulating sleeve, two insulating washers and two steel washers for each screw.
F Ring-type-joint [RTJ] application			The insulation kit consists of an RTJ gasket of either oval or octagonal design, an insulating sleeve, two insulating washers and two steel washers for each screw.

MATERIALS

GASKET CARRIER	PHENOLIC RESIN	PHENOLIC RESIN WITH NEOPRENE SURFACE	REINFORCED PTFE	G-7 [GLASS/SILICONE COMPOSITE LAMINATE]	G-10 [EPOXY/GLASS COMPOSITE LAMINATE]	G-11 [EPOXY/GLASS COMPOSITE LAMINATE]
DIELECTRIC STRENGTH [V/mm] ¹⁾	500	500	350	350	550	550
COMPRESSIVE STRENGTH [N/mm ²]	172	172	15	275	344	344
WATER ABSORPTION [%]	1.6	1.6	0.01	0.07	0.1	0.1
TENSILE STRENGTH [N/mm ²]	137	137	10	172	310	296
TEMPERATURE RANGE [°C]	-54 to +104	-54 to +79	-196 to +260	-196 to +232	-196 to +138	-196 to +176

1) The dielectric strength of an insulating material is the maximum permitted electrical field strength that can occur in that material without resulting in a voltage breakdown (electric arc or spark).

PHENOLIC RESIN

High dielectric strength and moderate mechanical properties. Water absorption is comparably high, so not the first choice in damp ambient conditions.

PHENOLIC RESIN WITH NEOPRENE SURFACE

For the properties of the gasket carrier, see "Phenolic resin". The version with a neoprene surface on both sides offers good sealing properties and was the standard version for a long time.

REINFORCED PTFE

Offers the highest level of thermal stability by comparison and is suitable for use in damp ambient conditions due to its low water absorption. The dielectric strength is at the lower end of the range.

G-7 [GLASS/SILICONE COMPOSITE LAMINATE]

The glass/silicone composite laminate is characterised by its very high temperature resistance combined with good mechanical properties. The dielectric strength is at the lower end of the range by comparison.

G-10/G11 [EPOXY/GLASS COMPOSITE LAMINATE]

The glass/epoxy laminates are characterised by their extremely high strength and dimensional stability. G-10 has a somewhat higher tensile strength, whereas G-11 is a better insulator and can withstand higher temperatures.

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GASKET

	NBR	FPM/FKM	PTFE	CR	EPDM
TEMPERATURE RANGE [°C]	-40 to +121	-29 to +177	-196 to +232	-40 to +121	-40 to +121

NBR

NBR is a frequently used sealing material thanks to its very good mechanical properties and resistance to mineral-oil-based lubricating oils and greases. For applications at elevated temperatures, however, FPM or PTFE have more potential.

FPM/FKM

Characterised by its excellent resistance to high temperatures and chemicals. This material is also highly resistant to ageing and has a very low gas permeability. It is not resistant to steam or hot water, among other substances.

PTFE

Resistant to almost all organic and inorganic chemicals (except for elemental fluorine, fluorine-halogen compounds and molten alkali metals). Offers the best temperature resistance by comparison, practically unlimited resistance to weathering and ageing. The disadvantages are the material's tendency to cold flow or creep.

CR

CR offers better resistance to weathering and ageing compared to NBR. Neoprene seals have good resistance to oils and greases. The temperature limits for use are comparable to those of NBR and EPDM.

EPDM

Good resistance to hot water, steam, ageing and chemicals. Resistant to mineral-oil products. Temperature resistance at the lower end of the range.

INSULATING SLEEVE

	MYLAR	NOMEX (META-ARAMID)	G-7 (GLASS/SILICONE COMPOSITE LAMINATE)	G-10 (EPOXY/GLASS COMPOSITE LAMINATE)	G-11 (EPOXY/GLASS COMPOSITE LAMINATE)
DIELECTRIC STRENGTH [V/mm] ¹⁾	4000	400	350	400	400
WATER ABSORPTION [%]	0.8	N/A	0.1	0.1	0.1
TEMPERATURE RANGE [°C]	-59 to +149	-54 to +232	-196 to +232	-196 to +232	-196 to +176

1) The dielectric strength of an insulating material is the maximum permitted electrical field strength that can occur in that material without resulting in a voltage breakdown (electric arc or spark).

STANDARDS/AVAILABILITY:

Insulation kits are available for flanges in accordance with:

- EN 1092-1
- ASME B16.5
- ISO 1759
- Special designs (on request)

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