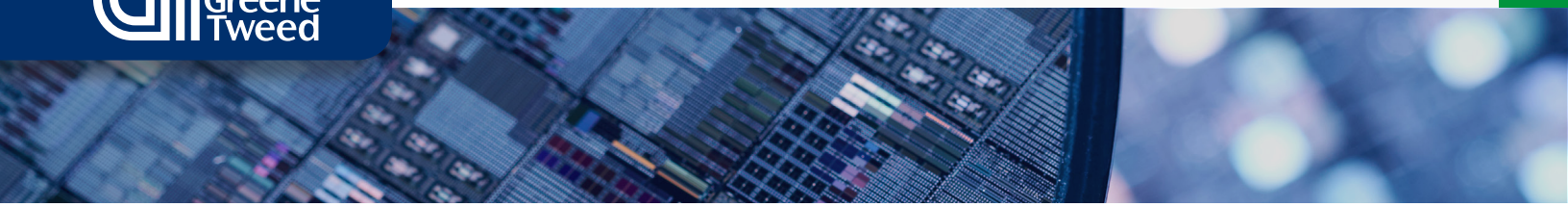

Chemraz® XTR

Superior Resistance to Corrosive ClF_3 Cleaning Environments

FFKM Increases Manufacturing Productivity

Chemraz® XTR, a perfluoroelastomer, is specifically designed to withstand the highly corrosive environments that commonly occur from using ClF_3 as a cleaning gas. Chemraz® XTR addresses application challenges typically found in ALD (atomic layer deposition) of titanium nitride and other nitride-based film deposition. With its unique molecular composition combined with fillers, it provides the highest available chemical resistance to thermal cleaning processes using ClF_3, resulting in minimal contamination, minimal weight loss, and longer seal lifetime. This means less downtime and higher wafer-processing yields.

Chemraz® XTR is recommended for both static and semi-dynamic applications in systems used for film deposition and etching, specifically for ALD of new barrier layers for advanced devices. These layers consist of materials that are difficult to etch; therefore, ClF_3 is employed for cleaning. Chemraz® XTR has high chemical resistance to corrosive fluorine-based chemistries at elevated temperatures. In addition, Chemraz® XTR remains stable to service temperatures exceeding 572°F (300°C) while demonstrating exceptional compression set resistance. This combination of excellent chemical resistance and low compression set in the extremely elevated temperatures found in process chambers extends seal longevity.

Recommended Process Applications

- Systems depositing barrier layers of TiN, TaN, and other refractory metal-based films
- Thermal environment with both high temperature (>300°C) and high concentration of ionized fluorine, ionized by plasma or thermal methods
- Delivery tubing seals for remotely generated fluorine-based gaseous cleans or thermally ionized ClF_3 gas

Features and Benefits

- Exceptional resistance to fluorine-based plasma environments for increased productivity
- Outstanding resistance to ClF_3 “thermal cleans” in ALD equipment results in extended PM (preventative maintenance) cycles
- Very low extraneous metallic ion content for reduced contamination
- Minimal compression set at elevated temperatures ensures sealing integrity
- Extended production performance with added reliability increases equipment operational time
- Reduced stiction simplifies PM

Applications

Process chamber seals including:

- Gate valve seals
- Isolator valve seals
- Lid seals
- Gas inlet/outlet seals
- Slit valve seals
- Chamber wall seals

Systems employing remote delivery of ionized fluorine

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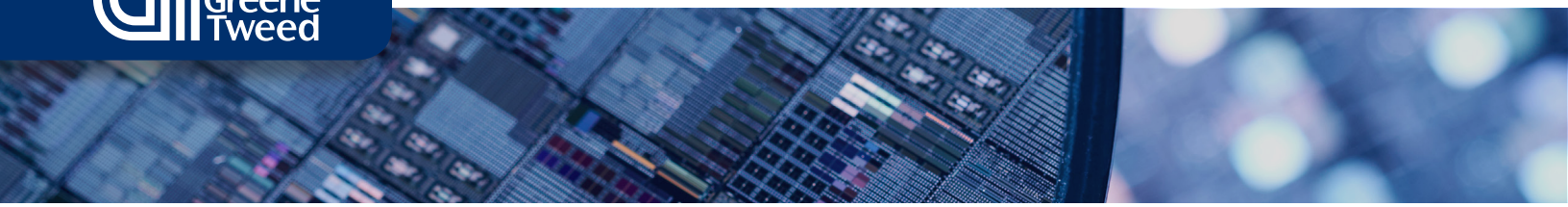
09/18-GT DS-US-SC-147



Typical Properties	
Physical Properties (ASTM Standard)	**Typical**
Color	Off-White
Polymer Type	Perfluoroelastomer
Specific Gravity (D297)	2.24
Hardness, Shore A* (D2240)	68
Hardness, Shore M (D2240)	76
Mechanical (ASTM Standard)	
Tensile Strength, psi (MPa) (D1414)	2076 (14.3)
Elongation, % (D1414)	265
Modulus @ 50% Elongation, psi (MPa) (D1414)	185 (1.3)
Modulus @ 100% Elongation, psi (MPa) (D1414)	365 (2.5)
Compression Set, (70 Hours @ 300°C @ 25% Compression), % (D395)	31
Thermal	
Thermal Service Temperature Range	-4°F to 572°F (-20°C to 300°C)

Not to be used for specification purposes.

Unless otherwise indicated, all tests are performed on AS 568A (-214) o-rings.

** Test performed on button samples.*

Note: Color variations and dark spots that might be observed in Chemraz® parts are considered cosmetic and an inherent result of the polymer curing process. They are not foreign matter and not anticipated to adversely affect the performance of the part in service. Please contact a Greene Tweed applications engineer for additional information.

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