

CHEMRAZ®

Perfluoroelastomers



GT Greene
Tweed
INDUSTRIAL GROUP

CHEMRAZ® Perfluoroelastomers

Chemical Composition

Chemraz® is a member of the perfluoroelastomer family. Polymer chemists describe the base (raw) perfluoroelastomers as polymers of three or more monomers, in which all hydrogen positions have been replaced by fluorine. The outstanding resistance of perfluoroelastomer vulcanizing to heat, as well as to most chemicals and solvents, is the result of this state of complete fluorination.



The Most Heat & Chemical-Resistant Elastomeric Parts Available

Chemraz®, a proprietary Greene, Tweed compound, has the broadest heat and chemical resistance of any elastomeric material.

- Chemraz solves some of the most difficult sealing problems in Natural Gas Power Generators and Truck Diesel Engines, while offering outstanding in-use cost effectiveness through reduced warranty claims as well as reduced down time.
- Chemraz combines the resilience and sealing force of an elastomer with chemical resistance approaching that of PTFE.
- Chemraz seals last longer and seal better in harsh environments at a wide range of temperatures from -20°F to 615°F.
- Chemraz is available in a wide array of standard O-Ring sizes as well as custom geometries to give you, the customer, the inside advantage.

Applications

Chemraz resists attack by nearly all chemical reagents, including inorganic and organic acids, alkalines, ketones, esters, aldehydes, alcohols and fuels. As a result, Chemraz provides long-term service in virtually all applications where vehicle-operating temperatures are elevated and reduced emission requirements are paramount. Chemraz resists swelling and embrittlement while retaining its elastomeric qualities. Chemraz seals are easily installed, conforming to sealing surfaces better than metal seals despite irregularities due to assembly or wear. And unlike PTFE seals, Chemraz does not cold flow or cause shaft fretting.

Transportation: Chemraz seals are used on Fuel ignition systems, Turbo chargers, Natural gas power generators, relief valves, disconnects, and loading and unloading equipment.

Chemraz is used in mechanical seals, pump housings reactors, mixers, compressor casings, valves, variable area meters and other equipment. Custom designed parts are used as valve seats, stem packings, diaphragms and gaskets.



Choosing The Right Chemraz Compound.

Industrial Black Chemraz

Chemraz 505: A general-purpose compound most often selected for fluid handling applications. 505 has the broadest chemical range of any single perfluoroelastomer, and is often specified by mechanical seal manufacturers as a secondary seal to reduce MTBF.

Chemraz 605: A higher temperature compound that displays superior physical properties. Exhibits the best resistance to steam above 300°F. Often used in demanding dynamic applications such as diaphragms.

Chemraz 615: An excellent compound for high temperature sealing applications. In addition to having a temperature rating up to 615°F, this compound exhibits the lowest compression set of any known perfluoroelastomer on the market today.

Industrial Specialty Chemraz

Chemraz 584 and 585: Selected for applications where strong oxidizing fluids are present, and in hot aqueous solutions.

Chemraz 526: Designed for gas service where explosive decompression is possible. Ideal for gas seal applications.

Industrial White Chemraz

Chemraz 514 and 517: Industrial white compounds for applications where contamination from carbon black must be prevented. Not to be used in acids, aldehydes, ethylene oxide, or propylene oxide.

Properties of Industrial Black Chemraz

Compound Number	Chemraz 505	Chemraz 605	Chemraz 615
Hardness	75A	80A	80A
Color	Black	Black	Black
Tensile, PSI	1750	2150	1830
50% Mod., PSI	450	420	360
100% Mod., PSI	1150	1310	1090
Elongation	140	130	135
TR ₁₀ 50% Stretch, °F	+5	+6	+9
Compression Set (70 hours at 400°F)*			
#214 O-Ring, %	25	20	16
Button, %	13	11	14

Properties of Industrial Specialty Chemraz

Compound Number	Chemraz 584	Chemraz 585	Chemraz 526
Hardness	70A	80A	95A
Color	Cream	Cream	Black
Tensile, PSI	1300	1550	2580
10% Mod., PSI	-	-	575
50% Mod., PSI	350	625	-
100% Mod., PSI	780	1240	-
Elongation	145	130	100
Compression Set (70 hours at 400°F)*			
#214 O-Ring, %	35	35	30
Button, %	16	22	14

