CHEMRAZ® 526

Explosive Decompression Resistant

SEALING SOLUTIONS

Greene, Tweed's Chemraz® 526, a perfluoroelastomer, offers superior chemical compatibility coupled with explosive decompression resistance, making it the ideal compound for fluid handling equipment exposed to extreme chemical environments. Chemraz 526 has a temperature range from -4ºF to 482ºF (-20ºC to 250ºC). With its outstanding explosive decompression resistant capabilities, Chemraz 526 is well suited in a range of applications from pumps and valves to oilfield completion equipment.

ED (explosive 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 ED. Most elastomers experience severe blistering or cracking when the forces of these expanding gases overcome the strength of the surrounding material. However, Chemraz 526 offers superior explosive decompression properties and the broadest chemical compatibility, e.g., better resistance to sour gas, acids, caustics, hot water and steam.

Chemraz 526 is available for use as O-rings, gaskets and many other custom shapes.

TYPICAL PROPERTIES

Physical Properties	ASTM Method	Typical Value
Color		Black
Specific Gravity	D297	1.92
Hardness, Shore A, Points	D2240	95
Elongation @ Break, %	D1414	100
Modulus @ 10% Elongation, psi (MPa)	D1414	575 (3.9)
Tensile Strength, psi (MPa)	D1414	2580 (17.7)
Temperature Range, °F (°C)		-4 to 482 (-20 to 250)

FEATURES & BENEFITS

- Provides excellent ED resistance so parts maintain sealing properties and equipment life is extended
- Combines broad chemical resistance with ED resistance while preventing leakage and equipment failure
- Reduces maintenance cost
- Reduces mean time between failure

APPLICATIONS

- Pumps
- Valves
- Oilfield completion equipment

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Chemraz 526 has been successfully tested under the following conditions:

Test	Temperature	Pressure	Media	Decompression Rate	Cycles	Configuration
A	Ambient	800 psi	CO_2	260 psi/sec	1	Open
B	160°F	2,400 psi	CO_2/N_2	1,000 psi/min	3	Gland
C	160°F	2,400 psi	CO_2/N_2	1,000 psi/min	5	Gland
D	150°F	2,000 psi	CO_2/CH_4	1,000 psi/min	5	Gland
E	150°F	2,000 psi	CO_2/N_2	1,200 psi/min	5	Open

Test Details

Test A

- Standard NACE TM0297-97.
- Single cycle, 24-hour pressure soak with near instantaneous (3 seconds) pressure drop.
- Seals are placed in a pressure vessel and are unrestrained with pressure on all sides.
- Results: -214 O-rings: Internal 1,1 External 1,1 (multiple samples).
- Results: -325 O-rings: Internal 1,1 External 1,1 (multiple samples).

Test B

- Test based on Shell DODEP 02.01B.03.02 requirements.
- -214 O-rings.
- 3 cycles, consisting of a 48-hour hold at elevated pressure and temperature. Each decompression is at a rate no less than 1000 psi/min. Entire fixture is maintained @ ambient pressure for a minimum of 1 hour between cycles.
- Seals are constrained as a face seal with no back-up ring. Nominal squeeze and gland fill are 17% and 77% respectively.
- Fluid media is approximately 30% CO_2 (by volume), balance N_2.
- Results: Internal: 1,1 External: 1,1* (2 samples tested).

Test C

- Test based on Shell DODEP 02.01B.03.02 requirements.
- -214 O-rings.
- 5 cycles, consisting of a 48-hour hold at elevated pressure and temperature. Each decompression is at a rate no less than 1000 psi/min. Entire fixture is maintained @ ambient pressure for a minimum of 1 hour between cycles.
- Seals are constrained as a face seal with no back-up ring. Nominal squeeze and gland fill are 17% and 77% respectively.
- Fluid media is approximately 30% CO_2 (by volume), balance N_2.
- Results: Internal: 1,1 External: 1,1,* (2 samples tested).

Test D

- Test based on Shell DODEP 02.01B.03.02 requirements.
- -214 O-rings.
- 5 cycles, consisting of a 48-hour hold at elevated pressure and temperature. Each decompression is at a rate no less than 1000 psi/min. Entire fixture is maintained @ ambient pressure for a minimum of 1 hour between cycles.
- Seals are constrained as a face seal with no back-up ring. Nominal squeeze and gland fill are 17% and 77% respectively.
- Fluid media is approximately 30% CO_2 (by volume), balance CH_4 (Methane).
- Results: Internal: 1,1 External: 1,2* (2 samples tested).

Test E

- Test based on Shell DODEP 02.01B.03.02 requirements.
- -214 O-rings.
- 5 cycles, consisting of a 48-hour hold at elevated pressure and temperature. Each decompression is at a rate between 1000 - 1200 psi/min. Entire fixture is maintained @ ambient pressure for a minimum of 1 hour between cycles.
- Fluid media is approximately 5% CO_2 (by volume), balance N_2.
- Results: Internal: 1,1,1 External: 1,1,1* (3 Samples tested).

Damage Rating Scale			
External Visual Damage		Internal Visual Damage	
1	No visible damage.	1	No visible damage.
2	Less than or equal to 2 pimples or cracks.	2	Slight damage. One split/ blister per cut surface.
3	3-10 pimples or 1-2 blisters.	3	Moderate damage. Less than 50% of surface cut.
4	Less than 50% of surface subjected to blistering.	4	Severe damage. More than 50% of surface cut.
5	Considerable damage. More than 50% of surface covered with blisters or splits.		

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