

# DuPont™ Vespel® Parts and Shapes:

## SCP Parts Withstand More Heat and Resist Wear

Extend part life, reduce weight and costs by replacing metal parts and assemblies with DuPont™ Vespel™ SCP-5050 and SCP-50094 direct-formed (DF) parts that can work in more demanding temperature and wear environments than traditional polyimide components.

### When the going gets hot...

There's an alternative to metal in aerospace and industrial applications where even traditional polyimides fall short in high temperature environments. Vespel® SCP-5050 and SCP-50094 parts combine polyimide with advanced filler technology to provide higher temperature resistance and a lower coefficient of thermal expansion than traditional polyimides. The advanced filler technology reduces friction and dramatically improves wear resistance versus Vespel® SP-21 parts.

### Extended part life

Thanks to their superior thermal oxidative stability (Figure 1) and wear resistance at elevated temperature (Figure 2), Vespel® SCP-5050 and SCP-50094 parts can last longer than traditional polyimides in high temperature wear environments.

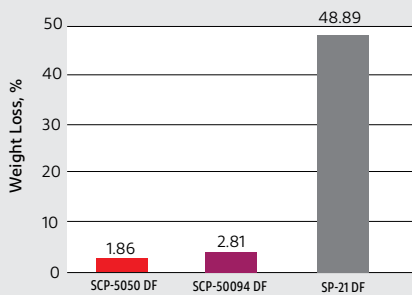


### Lightweight yet sturdy

Vespel® SCP-5050 and SCP-50094 parts enable you to save weight by replacing metal in high temperature environments. Both provide greater stiffness than traditionally filled polyimides at elevated temperature (Figure 3). Their low coefficient of thermal expansion (Figure 4) enables tighter fits and easier-to-manage tolerance stack-ups for your designs. The CTE of SCP-5050 parts is a near match for that of stainless steel.

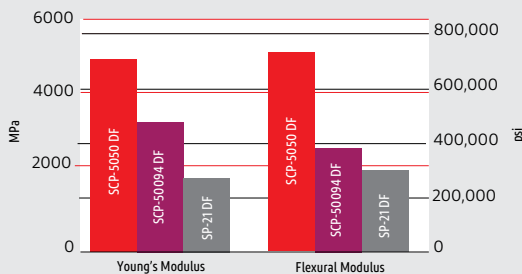
#### Superior heat stability

Fig. 1: Thermal oxidation stability, 100 hours at 371 °C (700 °F), 4.76 atm (70 psia)



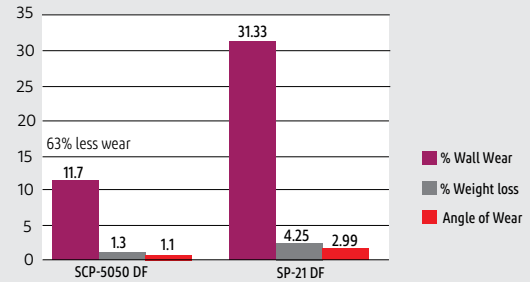
#### Stiff when hot

Fig. 3: Young's and flexural modulus at 200 °C (500 °F)



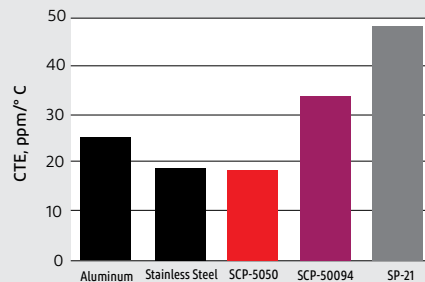
#### More hot wear resistance

Fig. 2: Wear\*, 500,000 cycles at 343 °C (650 °F)



#### Metal-like dimensional stability

Fig. 4: Coefficient of thermal expansion



## Reduced costs

Replacing metal with Vespel® SCP-5050 or SCP-50094 parts can reduce both initial and lifetime costs.

- Lower initial cost than hard-faced or specially treated metal wear parts like bushings.
- Less wear on mating high-value components and reduce maintenance costs – jet engine stators for example

## Vespel® SCP applications

DuPont™ Vespel® SCP-5050 and SCP 50094 parts can deliver major benefits in aerospace and other industries.

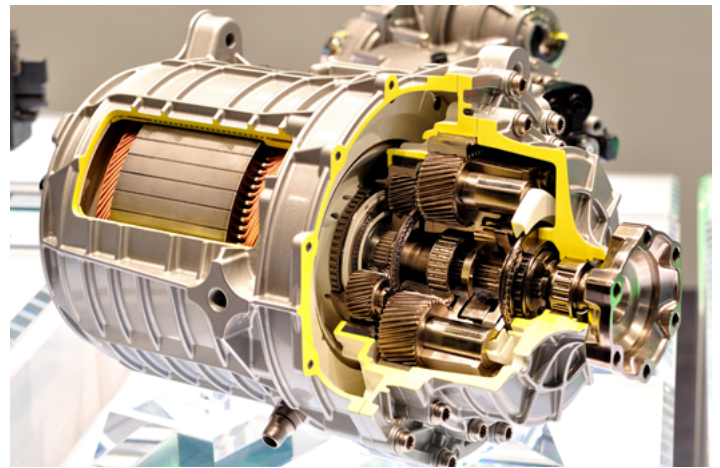
**Jet engines:** Leading global manufacturers are already using Vespel® SCP-5050 and SCP-50094 parts for engine applications, upgrading the wear performance of traditional polyimide parts and replacing metal parts in high temperature environments. Typical applications include wear parts and strips, thrust washers, bushings, bearings, bumpers and more.

**Other aerospace uses:** The outstanding wear performance of Vespel® SCP parts can also provide benefits in aerospace uses where temperatures are less severe than engines. Examples include control linkage components, door mechanisms, bushings, bearings, bumpers, wear pads and thrust washers.

**Other industries:** Vespel® SCP-5050 and SCP-50094 parts are delivering cost and performance benefits in light and heavy duty vehicles, as well as industrial equipment requiring higher temperatures capabilities, wear resistance and dimensional stability than traditional polyimides and metal bearings.

In glass manufacturing, for example, they open possibilities for guide and holder components used in even hotter process areas and/or equipment where longer life components and improved uptime deliver benefits over graphite components.

**For seals, insulators and more:** An unfilled grade in the SCP series, Vespel® SCP-5000 uses the same base polyimide as SCP-5050 and SCP-50094. It delivers major benefits in applications such as insulators requiring dielectric properties or seals and valve seats needing enhanced high-temperature performance and chemical compatibility.



We have the right materials, technology and technical resources to help you design and manufacture superior parts and systems. Please contact the nearest DuPont representative for your country.

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