

DuPont™ Vespel® CR-6100

Compression Molded Parts and Shapes

Product Description

DuPont™ Vespel® CR-6100 is a composite material designed for use in hostile chemical environments. Stationary parts in this composite material meet the following specification per API STD 610/ISO 13709, Centrifugal Pumps For Petroleum Petrochemical and Natural Gas Industries:-46 to 230 °C (-50 to 450 °F) temperature limits and 2,000 kPa (20 bar; 300 psi) limiting pressure differential per wear part linear measure of 25 mm (1.0 inch). Due to its low creep and high thermal resistance, Vespel® CR-6100 often excels where other chemically-resistant plastics fall short. This makes Vespel® CR-6100 particularly well suited for seals, wear rings and other components used in a variety of devices and operating conditions.

Mechanical Property	Temperature	Test Method	Direction	SI (English) Units	Typical Values
Compressive Strength	23 °C (73 °F)	ASTM D-695	x-y	MPa (ksi)	87 (12.6)
			z		174 (25.2)
Compressive Modulus	23 °C (73 °F)	ASTM D-695	x-y	MPa (ksi)	8,520 (1,240)
			z		2,070(300)
Compressive Strength	260 °C (500 °F)	ASTM D-695	x-y	MPa (ksi)	18 (2.6)
			z		84(12.2)
Compressive Modulus	260 °C (500 °F)	ASTM D-695	x-y	MPa (ksi)	1,730 (250)
			z		720 (104)
Flexural Strength	23 °C (73 °F)	ASTM D-790	x-y	MPa (ksi)	156 (22.7)
Flexural Modulus	23 °C (73 °F)	ASTM D-790	x-y	MPa (ksi)	9,530 (1,380)
Flexural Strength	260 °C (500 °F)	ASTM D-790	x-y	MPa (ksi)	43 (6.3)
Flexural Modulus	260 °C (500 °F)	ASTM D-790	x-y	MPa (ksi)	3,720 (540)
Tensile Strength	23 °C (73 °F)	ASTM D-3039	x-y	MPa (ksi)	120 (17.6)
			z		17 (2.5)
Tensile Modulus	23 °C (73 °F)	ASTM D-3039	x-y	MPa (ksi)	9,790 (1,420)
			z		2,680 (390)
Tensile Elongation	23 °C (73 °F)	ASTM D-3039	x-y	%	1.3
			z		0.4
Mechanical Property	Temperature	Test Method	Direction	SI (English) Units	Typical Values
Tensile Strength	260 °C (500 °F)	ASTM D-3039	x-y	MPa (ksi)	52 (7.6)
			z		2.8 (0.4)
Tensile Modulus	260 °C (500 °F)	ASTM D-3039	x-y	MPa (ksi)	2,800 (405)
			z		330(47.4)
Tensile Elongation	260 °C (500 °F)	ASTM D-3039	x-y	%	1.2
			z		1.6
Notched Izod Impact	23 °C (73 °F)	ASTM D-256	x-y	J/m (ft-lb/inch)	150 (3)
			z		85 (2)
Un-Notched Izod Impact	23 °C (73 °F)	ASTM D-256	x-y	J/m (ft-lb/inch)	260 (5)
			z		180 (3)

Thermal Property	Temperature	Test Method	Direction	SI (English) Units	Typical Values
CTE, Linear	23–260 °C (73–500 °F)	ASTM E-831	x-y	10 ⁻⁶ m/m·°C (10 ⁻⁶ in/in·°F)	5.6 (3.1)
	35–149 °C (95–300 °F)		z		300 (170)
	149–204 °C (300–399 °F)		z		470 (260)
	204–260 °C (399–500 °F)		z		750 (420)
Heat Deflection Temperature at 264 psi	–	ASTM D-648	x-y z	°C (°F)	315 (600) 120 (250)
Thermal Conductivity	23–149 °C (73–300 °F)	Hot Wire Method	–	W/m-K (BTU-in/hr-ft ² ·°F)	0.7 (4.7)
Wear Property	Condition	Test Method	Direction	SI (English) Units	Typical Values
PV Limit	1.72 MPa (250 psi)	Internal Test Falex	x-y	MPa.m/s (psi.ft/min.)	9.7 (278,000)
Other Property	Temperature	Test Method	Direction	SI (English) Units	Typical Values
Specific Gravity	23 °C (73 °F)	ASTM D-792	–	–	2.06
Hardness	23 °C (73 °F)	ASTM D-2240	x-y	Shore D	82
			z		84
Interlaminar Shear Strength	23 °C (73 °F)	Internal Test	x-y	MPa (ksi)	17 (2.4)
Water Absorption, 24 hr	23 °C (73 °F)	ASTM D-570	–	% by weight	0.01

