GREENE TWEED WR® 600

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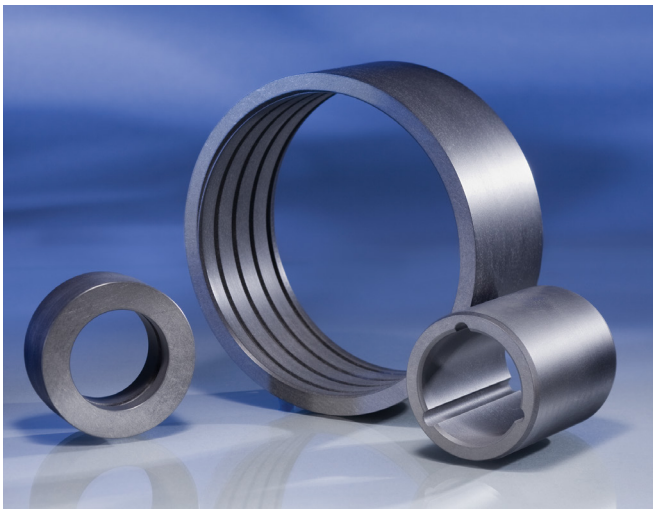
Greene Tweed



WR®600 Components

Applications

- Stationary wear rings for static applications
- Pump applications in refineries, chemical plants, power plants, and water treatment plants
- All centrifugal pumps (overhung, vertical in-line, single-stage between bearings, multi-stage horizontal, vertical, etc.)

Availability

- Ability to offer finished parts and stock shapes
- Greene Tweed maintains common wear ring billet sizes in inventory up to Ø12" (Ø305mm) with 6" (152mm) length

Superior Chemical Resistance and Dry Run Capabilities

Thermoplastic Composite

WR®600 is a carbon-fiber-reinforced, PFA-based composite with a maximum continuous service temperature of 500°F (260°C). Its outstanding chemical resistance comes from its constituents. These material elements can withstand practically all environments, including the strongest acids, bases, halogens, and solvents. In addition, WR®600 non-galling properties allow for extended periods of dry running during upset conditions.

This material features excellent impact and thermal shock resistance, tolerating rapid startup or shutdown without the risk of fracture. And WR®600 components run tighter clearances than traditional metallic materials, reducing recirculation and improving efficiency. The result is substantial energy savings, extended service life, and improved MTBR (Mean Time Between Repair).

Greene Tweed's engineers provide expert assistance in determining the best material and design for each application. With comprehensive, in-house machining centers, Greene Tweed offers finished WR®600 parts as well as multiple sizes of stock shapes. WR®600 conforms to API 610 requirements for non-metallic wear applications.

Features & Benefits

- Almost universal chemical compatibility and corrosion resistance
- Improved dry run properties to extend the reliability and lifetime of the pump
- Quick and easy machining to exact finish dimensions, reducing pump repair turnaround time and increasing equipment availability
- Superior impact resistance for enhanced damage protection
- Excellent thermal shock resistance allowing for rapid startup or shutdown of process without risk of fracture or pump failure
- Improved vibration damping for increased pump life

WR®600: Typical Properties

Description	ASTM Method	Typical Value
Physical Properties		
Color		Black
Specific Gravity	D792	2.02
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)

WR®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

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