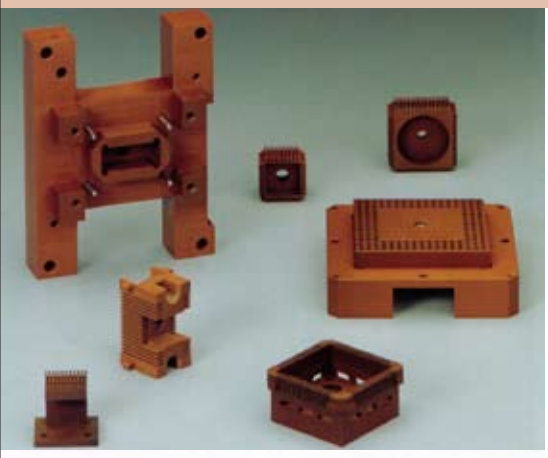
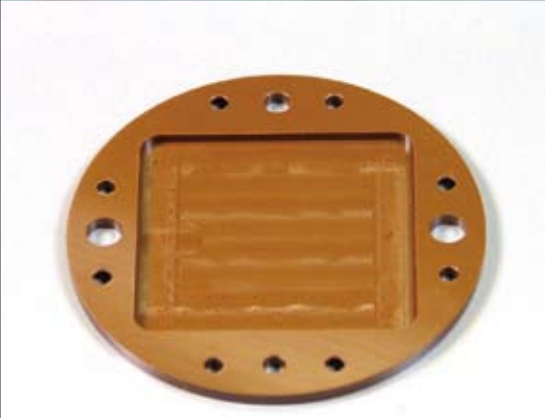
DuPont™ Vespel® Parts and Shapes

MATERIAL SOLUTION FOR TEST SOCKETS

High Performance Test Sockets with DuPont™ Vespel® SP-1 and SCP-5000





Challenges

- Pitch sizes are getting smaller and tighter resulting in thinner wall thickness where requirements for material stiffness is highly needed
- Demand for high-end sockets such as RF sockets is increasing due to multi-function chips being more common in the market

Solutions

Vespel® SP-1 & SCP-5000 plaques

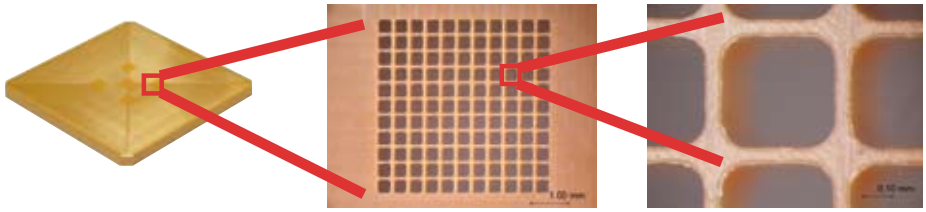
Features

- Superior Structural & Mechanical Strength
- Excellent Dimensional Stability
- Good Electrical Properties
- Easy Machinability
- Extremely low out gassing
- Excellent material durability and wear resistance
- High resistance to heat
- Low moisture absorption

Benefits

- Excellent mechanical strength and dimensional stability against moisture to ensure the reliability throughout the product life time
- With the low dielectric constants, the inherent capacitance nature of the material can be minimized, resulting in lower inductance effects and higher signal integrity in testing especially at higher desired radio frequencies
- Production lead time can be much reduced through ease of machining

Achieving fine pitch through excellent machining properties



- Square Holes with 0.35mm x 0.35mm, Wall Thickness 0.05mm in between holes

Excellent structural and mechanical properties of Vespel® SP-1 and SCP 5000 answers the market's requirement on producing test sockets with finer pitches & thinner wall. Machining of SP-1 and SCP-5000 has become quicker and easier. Coupled with superior dimensional stability especially against moisture absorption, good hole quality is always assured, delivering exceptional performance with great economical advantages.

DUPONT®

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Typical Properties Comparison

PROPERTY		ASTM METHOD	TEMP. K	UNITS	VESPEL® SCP-5000	VESPEL® SP-1M	VESPEL® SP-1DF
Specific Gravity		D-792			1.43	1.43	1.36
Tensile Strength		D-1708 or E8*1	296	MPa	160	86	72
Elongation		D-1708 or E8*1	296	%	7.0	7.5	7.5
Flexural Strength		D-790	296	MPa	247	110	83
Flexural Modulus		D-790	296	MPa	5700	3102	2482
Compressive Modulus		D-695	296	MPa	9200	2413	2413*2
Izod Impact Strength	Noched	D-256	296	J/m	63.6	42.7	-
Coefficient of Linear Thermal Expansion		E-228	296-573	μ m/m/K	44	54	50
Thermal Conductivity			313	W/mK	-	0.35	0.29*2
Dielectric Constant	10^6Hz				3.3	3.55	3.2
Dissipation Factor	10^6Hz				0.001	0.0034	0.0052
Dielectric Strength	2mm (Short time)	D-149		KV/mm	-	22.0	-
Volume Resistivity		D-257	296	Ω•m	10^{14}	10^{14}-10^{15}	10^{14}-10^{15} *3
Surface Resistivity		D-257	296	Ω	10^{15}	10^{15}-10^{16}	10^{15}-10^{16} *3
Water Absorption	24h	D-570	296	%	0.08	0.24	-
Hardness	D-785	D785			E94-95	E45-58	E20-30

- These are catalogue value.
- M: Parts machined out of shapes material. DF: Parts obtained by <Direct Forming> process.
- Vespel® SP-1 DF is added under 0.5wt% PTFE..

*1 Vespel® SP-1 DF is measured by E8. The others are measured by D-1708.
*2 This is measured at parallel to the forming direction, the others are at vertical.
*3 Vespel® SP-1DF data is nothing, so refer to Vespel® SP-1M data.

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