Properties of Industrial White Chemraz

Compound Number	Chemraz 514	Chemraz 517
Hardness	70A	80
Color	White	White
Tensile, PSI	1460	1600
50% Mod., PSI	300	540
100% Mod., PSI	680	1050
Elongation	190	165
TR ₁₀ 50% Stretch, °F	+5	+6
Compression Set (70 hours at 400°F)*		
#214 O-Ring, %	25	25
Button, %	13	12

*ASTM D395, Method B



General Physical Properties

Thermal Stability

70 Hours at 450°F	
Tensile, % Change	-9
Elongation, % Change	+40
Hardness, pts Change	-4

Estimated Service Temperatures (Vary by compound)

Low Temperature Limit, °F	-20
High Temperature Limit, °F	615

Miscellaneous Properties

Specific Gravity (approximate)	d	2.0
Pyrolysis Initiation	(°C)	approx. 400
Specific Heat	(cal/g °C)	0.2
Thermal Conductivity	(cal/cm. sec. °C)	b x 10 ⁻⁴
Glass Transition Temperature (DSC)	(°C)	-19
Gehman Torsion Test T ₅₀	(°C)	-21
Impact Resilience	(%)	12
Tabor Abrasion CS-17, 1000 g	(mg)	2
Flammability (oxygen index)	(%)	>95
Electrical Characteristics (non-carbon compound)		
Volume Resistance	(Ω-cm)	1.4 x 10 ⁻³
Dielectric Constant (23°C, 10 ³ Hz)		2.4
Dissipation Factor (23°C, 10 ³ Hz)		2 x 10 ⁻³
Dielectric Breakdown Strength (kV/0.15 mm)		7.0
Refractive Index (raw rubber)	n _D (23°C)	1.25 x 10 ⁻⁴
Coefficient Thermal Expansion	40° - 125°C	1.25 x 10 ⁻⁴
	125° - 230°C	2.15 x 10 ⁻⁴

Ordering Information

To order Chemraz o-rings, use a part number derived as follows:



Example: The typical part number 9026-505 describes a Chemraz 505 o-ring of 1.239" ID and 0.070" cross-section.

GREENE, TWEED & CO.

Corporate Headquarters

Kulpsville, PA, USA
TEL: 215/256-9521 • FAX: 215/256-0189

GREENE, TWEED & CO.

Industrial Group

Hatfield, PA, USA
TEL: 215/996-4700 • FAX: 215/996-4730

ADVANTEC, A DIVISION OF GREENE, TWEED & CO.

Garden Grove, CA, USA
TEL: 714/893-0903 • FAX: 714/373-1763

GREENE, TWEED & CO.

Houston

Houston, TX, USA
TEL: 281/821-2094 • FAX: 281/821-2696

GREENE, TWEED & CO., Ltd.

Nottingham, England
TEL: +44 (0) 115 9315 777
FAX: +44 (0) 115 9315 888

GREENE, TWEED & CO., GmbH

Hofheim am Taunus, Germany
TEL: +49 (0) 6192-929950
FAX: +49 (0) 6192-900316

GREENE, TWEED & CO., Italy

Milano, Italy
TEL: (39) 2-7063 2253 • FAX: (39) 2-7063 3211

GREENE, TWEED & CO., France S.A.

Cedex, France
TEL: +33 (0) 1 30 73 54 44
FAX: +33 (0) 1 30 73 45 75
Delegacion en España
Terrassa, Spain
TEL: (93) 731 05 38 • FAX: (93) 731 06 06

GREENE, TWEED & CO., Benelux B.V.

Halsteren, Netherlands
TEL: +31 (0) 164 612 123
FAX: +31 (0) 164 610 030

GREENE, TWEED & CO., Japan

Tokyo, Japan
TEL: 81-3-3454-1050 • FAX: 81-3-3454-1040

GREENE, TWEED & CO., Pte., Ltd.

Singapore
TEL: (65) 481 2808 • FAX: (65) 481 7338



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