



PROFESSIONAL PLASTICS, INC.

Vespel® SP-1 & Meldin® 7001 Polyimide Rods Comparative Material Data Sheets – ISO Properties

Vespel® SP-1 Overview from DuPont:

Made from DuPont's unfilled base polyimide resin, Vespel® SP-1 provides maximum physical strength, elongation and toughness, combined with best electrical and thermal insulation properties of all Vespel grades.

Typical applications include spacers, soldering fixtures, valve seats, balls, gaskets, poppets and static seals.

Meldin® 7001 Overview from Saint Gobain:

Made from Saint Gobain's unfilled polyimide base resin, Meldin® 7001 grade offers the maximum mechanical properties and high chemical resistance in a thermosetting polyimide. Meldin 7001 is ideal for electrical and thermal insulating applications. More ductile than ceramics, and lighter weight than metals, Meldin 7001 is a popular choice for structural parts in aerospace and other applications where metal replacement is desirable.

PROPERTY	ASTM Method	Units	Vespel® SP-1	Meldin® 7001
MECHANICAL			Unfilled Polyimide	Unfilled Polyimide
Tensile Strength @ 73F (23°C)	D-638	psi (MPa)	----	12,500 (86)
Tensile Strength @ 73F (23°C)	D-1708	Mpa (kpsi)	86 .2 (12.5)	-----
Tensile Strength @ 500F (260°C)	D-638	psi (Mpa)	-----	5,400 (37)
Tensile Strength @ 500F (260°C)	D-1708	Mpa (kpsi)	41.4 (6.0)	-----
Elongation @ 73F (23°C)	D-638	%	-----	7.5
Elongation @ 500F (260°C)	D-638	%	-----	4.5
Flexural Strength @ 73F (23°C)	D-790	psi (Mpa)	---	15,200 (105)
Flexural Strength @ 73F (23°C)	D-790	Mpa (kpsi)	11 0.3 (16.0)	-----
Flexural Modulus @ 73F (23°C)	D-790	psi x 10 ⁵ (Gpa)	-----	4.6 (3.2)
Flexural Modulus @ 73F (23°C)	D-790	Mpa (kpsi)	310 2 (450)	
Compressive Stress @ 1% Strain	D-695	psi (Mpa)	3,600 (24.8)	3,300 (22.7)
Compressive Stress @ 10% Strain	D-695	psi (Mpa)	19,300 (133.1)	18,000 (124)
Compressive Modulus	D-695	psi x 10 ⁵ (Gpa)	-----	2.9 (2.0)
Compressive Modulus	D-695	Mpa (kpsi)	2413 (350)	-----
Poisson's Ratio @ 73F (23°C)			0.41	0.33
THERMAL PROPERTIES				
Coefficient of Linear Expansion 75F to 500F (24°C to 260°C)	E-831	in/in/F x 10 ⁵ (m/m/°C)	-----	2.7 (5.0)
Coefficient of Linear Expansion 73F to 500F (23°C to 260°C)	D-696	in/in/F (m/m/°C)	45 (25) 54 (30)	-----
ELECTRICAL				
Dielectric Strength	D-149	V/Mil	320	450
Dielectric Strength	D-149	MV/m	22	18
OTHER PROPERTIES				
Specific Gravity	D-792		1.43	1.43
Water Absorption				
24 Hours @ 73F (23°C)	D-570	%	0.24	0.23
48 Hours @ 122F (50°C)	D-570	%	0.72	-----
Equilibrium, 50% RH	D-570	%	1.0 - 1.3	-----
SPECIFICATION QUALIFICATIONS				
ASTM D 6456-99		Satisfies	Type 1M	Type 1M
AMS SAE 3644G		Satisfies	Class 1, Form M	Class 1, Form M
MIL-R-46198 Resin, Polyimide, Hot Pressed or Pressed and Sintered		Satisfies	Type 1M	Type 1M

Results based on published factory data sheets for isostatically produced rods

This data falls within the normal range of properties but should not be used to establish specification limits nor used alone as the basis of design. Professional Plastics assumes no obligation or liability for any advice furnished by it or for results obtained with respect to these products. Actual properties may vary. Isostatic rod properties shown above exceed those of compression-molded or direct-formed parts. DuPont & Saint Gobain each perform tests to different ASTM specifications so certain side-by-side comparisons were not available.

- Vespel® is a registered trade name of EI DuPont DeNemours
- Vespel® Data Source: http://www2.dupont.com/Vespel/en_US/assets/downloads/vespel_s/Vespel_SP-1_ISO.pdf
- Meldin® is a registered trade name of Saint Gobain Performance Plastics

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