

DuPont™ Vespel® SMR-0454

POLYIMIDE MOLDED PARTS

Typical Molded Parts Properties

DuPont™ Vespel® SMR-0454 parts and shapes have high modulus, low elongation, high compressive strengths and low creep. SMR-0454 is a filled polymer used for low friction and it offers similar thermal resistance as other SP products, with less deflection under load. SMR-0454 has a coefficient of thermal expansion similar to steel with better thermal conductivity.

Some data presented below are based on limited production runs and are subject to revision as new knowledge and experience become available.

Property	Test Method	Units	Typical Values
Oxidative Stability	See note b	% wt loss	5
Glass Transition Temperature, Tg	Thermal Mechanical Analysis	° C (° F)	335 (635)
Specific Gravity	ASTM D792	gm/cc	1.51 ^a , 1.55
Thermal Expansion Coefficient, ^c 700 to 600 °F (21 to 316 °C)	ASTM D696	10 ⁻⁶ m/m/°C (10 ⁻⁶ in/in/°F)	23 (11)
Ultimate Tensile Strength	ASTM D638	MPa (kpsi)	100 ^a , 46 (15 ^a , 6.7)
Tensile Modulus	ASTM D638	10 ³ MPa (10 ⁶ kpsi)	13 (1.9) ^a
Tensile Elongation	ASTM D638	%	1.14 ^a
Ultimate Flexural Strength	ASTM D790	MPa (kpsi)	140 ^a , 96 (20 ^a , 14)
Flexural Modulus	ASTM D790	10 ³ MPa (10 ⁶ psi)	10 ^a , 8.3 (1.5 ^a , 1.2)
Ultimate Compressive Strength ^c	ASTM D695	MPa (kpsi)	190 (27)
Izod Impact	ASTM D256	J/m (ft lb/in)	13 (.25)
Hardness	ASTM D2240	Rockwell 15-T	85
Water Absorption 24 hr at 23 °C (73 °F) 24 hr at 100 °C (212 °F)	ASTM D570	% wt gain	.25 .97
Electrical Volume Resistivity	ASTM C611	Ohms-m (ohms-in)	0.012 (3)

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 Values based upon transfer molded samples.

^b 100 hours, 70 psia (483 kPa) 321 °C (610 °F) circulating air, saturated condition, volume/surface area — 0.66 mm (.026 in)

^c measured in the plane parallel to the direction of molding pressure

Vespel® parts may be processed via compression molding and transfer molding with single or multiple debulking steps to optimize process capability for each part configuration. These design considerations can cause variations from the typical values listed above.



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