

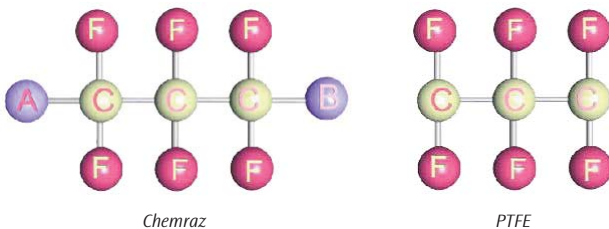
CHEMRAZ[®]

Perfluoroelastomer

THE ULTIMATE ELASTOMER

Chemraz[®] is a member of the perfluoroelastomer polymer family—polymers of three or more monomers in which all hydrogen positions have been replaced with fluorine. This complete state of fluorination results in outstanding resistance to heat and most chemicals and solvents. The principle monomer of Chemraz is tetrafluoroethylene (TFE); the proprietary second and third perfluorinated monomers are unique to it and confer the balance of the properties it demonstrates. Chemraz's resistance to steam and significantly improved low temperature properties are it's hallmark.

Chemraz—the ultimate elastomer for demanding oilfield applications—gives excellent sealing performance when exposed to mixes of aggressive chemicals found downhole and is often specified by operators. Special compounds have been formulated for improved resistance to rapid gas decompression and abrasion, giving significant reductions in downtime and maintenance.



Chemraz compounds are compatible with all well fluids and gases and injection and treatment chemicals, including reservoir fluids with high H₂S content, stimulation treatment fluids, completion fluids and asphaltene removers such as Xylene and Toluene together with amine-based inhibitors. Chemraz is available in O-ring, Vee ring, G-T[®] ring, electrical connector boots, slabs, metal bonded seals, Arlon[®] thermoplastic bonded seals, miniature seals, diaphragms and custom configurations.



TYPICAL APPLICATIONS

- Subsurface safety valves
- Packers
- Geothermal applications
- Logging tools
- Wireline tools
- Drillstem test tools

CHEMRAZ COMPOUNDS

- **Chemraz 510**—Developed specifically for O-ring applications in downhole environments.
- **Chemraz 522**—Developed specifically for Vee ring use. A harder compound that is resistant to rapid gas decompression.
- **Chemraz 526**—The ultimate rapid gas decompression resistant perfluoroelastomer.
- **Chemraz 562**—The ultimate high-temperature elastomer.
- **Chemraz 600**—High/low temperature capabilities (-4°F to 500°F, -20°C to 260°C). Higher durometer gives greater resistance to rapid gas decompression and aggressive environments.
- **Chemraz 605**—High-temperature capabilities (-4°F to 500°F, -20°C to 260°C) in aggressive oilfield environments.

RAPID GAS DECOMPRESSION RESISTANCE

Rapid Gas Decompression Test Data 526 in CO₂

- Parameters
 1. Pressure—800 psi
 2. Soak Time—24 hours
 3. Temperature—ambient
 4. Media—carbon dioxide
 5. Release Rate—5 seconds to atmosphere
 6. Test Sample—AS-568 size 325 and 214 O-rings

Damage Rating Scale Modified NACE Test Method #TM0192-92

- External Visual Damage
 1. No visible damage
 2. Less than or equal to two pimples
 3. Three to ten pimples or one to two blisters
 4. Less than 5% of surface subjected to blistering
 5. Considerable damage; more than 50% of surface covered with blisters or splits
- Internal Visual Damage
 1. No visible damage
 2. Slight damage; one split/blister per cut surface
 3. Moderate damage; less than 50% of surface cut
 4. Severe damage; more than 50% of surface cut

TEST RESULTS ON CHEMRAZ 526

Cross Section 325		Hardness M	
Initial	0.211 in. (5.36 mm)	1 Minute	91
1 Minute	0.232 in. (5.89 mm)	30 Minutes	95
30 Minutes	0.220 in. (5.58 mm)		

Damage			
External	1	Internal	1

Cross Section 214		Hardness M	
Initial	0.140 in. (3.56 mm)	1 Minute	92
1 Minute	0.149 in. (3.78 mm)	30 Minutes	95
30 Minutes	0.143 in. (3.63 mm)		

Damage			
External	1	Internal	1

GLASS TRANSITION

Lower numbers mean that elastomers will seal better at lower temperatures.

Chemraz 605 = 27°F (-3°C)

Competitive FFKM = 42°F (6°C)

LONG-TERM COMPRESSION SET EVALUATION FOR CHEMRAZ 562

