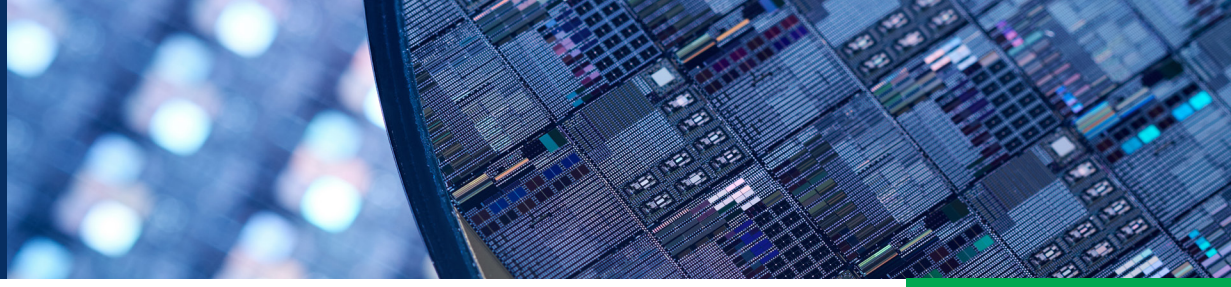


DATASHEET

ONX® 600

A Fluoropolymer Composite with Excellent Acid Resistance at High Temperatures

Greene Tweed's ONX® 600, a fluoropolymer-based, carbon-fiber-reinforced composite, is a high-strength, high-purity material that withstands strong acid chemistries at high temperatures.

Used in wafer cleaning, ONX® 600 is resistant to SPM (sulfuric-peroxide, Piranha), SC1 (ammonium hydroxide-peroxide), SC2 (HCl-peroxide), and dilute HF cleaning solutions.

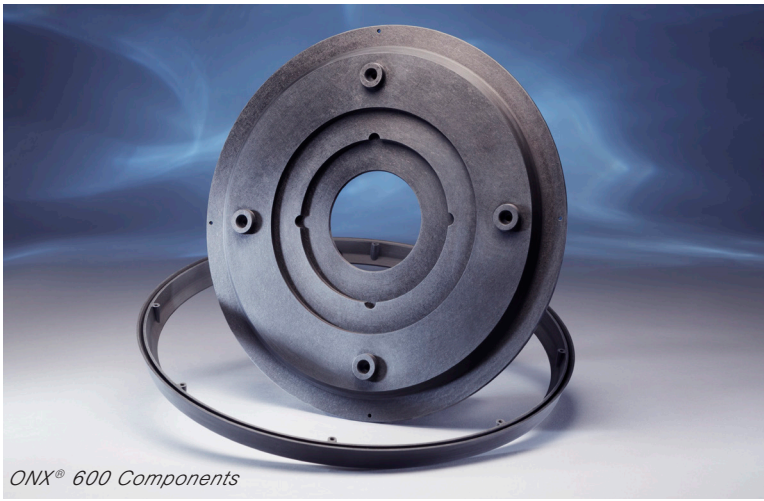
ONX® 600 is recommended for precision components, is stable to wet process temperatures up to 260°C (500°F), and is pure enough for applications that must contact the wafer edge. Moreover, because Silicon is harder than ONX® 600, edge damage and particles are minimized. Finally, ONX® 600 is electrically conductive to remove static charges caused by spin-spray actions, protecting delicate features of semiconductor devices.

ONX® 600 offers enhanced performance and reduced cost of ownership over other fluoropolymer materials. It maximizes equipment capability and reliability through outstanding mechanical properties and consistent quality, making it an ideal choice for the challenging specifications of OEM equipment manufacturers.

ONX® 600 combines Greene Tweed's engineering, design, and materials expertise, our focus on continuous product improvement, and dedicated customer support and collaboration to deliver a highly engineered solution to meet the rapidly evolving needs of the semiconductor market.

Greene Tweed, the direct supplier for ONX® 600, is your single source for material knowledge, manufacture, and cleaning. Our engineering team offers expert assistance in optimizing designs to meet your specific requirements.

Component sizes up to 20 inches in diameter can be accommodated.



