



Fusion® 938

Rapid Gas Decompression Resistant



Features and Benefits

- Fusion® 938 has successfully passed the stringent Norsok M-710/ISO 23936-2, 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 RGD resistance reduces maintenance and increases MTBF (mean time between failures)
- Meets quality control requirements of Aramco 06-SAMSS-001 specification
- BAM tested to 150°C at 50 bar in gaseous oxygen.
- Fusion® 938 is a very stable material when exposed to Hydrogen at high pressure

NORSOK and Total Qualified FKM

Most elastomers experience severe blistering or cracking when expanding gas forces overcome the strength of the surrounding material, but Fusion® 938 provides superior RGD-resistant properties, enabling seal integrity. Fusion® 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, Fusion® 938 offers much better resistance to methanol, sour gas, hot water, steam, and corrosion inhibitors than conventional fluorocarbon elastomers, extending seal lifetime. Rapid gas decompression (RGD) 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 Fusion® 938 is a fluorocarbon elastomer specifically designed to withstand RGD in compressor components, valves, and pumps.

Applications

- Compressor components
- Valves
- Pump

Availability

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



Typical Properties	
Original Properties (ASTM Standard)	Typical
Color	Black
Hardness, Shore A, Points (D2240)	90
O-ring Properties (ASTM Standard)	
Elongation @ Break, % (D1414)	94
Tensile Strength, psi [MPa] (D1414)	3454 [23.8]
Modulus @ 50% Elongation, psi [MPa] (D1414)	960 [6.6]
Compression Set @ 25% Deflection, 22 Hours @ 392°F (200°C) in Air, % of Original Deflection (D1414)	22
Compression Set @ 25% Deflection, 70 Hours @ 392°F (200°C) in Air, % of Original Deflection (D1414)	37
Thermal	
Service Temperature Range, °F (°C)	-35°F to 450°F (-37°C to 232°C)

Testing Protocol

NORSOK defines aging and RGD tests at various gas, temperature and pressure variations. Fusion® 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

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

Greene Tweed

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