

# DuPont™ Vespel® CP-0301

## Composite Parts

### Technical Information

Vespel® CP-0301 composite parts from sheet molding compound consist of long, chopped fibers held in a polymer matrix. The discontinuous nature of the fibers allows the fibers to align with the contours of the part, permitting the molding of relatively complex shapes, while providing reinforcing strength. Vespel® CP-0301 parts demonstrate high strength and low weight for aircraft clamps and similar components.

Mechanical Property	Temperature	Test Method	Units	Typical Values
Ultimate Tensile Strength	23 °C (73 °F) 260 °C (500 °F)	ASTM D-3039	MPa (ksi)	340 (50) 320 (47)
Tensile Modulus	23 °C (73 °F) 260 °C (500 °F)	ASTM D-3039	MPa (ksi)	47,000 (6,800) 45,000 (6,500)
Ultimate Flexural Strength	23 °C (73 °F) 260 °C (500 °F)	ASTM D-790	MPa (ksi)	490 (71) 340 (50)
Flexural Modulus	23 °C (73 °F) 260 °C (500 °F)	ASTM D-790	MPa (ksi)	38,000 (5,500) 33,000 (4,800)
Ultimate Compressive Strength <sup>a</sup>	23 °C (73 °F) 260 °C (500 °F)	ASTM D-695	MPa (ksi)	370 (53) 240 (35)
Notched Izod	—	ASTM D-256	J/m (ft·lb/in)	690 (13)
Hardness, Rockwell 15-T	—	ASTM D-2240	—	86
Thermal Property				
Glass Transition Temperature, T <sub>g</sub>	—	Thermal Mechanical Analysis	°C (°F)	335 (635)
Thermal Expansion Coefficient	21 to 316 °C (70 to 600 °F)	ASTM D-696	m/m/°C (in/in/°F)	2.9 x 10 <sup>-6</sup> (1.6 x 10 <sup>-6</sup> )
Thermal Expansion Coefficient <sup>a</sup>	21 to 316 °C (70 to 600 °F)	ASTM E-228-85	m/m/°C (in/in/°F)	27 x 10 <sup>-6</sup> (15 x 10 <sup>-6</sup> )
Thermal Conductivity	—	ASTM C-177	W/m K (Btu/hr/ft/°F)	0.30 (0.17)
Oxidative Stability	—	See note <sup>b</sup>	% weight loss	2
Other Properties				
Water Absorption, 24 hr	23 °C (73 °F)	ASTM D-570	% weight gain	0.5
Specific Gravity	—	ASTM D-792	—	1.54

Note: All values listed are for compression-molded samples and are measured in the plane perpendicular to the direction of molding pressure unless otherwise indicated.

<sup>a</sup> Measured in the plane parallel to the direction of molding pressure.

<sup>b</sup> 100 hours, 70 psia (483 kPa), 610 °F (321 °C) circulating air, saturated conditions, volume/surface area = .091 in. (2.31 mm).

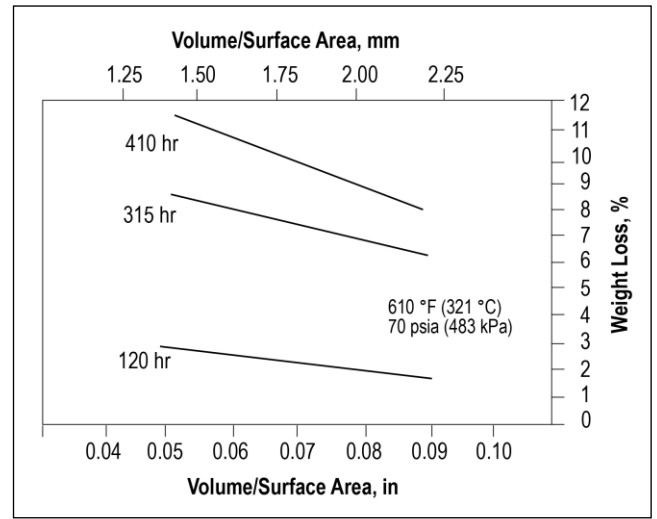
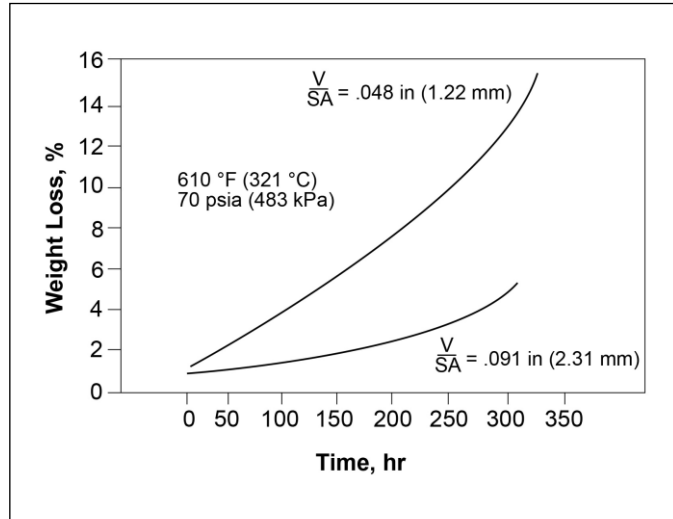
CP-0301 may be processed using a variety of lay-up techniques with single or multiple debulking steps to optimize process capability for each part configuration. These design considerations can cause variation from the typical values listed above. Listed properties are based upon technical data that DuPont believes to be reliable. DuPont makes no warranties, expressed or implied, and assumes no liability in connection with use of this information.



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# Thermal Oxidation Curves for CP-0301

(Tests performed in circulating air, saturated conditions)



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