

DuPont™ Vespel® SP-22

POLYIMIDE ISOSTATIC SHAPES

Typical ISO Properties

DuPont™ Vespel® SP-22 parts and shapes provide low wear and friction for bearings, thrust washers, and dynamic seals. SP-22 is a filled polymer with a coefficient of thermal expansion similar to aluminum.

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

Mechanical Property	Temperature	ASTM	Units	Typical Values
Tensile Strength	23 °C (73 °F) 260 °C (500 °F)	D-1708 or E8 [†]	MPa (kpsi)	51.7 (7.5) 23.4 (3.4)
Strain at Break	23 °C (73 °F) 260 °C (500 °F)	D-1708 or E8 [†]	%	3.0 2.0
Flexural Strength	23 °C (73 °F) 260 °C (500 °F)	D-790	MPa (kpsi)	89.6 (13.0) 44.8 (6.5)
Flexural Modulus	23 °C (73 °F) 260 °C (500 °F)	D-790	MPa (kpsi)	4826 (700) 2758 (400)
Compressive Stress at 1% strain at 10% strain at 0.1% offset	23 °C (73 °F) 23 °C (73 °F) 23 °C (73 °F)	D-695	MPa (kpsi)	31.7 (4.6) 112.4 (16.3) 41.4 (6.0)
Compressive Modulus	23 °C (73 °F)	D-695	MPa (kpsi)	3275 (475)
Axial Fatigue, Endurance Limit at 10 ³ cycles at 10 ⁷ cycles	23 °C (73 °F) 260 °C (500 °F) 23 °C (73 °F) 260 °C (500 °F)	—	MPa (kpsi)	—
Flexural Fatigue, Endurance Limit at 10 ³ cycles at 10 ⁷ cycles	23 °C (73 °F) 23 °C (73 °F)	—	MPa (kpsi)	—
Shear Strength	23 °C (73 °F)	D-732	MPa (kpsi)	—
Izod Notched Impact Strength	23 °C (73 °F)	D-256	J/m	—
Izod Unnotched Impact Strength	23 °C (73 °F)	D-256	J/m	—
Poisson's Ratio	23 °C (73 °F)	—	—	—
Wear and Friction				
Wear Rate ^{††}	—	—	m/s x 10 ⁻¹⁰	4.20
Friction Coefficient ^{**} PV = 0.875 MPa·m/s PV = 3.5 MPa·m/s	—	—	—	0.30 0.09
In Vacuum	—	—	—	—
Static in Air	—	—	—	0.27



The miracles of science™

DuPont™ Vespel® SP-22 Typical ISO Properties (continued)

Thermal Property	Temperature	ASTM	Units	Typical Values
Coefficient of Linear Expansion	23 °C (73 °F) to 260 °C (500 °F)	D-696	µm/m/°C (in/in/°F)	38 (21)
Thermal Conductivity	40 °C (104 °F)	—	W/m·°C	1.73
Specific Heat	—	—	J/kg/°C	—
Deformation Under 14 MPa Load	50 °C (122 °F)	D-621	%	0.08
Deflection Temperature at 2 MPa	—	D-648	°C	—
Electrical Property				
Dielectric Constant at 10 ² Hz at 10 ⁴ Hz at 10 ⁶ Hz	23 °C (73 °F)	D150	—	—
Dissipation Factor at 10 ² Hz at 10 ⁴ Hz at 10 ⁶ Hz	23 °C (73 °F)	D150	—	—
Dielectric Strength, Short Time 2 mm Thick	23 °C (73 °F)	D149	MV/m	—
Volume Resistivity	23 °C (73 °F)	D257	Ω·m	—
Surface Resistivity	23 °C (73 °F)	D257	Ω	—
Other Properties				
Water Absorption 24 h 48 h Equilibrium, 50% RH	23 °C (73 °F) 50 °C (122 °F)	D570	%	0.14 0.42 —
Specific Gravity	—	D792	—	1.65
Oxygen Index	—	D2863	%	—

† Machined isotstic tensile specimens made per D1708

†† Unlubricated in air (PV 0.875 MPa·m/s).

** Steady state, unlubricated in air.

Visit us at kalrez.dupont.com or vespel.dupont.com

Contact DuPont at the following regional locations:

North America
800-222-8377

Latin America
+0800 17 17 15

Europe, Middle East, Africa
+41 22 717 51 11

Greater China
+86-400-8851-888

ASEAN
+65-6586-3688

Japan
+81-3-5521-8484

The information provided in this data sheet corresponds to our knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relate only to the specific material designated; these data may not be valid for such material used in combination with any other materials, additives or pigments or in any process, unless expressly indicated otherwise.

The data provided should not be used to establish specification limits or used alone as the basis of design; they are not intended to substitute for any testing you may need to conduct to determine for yourself the suitability of a specific material for your particular purposes. Since DuPont cannot anticipate all variations in actual end-use and disposal conditions, DuPont does not guarantee favorable results, makes no warranties and assumes no liability in connection with any use of this information. All such information is given and accepted at the buyer's risk. It is intended for use by persons having technical skill, at their own discretion and risk. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent. DuPont advises you to seek independent counsel for a freedom to practice opinion on the intended application or end-use of our products.

CAUTION: Do not use DuPont materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless the material has been provided from DuPont under a written contract that is consistent with DuPont policy regarding medical applications and expressly acknowledges the contemplated use. For further information, please contact your DuPont representative. You may also request a copy of DuPont POLICY Regarding Medical Applications H-50103-4 and DuPont CAUTION Regarding Medical Applications H-50102-4.

Copyright © 2014 DuPont. The DuPont Oval Logo, DuPont™, The miracles of science™, Kalrez®, and Vespel® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company or its affiliates. All rights reserved.

(09/10) Reference No. VPE-A10865-00-B0614



The miracles of science™