

Chemraz® XCD

Superior Thermal Resistance and Cleanliness

Chemraz® XCD, a perfluoroelastomer, is specifically designed to exceed the most rigorous demands of front-end semiconductor thermal processing equipment. Chemraz® XCD withstands the extreme thermal challenges typically found in LPCVD (low pressure chemical vapor deposition), RTP (rapid thermal process), and epitaxial deposition systems.

Because of its unique polymer and filler structure, Chemraz® XCD provides the lowest compression set at high operating temperatures (> 572°F/300°C) of any perfluoroelastomer on the market, resulting in increased seal integrity and longer seal lifetimes. This means reduced downtime and higher wafer processing yields.

With the lowest outgassing profile for perfluoroelastomer materials in high-temperature applications, Chemraz® XCD provides a cleaner process environment. Because of its reduced surface stiction, Chemraz® XCD can be used for semi-dynamic and static sealing applications. Chemraz® XCD remains stable at operating temperatures up to 572°F (300°C) while maintaining exceptional compression set.

Features & Benefits

- Outstanding resistance to extreme heat broadens thermal budgets
- Minimal compression set at elevated temperatures ensures extended sealing integrity
- High purity and lower outgassing ensures cleaner processing
- Reduced sticking increases longevity in semi-dynamic applications and facilitates installation and removal



Applications

- Chamber seals
- Gas inlet/outlet seals
- Gate valve seals
- Isolator valve seals
- Reaction chamber lid seals
- Seals in close proximity to high-temperature wafer heaters
- Slit valve seals
- Tube capping seals

Recommended Process Applications

- LPCVD (silicon nitride, silicon oxide)
- RTP (annealing, oxidation, nitridation, silicidation)
- Epitaxial deposition
- Thermal CVD
- Atomic layer deposition
- Silicon wafer ingot growing
- SOI annealing

Typical Properties	
Physical Properties (ASTM Standard)	
Color	Black
Polymer Type	Perfluoroelastomer
Specific Gravity (D792)	1.99
Hardness, Shore A* (D2240)	74
Hardness, Shore M (D1414, D2240)	81
Mechanical (ASTM Standard)	
Tensile Strength, psi (kPa) (D1414, D412)	2600 (17927)
Elongation, % (D1414, D412)	217
Tensile Modulus @ 100% Elongation, psi (kPa) (D1414, D412)	610 (4206)
Compression Set @ 25% Deflection, % 70 Hours @ 300°C 168 Hours @ 300°C	32 43
Thermal	
Maximum Service Temperature**	572°F (300°C)

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.

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.

** Consult Greene Tweed for proper design guidelines in applications that exceed 482°F (250°C).