

THE SUCCESS OF YOUR APPLICATION DEMANDS IT.

# AUTHENTIC

**DuPont™ Vespel® Polyimide Shapes**

High performance parts for aerospace,  
semiconductor manufacturing, and machine shops

**CURBELL**  
PLASTICS

*Curbell Plastics is the Western US Region Authorized Supplier of Authentic DuPont™ Vespel® Polyimide Shapes*



# WHY DEMAND AUTHENTIC?

**How can I tell if the DuPont™ Vespel® shapes I have are authentic?**

**The first step to ensure you are purchasing Authentic DuPont™ Vespel® shapes is to buy only from a DuPont authorized distributor.**

Product purchased from Curbell Plastics will be labeled with a genuine DuPont™ Vespel® shapes product label and be accompanied by an official Certificate of Conformance (CoC).

The tamper-evident product labels are serialized to add a level of traceability and contain covert security technology that helps prevent the counterfeiting of Authentic DuPont™ Vespel® shapes product labels. The appearance of genuine product labels is shown to the right.

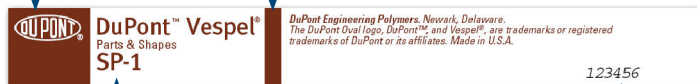
DuPont has granted Curbell Plastics permission to legally reproduce the original CoC to accompany purchased Authentic DuPont™ Vespel® shapes cut to length. The appearance of a DuPont™ Vespel® shapes CoC is shown to the right.



*The miracles of science™*

The DuPont Oval displayed in the upper left-hand corner without "The miracles of science tagline"

Each grade will have a unique colored band at the far left and at the offset middle position



Vespel® grade is displayed directly beneath the business name

Each label will have a unique six digit serial number at the lower right hand corner

**CERTIFICATE OF CONFORMANCE**

From: E.I. du Pont de Nemours and Company To:

Engineering Polymer  
DuPont™ Vespel® parts & shapes  
800 Delaware Road  
Newark, DE 19713

DuPont™ and Vespel® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company

Date: 07 Aug 2006

Customer Order Number: \_\_\_\_\_  
DuPont Order: \_\_\_\_\_  
Description: \_\_\_\_\_  
Drawing Number: \_\_\_\_\_  
Part Number: 01000070  
Lot: \_\_\_\_\_

**SAMPLE**

Material: SP-22  
Resin Lot No. PGH3373  
Batch Number: PGH3373  
Tensile Strength (ksi): 4.50  
Elongation (%): 4.50  
Specific Gravity (g/cc): 1.400

This is to certify that the product or service listed above are of the quality specified and conform in all respects with the contract, specifications, including specifications, drawings, instructions, assembly, testing requirements, physical and chemical properties, and are in the quality control of the department.

The responsibility for the use of the product and for the materials used in the order is on the user and is not the responsibility of the manufacturer.

The quality of the product is not guaranteed and therefore does not require a signature.

Quality Assurance for Pharmaceuticals  
DuPont™ and Vespel®

For more information, please contact your local DuPont representative or the DuPont Engineering Polymer Department. DuPont Engineering Polymers, Newark, Delaware. The DuPont Oval logo, DuPont™, and Vespel® are trademarks or registered trademarks of DuPont or its affiliates. Made in U.S.A.

This product certification is Non Transferable and is valid only for the first end-user purchasing from Curbell Plastics, a DuPont authorized distributor. Product and/or product certification obtained from an unauthorized source is assumed counterfeit. DuPont makes no warranties and assumes no liability in connection with the use of product or product certification obtained from an unauthorized source.





# VESPEL® SP-1

## FOR PHYSICAL AND ELECTRICAL PROPERTIES

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

### BENEFITS:

- Operating temps from cryogenic to 550°F (288°C)
- Ultra-high purity
- Minimal electrical and thermal conductivity
- Maximum strength and elongation
- Low outgassing
- Improved tech uniformity
- Excellent wear for longer life

### APPLICATIONS:

- Insulators
- Valve seats
- Balls
- Gaskets
- Poppets
- Wafer clamping
- Clamping rings
- In-chamber semiconductor parts



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# VESPEL® SP-21

## FOR BALANCED LOW WEAR AND PHYSICAL PROPERTIES

SP-21 is ideal for low wear and friction in applications such as bearings, thrust washers, bushings, seal rings, slide blocks, and other wear surfaces. SP-21 has the maximum physical strength, elongation, and toughness.

### BENEFITS:

- Low wear at high bearing PV's
- Low coefficient of friction
- Long-term thermal stability
- High stiffness
- Low elongation
- Outstanding performance with or without lubrication
- Good strength and impact resistance

### APPLICATIONS:

- Thrust washers
- Seal rings
- Valve seats
- Bearings
- Seals

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## VESPEL® SP-22

### FOR LOW WEAR AND DIMENSIONAL STABILITY

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

#### **BENEFITS:**

- Enhanced resistance to friction and wear
- Minimal thermal expansion
- Maximum thermal conductivity
- High temperature resistance
- Improved dimensional and oxidative stability
- Minimal elongation

#### **APPLICATIONS:**

- Bearings
- Thrust washers
- Seal rings
- Ferrules
- Sleeves
- Wear strips
- Vanes



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# 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).

### BENEFITS:

- Low wear at high bearing PV's
- Low coefficient of friction
- Superior unlubricated wear
- Excellent creep resistance
- Wear resistance up to 300°F (149°C)
- Good tensile strength, elongation, and flexural modulus

### APPLICATIONS:

- Sliding and linear bearings
- Thrust washers
- Bushings
- Seal rings

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## 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 actually becomes abrasive.

#### BENEFITS:

- Maximum wear and friction resistance in vacuums and other dry environments
- Ultra-low outgassing
- High performance in aerospace applications

#### APPLICATIONS:

- Bushings
- Bearings
- Piston rings
- Seals
- Gears



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# VESPEL® SCP-5000

FOR STRENGTH, HARDNESS, AND CHEMICAL RESISTANCE  
OVER BROAD TEMPERATURE RANGE

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

## BENEFITS:

- Ultra-high purity
- High thermal oxidative stability
- High stiffness
- Higher modulus and surface hardness
- Improved chemical resistance
- High temperature
- High wear resistance with low outgassing

## APPLICATIONS:

- CMP retaining rings
- Substrate lift pins
- Test sockets
- Aircraft engine parts

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## 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 at these extreme conditions.

### BENEFITS:

- Cost, weight, and performance opportunities over metals, ceramics, and other engineering plastics
- Resistance to temperatures above 300°C and pressures above 20,000 psi
- Low coefficient of friction
- Easy to machine to near-metal tolerances



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## VESPEL® SCP-5050

### FOR HIGH TEMPERATURES, 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 propriety composition is designed to offer a coefficient of thermal expansion (CTE) similar to steel.

#### BENEFITS:

- More efficient and durable systems
- Increased performance
- Reduced maintenance costs

## VESPEL® SCP-50094

### FOR HIGH TEMPERATURES AND WEAR RESISTANCE

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



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*DuPont is committed to maintaining the integrity of its Authentic DuPont™ Vespel® shapes and the high levels of product quality and service that our customers have come to expect and enjoy. Ensure the integrity of your product as well as your customer's business, purchase only Authentic DuPont™ Vespel® shapes from Curbell Plastics - **your western US region authorized supplier.***

*Curbell is committed to providing machinists and fabricators with the very best plastic sheet, rod, tube, and film materials along with the best technical support and customer service. We have over 75 years of experience in the plastics industry and we look forward to using that expertise to meet your material needs.*

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