ONX® 600 Components

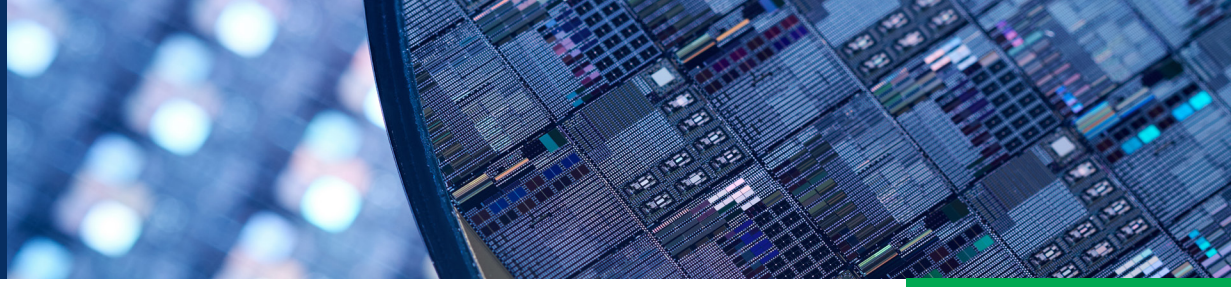
Features and Benefits

- Low cost of ownership
- Thermally stable – no deformation up to 260°C (500°F) exposure or with temperature cycling
- Superior strength and stiffness allow for applications with high angular acceleration
- High purity – ionics in low ppb range
- Electrically conductive to protect against process related electrostatic discharge
- Resistant to strong acids, bases, and solvents, enabling a wide range of use
- Smooth surface finish
- Black color – resists discoloration; no marking or color transfer upon contact/physical abrasion

Applications

Components for high-temperature wafer cleaning (front side and backside/bevel), wet etch processing, and resist removal:

- Precision wafer chuck assemblies
- Wafer clamps
- Wafer pins
- Screws



DATASHEET

ONX®600: Typical Properties

Description	ASTM Method	Typical Value
Physical Properties		
Color		Black
Specific Gravity	D792	2.02
Resistivity, Ω-cm	JIS K7194	2.06 x 10^{-1}
Hardness, Shore D, Points	D2240	80
Mechanical		
Tensile Strength @ Break, 24°C (75°F), x-y plane, MPa (ksi)	D638	138 (20.0)
Elongation @ Break, 24°C (75°F), x-y plane, %	D638	1.25
Tensile Modulus, 24°C (75°F), x-y plane, MPa (ksi)	D638	14,700 (2,130)
Tensile Strength @ Break, 200°C (392°F), x-y plane, MPa (ksi)	D638	69.1 (10.0)
Elongation @ Break, 200°C (392°F), x-y plane, %	D638	1.00
Tensile Modulus, 200°C (392°F), x-y plane, MPa (ksi)	D638	8,600 (1,260)
Flexural Strength @ Break, 24°C (75°F), x-y plane, MPa (ksi)	D790	142 (20.6)
Flexural Strain @ Break, 24°C (75°F), x-y plane, %	D790	1.41
Flexural Modulus, 24°C (75°F), x-y plane, MPa (ksi)	D790	12,200 (1,770)
Flexural Strength @ Break, 200°C (392°F), x-y plane, MPa (ksi)	D790	53.4 (7.75)
Flexural Strain @ Break, 200°C (392°F), x-y plane, %	D790	1.07
Flexural Modulus, 200°C (392°F), x-y plane, MPa (ksi)	D790	6,200 (899)
Compressive Strength, 24°C (74°F), x-y plane, MPa (ksi)	D695	105 (15.2)
Compressive Strength, 24°C (74°F), z plane, MPa (ksi)	D695	277 (40.2)
Compressive Strength, 200°C (392°F), x-y plane, MPa (ksi)	D695	39.8 (5.77)
Compressive Strength, 200°C (392°F), z plane, MPa (ksi)	D695	163 (23.7)
Thermal	E831	
Coefficient of Thermal Expansion, x-y plane, µm/m°C (µin/in°F)	25°C to 80°C	2.6 (1.4)
	25°C to 140°C	2.2 (1.2)
	25°C to 200°C	2.7 (1.5)
Coefficient of Thermal Expansion, z plane, µm/m°C (µin/in°F)	25°C to 80°C	220 (122)
	25°C to 140°C	247 (137)
	25°C to 200°C	282 (156)
Maximum Continuous Service Temperature		260°C (500°F)

ONX®600: Chemical Compatibility

Media	Soak Time (Hours)	Volume Change,%	Weight Change,%
Room Temperature			
Sodium Hydroxide, 50%	168	-1.2	0.07
Hydrofluoric Acid, 50%	168	-0.8	0.10
Elevated Temperature			
Acetic Acid, 100%, 150°F (65°C)	168	-1.1	1.68
Nitric Acid, 100%, 150°F (65°C)	168	4.3	1.22
Sulfuric Acid, 95-98%, 150°F (65°C)	168	-0.8	0.36
Diethanolamine, 400°F (205°C)	168	2.1	1.73
Diglycolamine, 100%, 400°F (205°C)	168	9.5	5.42
Dipropylamine, 300°F (150°C)	168	0.9	1.85
Methyldiethanolamine, 300°F (150°C)	168	-0.2	0.79
Benzene, 350°F (175°C)	168	5.5	2.50
Steam (DI Water), 400°F (204°C)	168	10.0	-0.06
Sulfolane, 350°F (175°C)	168	0.8	0.16

Greene Tweed

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