SEALING SOLUTIONS

Fusion® 938

High-Performance FKM Engineered to Resist Rapid Gas Decompression (RGD)

Features and Benefits

- Fusion® 938 has successfully passed the stringent NORSOK M-710/ISO 23936-2, API6A, and TotalEnergies specification GS EP PVV 154 test protocols at third-party laboratories
- Provides reliable RGD resistance and performance at temperatures down to -35°F (-37°C), maintaining sealing properties and extending equipment life
- 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
- Successfully tested in hydrogen and CO_2 services

Rapid Gas Decompression Resistant NFS FKM

Rapid gas decompression (RGD) occurs when high-pressure gas molecules permeate an elastomer seal and then expand rapidly during sudden pressure drops. Most elastomers cannot withstand these conditions, potentially leading to severe seal blistering, internal cracking, and reduced performance. Fusion® 938 is designed to withstand rapid gas decompression in compressor components, valves, pumps, and fluid/gas separation systems.

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.

Fusion® 938 is formulated with a non-fluorinated surfactant (NFS) polymer to meet environmental regulations without sacrificing performance for critical applications.

Applications

- Compressors
- Valves & Instrumentation
- Pumps
- Fluid/Gas Separation Systems
- Completion Equipment

Availability

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

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Typical Properties	
Original Properties (ASTM Standard)	Typical
Color	Black
Hardness, Shore A, Points (D2240)	92
Elongation @ Break, % (D412)	89
Tensile Strength, psi [MPa] (D412)	2979 [20.5]
Modulus @ 50% Elongation, psi [MPa] (D412)	1296 [8.9]
Compression Set @ 25% Deflection, 22 Hours @ 392°F (200°C) in Air, % of Original Deflection (D395)	10
Compression Set @ 25% Deflection, 70 Hours @ 392°F (200°C) in Air, % of Original Deflection (D395)	14
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 RGD tested under the following criteria:

- Media: 10% CO_2, 90% CH_4
- Temperature: 212°F (100°C)
- Pressure: 2,175 psi (150 bar)
- Exposure: 68 hrs (min) followed by 8 decompression cycles over 4 days
- Test specimen: size 312 o-ring

TotalEnergies specification GS EP PVV 154 defines RGD tests at these gas, temperature, and pressure conditions:

- Medium: 20% CO_2, 80% CH_4
- Temperature: 167°F (75°C)
- Pressure: 2,755 psi (190 bar)
- Rate of depressurization 190 bar to atmospheric pressure in 90 seconds max
- Exposure: 48 hours with five 24-hour cycles at temperature
- Test specimen: size 425 o-ring

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