杜邦 - Vespel 高階工程材料
DUPONT - Vespel material

Vespel®可根據每個客戶的需求而形成。它們的特性有助於克服嚴峻的密封，磨損或摩擦挑戰，承受高溫，並能經受世界上最惡劣的工作環境的考驗。

杜邦在亞洲，歐洲和美洲擁有卓越的設計中心，將材料科學與獨特的協作設計資源相結合，為客戶提供服務。定制和庫存的Vespel®已在全球高要求的應用中經過測試並證明有效。Vespel®零件和形狀可以使生產更加順暢，提高生產率並延長維修間隔。

Vespel®零件的性能還可以使重量更輕的零件不僅實用，而且比標準金屬，陶瓷甚至其他工程塑料更好。

DuPont™ Vespel® parts and shapes are formed by the needs of each customer. Their properties help overcome severe sealing, wear, or friction challenges, endure high temperature, and stand up to some of the world’s harshest operating environments.

With design centers of excellence in Asia, Europe and the Americas, DuPont combines material science with unique collaborative design resources for customers. Vespel® parts and shapes, both custom and stock, have been tested and proven effective in highly demanding applications around the globe.

Vespel® parts and shapes can keep production running more smoothly, improve throughputs, and extend service intervals. The performance of Vespel® parts can also make lighter-weight parts not only practical, but better than standard metal, ceramics and even other engineering plastics.

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https://lih-kuang.com/?page_id=503

Vespel® S Polyimide Family

The Vespel® S Family of products are highly durable polyimides and are used in demanding applications where exceptional thermal resistance, low wear and/or low friction, strength and impact resistance are desired.

- ***SP-1***: 在低溫至*300°C*的工作溫度下具有出色的耐磨和絕緣性能。低電導率。最高的伸長率和純度的*SP*系列。Superior wear and insulation properties with operating temperatures from cryogenic to 300°C. Low electrical conductivity. Highest elongation and purity of SP family.
- ***SP-21***: 具有低摩擦特性的增強石墨，可在各種應用中使用或不使用潤滑。Graphite-enhanced with low-friction properties for use with or without lubrication in various applications.
- ***SP-202***: 導電部件*(<10E2 ohm)*，有助於消除靜電荷。優異的耐磨性，高溫下的尺寸穩定性和良好的切削性。Conductive parts (<10E2 ohm) to help the elimination of static charge. Excellent wear resistance, dimensional stability at high temperatures and good machinability.
- ***SP-211***: 在各種應用中，比不潤滑的*SP-21*更低的摩擦係數。*Lower coefficient of friction than SP-21 without lubrication in various applications.*
- ***SP-22***: 最小的熱膨脹和尺寸穩定性，可提供設計靈活性。*Minimal thermal expansion and dimensional stability for design flexibility.*
- ***SP-221***: 適用於高度專業化的應用-在非潤滑條件下抵抗軟金屬。*For highly specialized applications—against soft metals in "non-lube" conditions.*
- ***SP-2515***: 低熱膨脹係數，出色的耐磨性和低摩擦係數，適合尺寸控制。*Low coefficient of thermal expansion, excellent wear properties and a low coefficient of friction for dimensional control.*
- ***SP-3***: 用於低放氣的真空和乾燥環境。*Used in vacuum and dry environments with low outgassing.*
- ***SMR-0454***: 石墨增強的低摩擦性能。高模量，低伸長率，高抗壓強度和低蠕變，在載荷下變形較小。*Graphite-enhanced for low friction. High modulus, low elongation, high compressive strength and low creep with less deflection under load.*

- ***ST-2010***: 與*SP-21*相似，具有改進的韌性，更高的伸長率和更好的熱氧化穩定性。更好的耐溶劑，酸和鹼。*Similar to SP-21 with improved toughness, higher elongation and better thermal oxidative stability. Better resistance to solvents, acids and bases.*
- ***ST-2030***: 與*SP-22*類似。應用在包括軸

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承，襯套和墊圈。*Similar to SP-22. Found in applications in which low thermal expansion is more important than strength (which is slightly reduced). Applications may include bearings, bushings and washers.*

- ***SCP-5000****:* 尺寸穩定性和耐化學性。與*SP-1*一樣，*SCP-5000*具有良好的絕緣性。它具有*SCP*級的最高伸長率和純度。*Unfilled SCP-5000 has better plasma resistance, dimensional stability and chemical resistance than unfilled SP-1. Like SP-1, SCP-5000 has good insulation. It has the highest elongation and purity of the SCP grades.*
- ***SCP-5050, SCP-5009 & SCP-50094****:* 比具有優良耐化學性的*SP*聚酰亞胺更高的抗熱氧化性。 *SCP-5050*與鋼的*CTE*相匹配。 *SCP-5009*和*SCP-50094*近似於鋁的*CTE*。*Higher thermal oxidative resistance than SP polyimides with superior chemical resistance. SCP-5050 matches the CTE of steel. SCP-5009 and SCP-50094 approximates the CTE of aluminum.*
- ***SMP-40025****:* 高模量和低伸長率可在高溫和高載荷下提供尺寸穩定性。*High modulus and low elongation provide dimensional stability at high temperatures and loads.*
- ***SF-0920, SF-0930, SF-0940****:* 卓越的隔熱和電絕緣性能。與低密度聚酰亞胺泡沫相比，獨特的聚酰亞胺泡沫具有更高的耐久性。*Superior thermal and electrical insulating properties. Unique polyimide foam has higher durability compared to low density polyimide foams.*