

XR[®] 1

When equipment failure is not an option!



STRUCTURAL COMPONENTS

Powerful Resistance Across a Broad Range of Extreme Conditions

XR[®]1 is a proprietary thermoplastic material reinforced with carbon fiber. This unique makeup and manufacturing method enable XR[®]1 to operate in the harshest industrial conditions. XR[®]1 can be applied as bushings, bearings, and wear rings in API-style centrifugal pumps.

Best-in-class chemical resistance makes it an ideal solution for processing harsh chemicals. Superior resistance to erosive services means XR[®]1 components will survive the abrasion associated with processing solids-containing media – and its wear resistance is designed to withstand the upset conditions associated with dry-starts or a starved pump. XR[®]1 is designed with tighter clearances than traditional metal wear components for improved efficiency and reliability of centrifugal pumps.



Features and Benefits

- Near universal chemical compatibility and corrosion resistance
- Continuous use up to 500°F [260°C]
- Excellent erosion resistance in abrasive applications
- Easy to machine and install
- Low friction/Non-gall/Non-seize to enable tighter running clearance
- Thermal shock and impact resistant

Availability

- Finished part to existing design
- Custom designed parts for specific service
- Stock shapes [billets and rods]
- Maximum outer diameter – Ø16" [406 mm] X 6" long [150 mm]

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Typical Properties



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XR1 Typical Properties				
Physical Properties	Direction	ASTM Method	Units	Typical
Color	-	-	-	Black
Specific Gravity	-	D792	-	2.02
Hardness	-	D2240	Shore D	75
Mechanical Properties				
Tensile Strength @ Break, -321°F(-196°C)	X-Y	D638	ksi [MPa]	19.6 [135.3]
Tensile 0.5% Secant Modulus, -321°F(-196°C)	X-Y	D638	ksi [MPa]	1952 [13,460]
Elongation @ Break, -321°F(-196°C)	X-Y	D638	%	1.2
Tensile Strength @ Break, 75°F(24°C)	X-Y	D638	ksi [MPa]	4.4 [30.2]
Tensile 0.5% Secant Modulus, 75°F(24°C)	X-Y	D638	ksi [MPa]	703 [4,848]
Elongation @ Break, 75°F(24°C)	X-Y	D638	%	0.9
Tensile Strength @ Break, 392°F(200°C)	X-Y	D638	ksi [MPa]	1.6 [10.9]
Tensile 0.5% Secant Modulus, 392°F(200°C)	X-Y	D638	ksi [MPa]	235 [1,620]
Elongation @ Break, 392°F(200°C)	X-Y	D638	%	1.00
Flexural Strength @ Break, -321°F(-196°C)	X-Y	D638	ksi [MPa]	35.4 [244.4]
Flexural 0.5% Secant Modulus, -321°F(-196°C)	X-Y	D638	ksi [MPa]	2306 [15,900]
Flexural Strength @ Break, 75°F(24°C)	X-Y	D790	ksi [MPa]	9.3 [64.3]
Flexural 0.5% Secant Modulus, 75°F(24°C)	X-Y	D790	ksi [MPa]	846 [5,835]
Flexural Strength @ Break, 392°F(200°C)	X-Y	D790	ksi [MPa]	3.4 [23.7]
Flexural 0.5% Secant Modulus, 392°F(200°C)	X-Y	D790	ksi [MPa]	242 [1,671]
Compressive Strength @ Break, -321°F(-196°C)	X-Y	D695	ksi [MPa]	39.0 [269.2]
Compressive 0.5% Secant Modulus, -321°F(-196°C)	X-Y	D695	ksi [MPa]	1318 [9090]
Compressive Strength @ Break, 75°F(24°C)	X-Y	D695	ksi [MPa]	6.8 [47.2]
Compressive 0.5% Secant Modulus, 75°F(24°C)	X-Y	D695	ksi [MPa]	858.2 [5,641]
Compressive Strength @ Break, 392°F(200°C)	X-Y	D695	ksi [MPa]	2.4 [16.3]
Compressive 0.5% Secant Modulus, 392°F(200°C)	X-Y	D695	ksi [MPa]	268 [1,848]