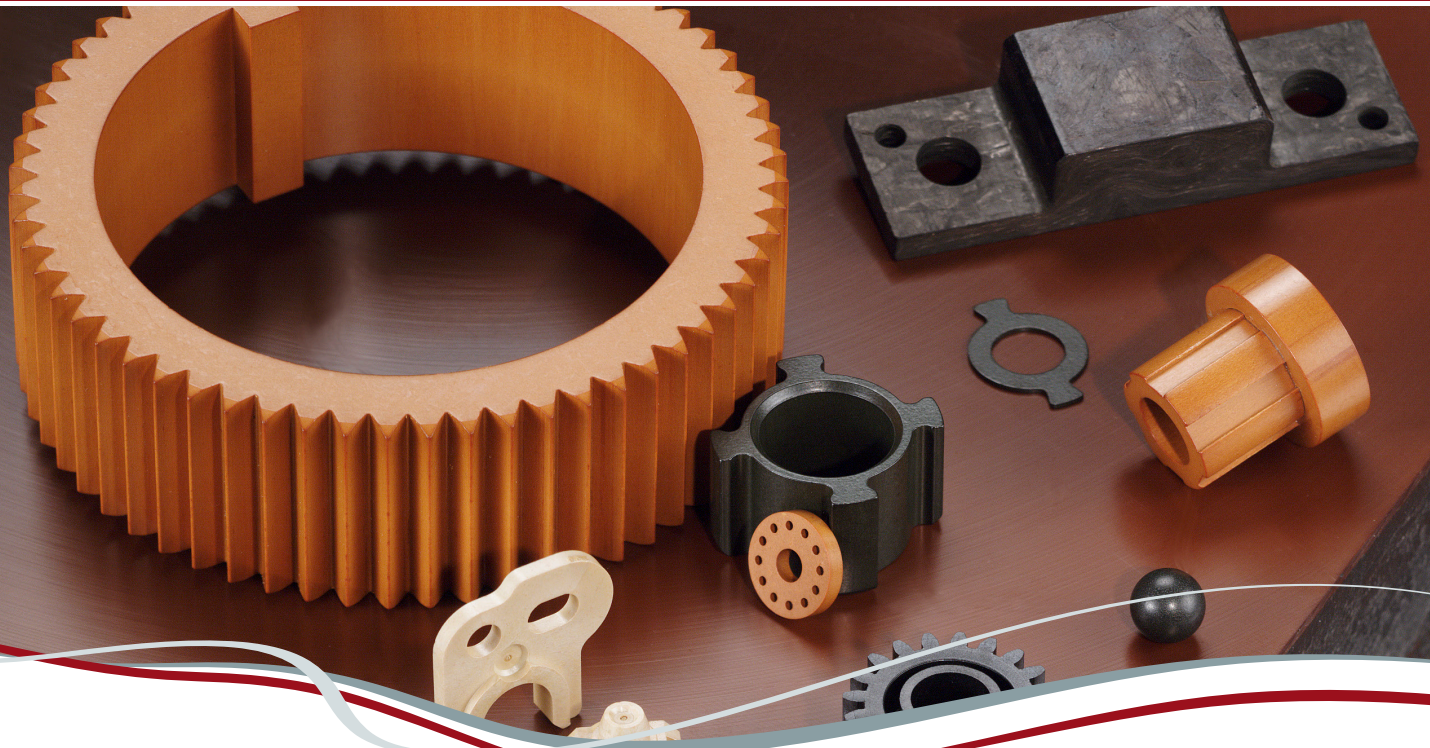


DuPont™ Vespel® Polyimide Shapes



Authorized Supplier of Authentic DuPont™ Vespel® Polyimide Shapes

DuPont™ Vespel® Polyimide is an extremely high temperature, creep resistant plastic material used in high heat environments where thermoplastic materials lose their mechanical properties and as a lightweight metal replacement. Vespel® has long term performance at cryogenic temperatures and up to 260°C (500°F) making it a popular choice for many aerospace and industrial applications.

High performance parts made from DuPont™ Vespel® Polyimide Shapes

- Provide strength and toughness to resist damage
- Withstand high temperatures
- Provide low wear and friction
- Hold tight tolerances
- Are first-class electrical insulators
- Have excellent machinability
- Resist chemical attack
- Offer high purity and low out-gassing

Put us to work for you!™



TYPICAL APPLICATIONS:

- Wafer handling
- Seals
- Valves
- Fasteners
- Gears
- Splines
- Thrust washers
- Wear pads
- Compressor and pump parts
- Piston rings
- Bushings
- Bearings
- Hot glass handling

INDUSTRIES SERVED:

- Aerospace
- Semiconductor/electronics
- High temperature applications

AUTHORIZED DISTRIBUTOR

DuPont™ Vespel® 
PARTS & SHAPES

Supplying Authentic Vespel® Shapes

SP-1
SP-3
SP-21
SP-211
SP-22
SCP-5000
SCP-5009
SCP-50094
SCP-5050

Vespel® SP-1

For physical and electrical properties

SP-1 has high purity and provides physical strength, elongation and toughness, along with electrical and thermal insulation properties. Semiconductor manufacturers often find components fabricated from Vespel® SP-1 shapes useful in production processes.

Vespel® SP-21

For balanced low wear and physical properties

SP-21 is ideal for low wear and friction in applications. SP-21 has physical strength, elongation, and toughness.

Vespel® SP-22

For low wear and dimensional stability

SP-22 provides enhanced resistance to wear and friction as well as improved dimensional and oxidative stability.

