

DuPont™ Vespel® CR-6100

Compression Molded Parts and Shapes

Typical Properties Data Sheet

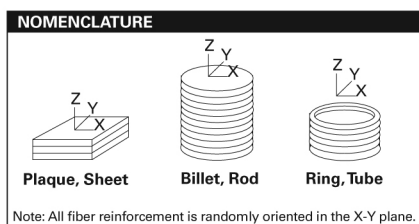
DuPont™ Vespel® CR-6100 is a composite material designed for use in hostile chemical environments. Stationary parts in this composite material meet the following specification per API STD 610/ISO 13709, Centrifugal Pumps For Petroleum Petrochemical and Natural Gas Industries: -46 to 230 °C (-50 to 450 °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. In addition, Vespel® CR-6100 material has been approved for use in potable water applications in the United Kingdom and Australia per the "Water Regulations Advisory Scheme (WRAS) Tests on Water Quality" based on the methods described in British Standards Institution, BS6920.

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



The miracles of science™

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		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		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



Visit us at kalrez.dupont.com or vespel.dupont.com

Contact DuPont at the following regional locations:

North America
800-222-8377

Latin America
+0800 17 17 15

Europe, Middle East, Africa
+41 22 717 51 11

Greater China
+86-400-8851-888

ASEAN
+65-6586-3688

Japan
+81-3-5521-8484

The information set forth herein is furnished free of charge and is based on technical data that DuPont believes to be reliable and falls within the normal range of properties. It is intended for use by persons having technical skill, at their own discretion and risk. This data should not be used to establish specification limits nor used alone as the basis of design. Handling precaution information is given with the understanding that those using it will satisfy themselves that their particular conditions of use present no health or safety hazards. Since conditions of product use and disposal are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information. As with any product, evaluation under end-use conditions prior to specification is essential. Nothing herein is to be taken as a license to operate or a recommendation to infringe on patents.

Caution: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, discuss with your DuPont customer service representative and read Medical Caution Statement H-50103-3.

Copyright © 2010 DuPont. The DuPont Oval Logo, DuPont™, The miracles of science™, Kalrez®, and Vespel® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company or its affiliates. All rights reserved.

(01/11) Reference No. VPE A 10840-00-A0111

(replaces K-22676)



The miracles of science™