



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 utilizing 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 300°C (572°F) 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.

FEATURES & 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

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

TYPICAL PROPERTIES		
Physical	ASTM Method	Typical Value
Color		Off White
Polymer Type		Perfluoroelastomer
Specific Gravity	D297	2.24
Hardness, Shore A	D2240	68
Hardness, Shore M	D2240	76
Mechanical		
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		-20 °C to 300°C (-4°F to 572°F)

Chemraz® XTR, collaborative innovation from GREENE, TWEED & CO., INC., and DAIKIN INDUSTRIES, LTD.

Statements and recommendations in this publication are based on our experience and knowledge of typical applications of this product and shall not constitute a guarantee of performance nor modify or alter our standard warranty applicable to such products.

Prior to actual use it is recommended compatibility tests be run to determine suitability in a specific application. This is critical where failure could result in injury or damage. A regular program of inspection and replacement should be implemented. Greene, Tweed technical personnel are available to help with a recommendation.

Contact Us

Greene, Tweed
Semiconductor
Kulpsville, PA, USA

Tel: +1.215.256.9521
Fax: +1.215.256.0189

Our Distributor

Banner Industries
High Purity Flow
Component Distribution
USA & Asia Pacific

Tel: +1.800.705.0016
Web: www.bannerindustries.com

 **Banner Industries**