Vespel® SP-211

For low coefficient of friction and unlubricated wear

SP-211 provides the lowest coefficient of friction over a wide range of operating conditions. It offers excellent wear resistance up to 300°F (149°C).

Vespel® SP-3

For unlubricated sealing and low wear in vacuum or dry environments

SP-3 provides lubrication for seals and bearings in vacuum or dry environments. SP-3 provides maximum wear and friction resistance in vacuum and other moisture-free environments, where graphite becomes abrasive.

Vespel® SCP-5000

For strength, hardness, and chemical resistance over a broad temperature range

SCP-5000 is ideal for demanding applications that require toughness, thermal and dimensional stability, chemical resistance, and stable dielectric performance across a broad temperature range.

Vespel® SCP-5009

For high wear and friction applications under high operating pressure and elevated temperature environments

SCP-5009 shapes have a low coefficient of thermal expansion and provide good sealing as well as outstanding mechanical properties like high compressive strength and low creep, even in extreme conditions.

Vespel® SCP-5050

For high temperature, wear resistance, and exceptional coefficient of thermal expansion

SCP-5050 is a new and innovative polyimide composition. SCP-5050 has improved high temperature and wear resistance compared to conventional polyimides allowing replacement of metal and graphite in more applications. Its proprietary composition is designed to offer a coefficient of thermal expansion (CTE) close to the CTE of metals.

Vespel® SCP-50094

For high temperature and wear resistance

SCP-50094 is a proprietary polymer designed for demanding applications that require high strength, high temperature, and wear resistance.

TYPICAL PROPERTIES OF DUPONT™ VESPEL® ISOSTATIC SHAPE GRADES

DUPONT™ VESPEL® ISOSTATIC SHAPE GRADES			VESPEL® SP					VESPEL® SCP			
ASTM Method	Units		SP-1 Unfilled	SP-21 15% Graphite	SP-22 40% Graphite	SP-211 15% Graphite & 10% Teflon®	SP-3 Vacuum Bearing Grade	SCP-5000 Unfilled	SCP-5009 Graphite Filled	SCP-50094 Graphite Bearing Grade—Low Fill	SCP-5050 Graphite Bearing Grade—High Fill
MECHANICAL											
Tensile strength 23°C (73°F)	D1708/D638	MPa (kpsi)	86.2 (12.5)	65.5 (9.5)	51.7 (7.5)	44.8 (6.5)	56.5 (8.2)	163 (23.6)	116 (16.9)	124 (18.0)	72 (10.5)
Tensile strength 260°C (500°F)	D1708/D638	MPa (kpsi)	41.4 (6.0)	37.9 (5.5)	23.4 (3.4)	24.1 (3.5)		62 (9)	57 (8.4)	55 (8.0)	39 (5.6)
Elongation at break 23°C (73°F)	D1708/D638	%	7.5	4.5	3.0	3.5	4.0	7.5	3.0	4.3	2.5
Elongation at break 260°C (500°F)	D1708/D638	%	6.0	3.0	2.0	3.0		49.0	9.7	13.0	5.3
Flexural modulus 23°C (73°F)	D790	MPa (kpsi)	3,100 (450)	3,790 (550)	4,830 (700)	3,100 (450)	3,280 (475)	5,760 (836)	6,231 (903)	6,360 (923)	7,790 (1130)
Flexural modulus 260°C (500°F)	D790	MPa (kpsi)	1,720 (250)	2,550 (370)	2,760 (400)	1,380 (200)	1,860 (270)	3,010 (436)	3,560 (516)	3,540 (514)	5,100 (740)
Compressive stress at 10% strain, 23°C (73°F)	D695	MPa (kpsi)	133 (19.3)	133 (19.3)	112 (16.3)	102 (14.8)	128 (18.5)	230 (33.4)	222 (32.2)	220 (31.9)	172 (25)
Deformation under 13.8 MPa (2,000 psi) load	D621	%	0.14	0.10	0.08	0.13	0.12	0.05	0.03	0.05	0.03
FRICION											
Coefficient of friction at PV = .875 MPa m/s (25,000 psi-ft/min)*			0.29	0.24	0.20	0.12	0.25	0.26	0.22	0.25	0.12
Coefficient of friction at PV = 3.5 MPa m/s (25,000 psi-ft/min)*				0.12	0.09	0.08	0.17	0.15	0.14	0.07	0.08
Static coefficient of friction in air**			0.35	0.30	0.27	0.20					
PV limit (unlubricated)**		MPa·m/s (kpsi ft/min)		12.3 (350)	12.3 (350)	3.5 (100)			25K/0.22 100K/0.14	17.5 (500)	
OTHER PROPERTIES											
Coefficient of thermal expansion 23-300°C (73-572°F)	E831	µm/m/K (10 ⁻⁶ in/in-°F)	54 (30)	49 (27)	38 (21)	54 (30)	52 (29)	47 (26)	44 (24)	43 (24)	29 (16)
Hardness	D785	Rockwell E	45-60	25-45	5-25	1-20	40-55	95	91	91	63
Water absorption 24 hr at 23°C (73°F)	D570	%	0.24	0.19	0.14	0.21	0.23	0.08	0.14	0.06	0.04

*Versus carbon steel, steady state, unlubricated, in air, thrust bearing. **PV limits for any material vary with different combinations of pressure and velocity as well as other conditions.

Standard Sizes: **PLAQUE:** 10"x10" (0.062"-2.0" thick), 5"x5" and 5"x10" (0.25"-2.0" thick) **ROD:** diameter 1/8"-6.0" (0.125"-6.0") **BALLS:** diameter 1/8"-5/8" (DuPont™ Vespel® SP-1, only)

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