



FKM 938

Rapid Gas Decompression Resistant

NORSOK & TOTAL QUALIFIED FKM

RGD (rapid gas decompression) is a phenomenon that often occurs when high-pressure gas molecules migrate into an elastomer at a compressed state. When the pressure surrounding the elastomer is suddenly released, the compressed gas inside the elastomer tries to expand and exit the elastomer, thus causing RGD (also known as explosive decompression). Greene, Tweed's FKM 938 is a fluorocarbon elastomer specifically designed to withstand RGD in compressor components, valves and pumps. Most elastomers experience severe blistering or cracking when the forces of these expanding gases overcome the strength of the surrounding material, but FKM 938 provides superior RGD resistant properties enabling seal integrity. FKM 938 also offers an improved lower temperature operating window. Its compression set resistance provides superior sealing and leak prevention unmatched by the leading competitive material. In addition, FKM 938 offers much better resistance to methanol, sour gas, hot water, steam and corrosion inhibitors than conventional fluorocarbon elastomers, extending seal lifetime.

FEATURES & BENEFITS

- FKM 938 has successfully passed the stringent NORSOK M-710 and TotalFinaElf test protocols at third party laboratories
- Provides reliable RGD resistance at low temperatures down to -35°F (-37°C), maintaining sealing properties and extending equipment life
- Offers reliable RGD resistance with compression set values that are much lower than existing material while preventing leakage and equipment failure



- Extends the life of refining, pipeline and oilfield equipment exposed to unanticipated process upsets resulting in pressure drops
- Superior resistance to RGD reduces maintenance and increases MTBF (mean time between failures)

APPLICATIONS

- Compressor components
- Valves
- Pumps

AVAILABILITY

- O-rings
- G-T® rings
- Custom-molded shapes

TYPICAL PROPERTIES

Physical Properties	ASTM Method	Typical Value
Color		Black
Hardness, Shore A, Points	D2240	90
Mechanical		
Compression Set, 22 hours @ 392°F (200°C) @ 25% Deflection, % of original deflection	D395 Method B	32
O-ring Properties		
Elongation @ Break, %		100
Tensile Strength, psi (MPa)		3,140 (21.6)
Slab Properties		
Elongation @ Break, %		85
Tensile Strength, psi (MPa)		3,070 (21.2)
Thermal		
Service Temperature Range, °F (°C)		-35°F to 450°F (-37°C to 232°C)

TotalFinaElf defines RGD tests at these gas, temperature and pressure conditions:

- Medium: 20% CO₂, 80% CH₄
- Temperature: 167°F (75°C)
- Pressure: 2,755 psi (190 bar)
- Decompression rate, max: 1,840 psi/min (127 bar/min)
- Exposure: 48 hours with five 24 hour cycles at temperature
- Test Specimen: size 425 O-ring

TESTING PROTOCOL

NORSOK

Norsok defines aging and RGD tests at various gas, temperature and pressure variations.

938 was tested under the following criteria:

- Media: 10% CO₂, 90% CH₄
- Temperature: 212°F (100°C)
- Pressure: 2,175 psi (150 bar)
- Exposure: 72 hours with ten 24 hour cycles at temperature
- Test Specimen: size 312 O-ring

TOTAL



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