PRODUCT BROCHURE

Deposition

Semiconductor Solutions

Chemraz®: The Preferred Choice for Semiconductor Sealing Solutions

Greene Tweed's broad range of Chemraz® formulations are used by some of the world's leading semiconductor fabs because of their superior performance and reliability.

Chemraz® sealing solutions provide customers with an increased MTBR (mean time between repair) to reduce downtime and maintenance costs.

Superior Performance

- Minimal metallic ion content
- Exceptional plasma resistance
- Low particle generation
- High dimensional stability

Operational Benefits

- Superior reliability
- Enhanced repeatability
- Maximum system uptime
- Lower cost of ownership

A Full Range of Materials for Every Fab

Greene Tweed offers a full spectrum of materials to suit the needs of a variety of semiconductor fabs. Greene Tweed has sealing solutions for fabs that use the most advanced technology nodes in the most aggressive operating environments, as well as those requiring less-stringent particle process controls.

Technology Node	Material	Compression Set @25% Deflection, %	Max Service Temperature
10 nm and below	**Chemraz® XPE** Superior O_2 plasma resistance to protect components	70 hours @ 240°C **22%**	**280°C**
	Chemraz® 629 Excellent O_2 plasma resistance with low contamination	70 hours @ 204°C **30%**	**260°C**
10 nm – 45 nm	**Chemraz® XCD** Superior thermal resistance; carbon-loaded	70 hours @ 300°C **32%**	**300°C**
	Chemraz® XRZ Exceptional plasma resistance in corrosive environments	70 hours @ 300°C **17%**	**300°C**
	Chemraz® XTR Superior resistance to corrosive CLF3 cleaning environments	70 hours @ 204°C **25%**	**210°C**
	Chemraz® 655 High temperature perfluoroelastomer with minimal particle generation	70 hours @ 300°C **31%**	**300°C**
	Fusion® F10 High performance at a low cost of ownership	70 hours @ 204°C **15%**	**315°C**
> 45 nm	**Chemraz® 541** Broad chemical compatibility, temperature range, and shape versatility	70 hours @ 204°C **25%**	**230°C**

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Process	Typical Application Temperatures	Process Environments	Recommended Products
PECVD/ PEALD	25 – 300° C	TMS, DEMS, TEOS, SiH_4, C_3H_6, NH_3, SiF_4, O_2, N_2O, NF_3	Chemraz® 629, XRZ, XCD, 518, 536, 547, 656 Fusion™ F10, 742
Thermal ALD	25 – 300° C	TEOS, SiH_4, NH_3, SiF_4, O_2, C_2F_6, N_2O, NF_3, CF4	Chemraz® XRZ, XCD, 518, 536 Fusion™
PVD	25 – 300° C	Organic Precursors, WF_6, $TiCl_4$, SiH_4, HF, F_2, Cl_2, ClF_3, NF_3, H_2O vapor, O_2, O_3	Fusion™ F10, 742
Thermal (CVD, Epi, RTP, Dift)	150 – 300° C	N_2, O_2, H_2O, HCl, Cl_2	Chemraz® XCD

Dynamic Applications	Static Applications
Door seals Valves	Chamber seals Lid seals Quartz chamber seals Fittings Gas inlet/outlet/mixing block seals Window seals Center rings

The Greene Tweed Advantage

Greene Tweed has been developing high-performance sealing solutions to withstand the extreme conditions in semi-conductor fabs since the 1980s, and has continually evolved to meet the increasingly demanding needs of the industry.

Greene Tweed leverages decades of engineering and applications expertise to design customized solutions, including material selection and hardware designs based on specific operating environments, such as acids, solvents, bases, and ultra-pure H_2O applications.

Greene Tweed
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