

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 ^a | 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 _g | — | 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 ⁻⁶ (1.6 x 10 ⁻⁶) |
| Thermal Expansion Coefficient ^a | 21 to 316 °C (70 to 600 °F) | ASTM E-228-85 | m/m/°C (in/in/°F) | 27 x 10 ⁻⁶ (15 x 10 ⁻⁶) |
| Thermal Conductivity | — | ASTM C-177 | W/m K (Btu/hr/ft/°F) | 0.30 (0.17) |
| Oxidative Stability | — | See note ^b | % 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.

^a Measured in the plane parallel to the direction of molding pressure.

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

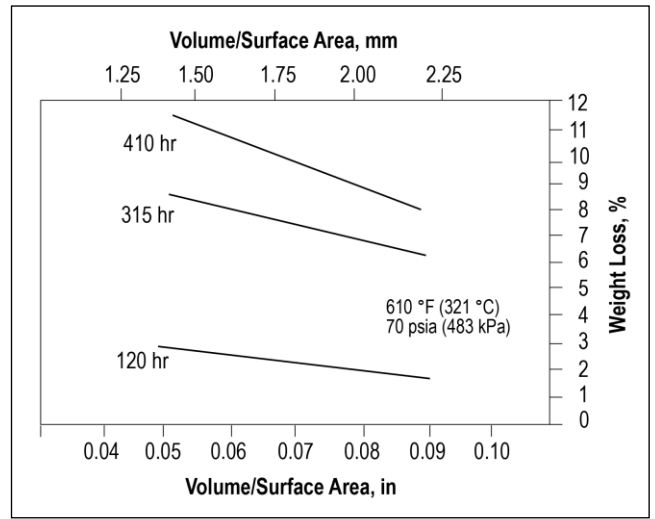
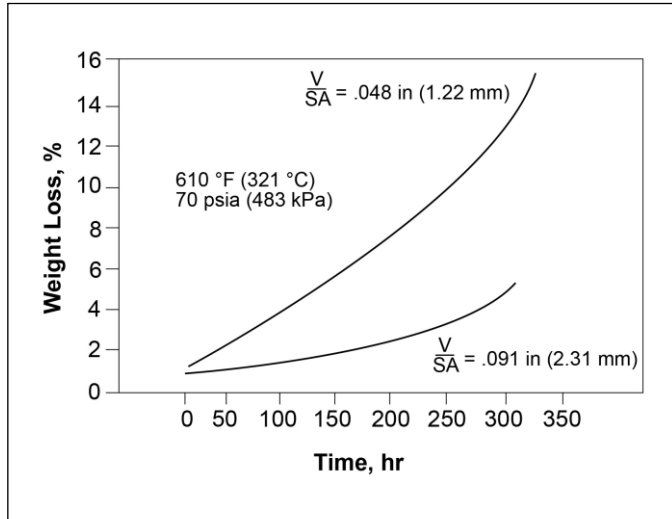
CP-0301 may be processed using a variety of lay-up techniques with single or multiple debulking steps to optimize process capability for each part configuration. These design considerations can cause variation from the typical values listed above. Listed properties are based upon technical data that 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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