

DuPont™ Vespel® Parts and Shapes

Internal Combustion Engine Applications

The DuPont™ Vespel® S family of products and finished parts are made of 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. Primarily used in transmissions in the form of wear rings, bushings, and thrust washers, Vespel® parts enable specific performance in ICEs, including:

- Low wear under high Pressure-Velocity (PV)
- Low Friction under high PV
- Improved Noise, Vibration and Harshness (NVH)
- Lightweighting

Typical Vespel® Parts



Thrust Washer



Bushings



Sealrings



Thrust Plugs



Ballbearing Cages

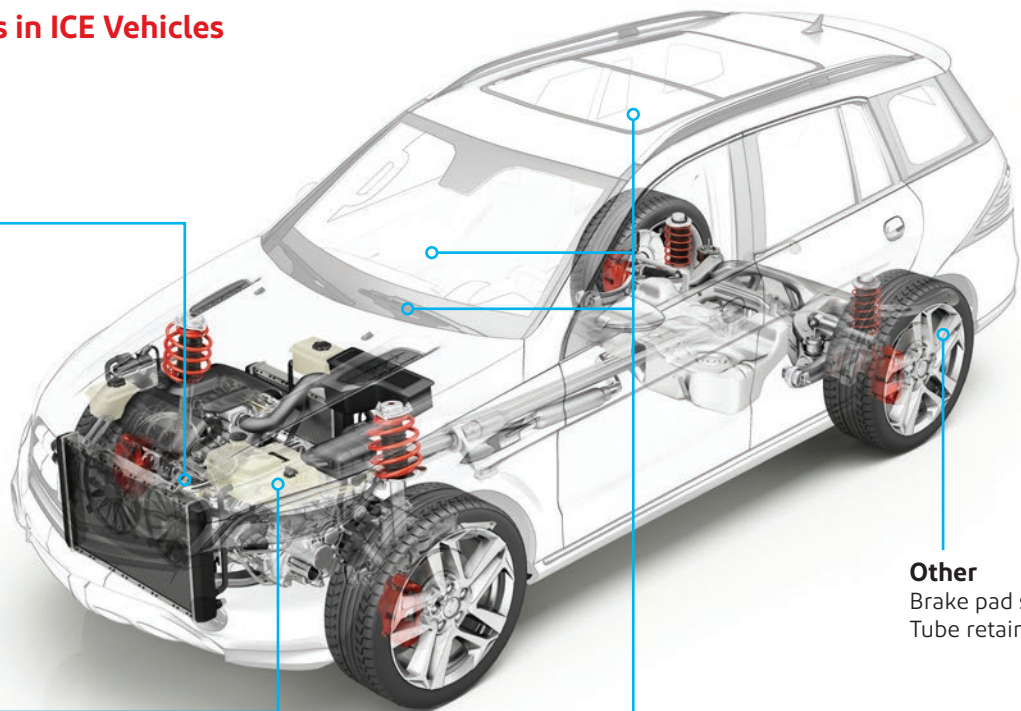


Insulation

Main Applications Areas in ICE Vehicles

Powertrain

Drivetrain (AT, CVT, Diff)
Engine (VVT, Chain guide)



Air Management

EGRs, turbocharger,
air conditioning

Other

Brake pad sensors
Tube retainers

Electrical Motors

Window lift, sun roof,
wiper, seat adjustment

Thrust Washers for demanding conditions

Axles, differential, torque vectoring



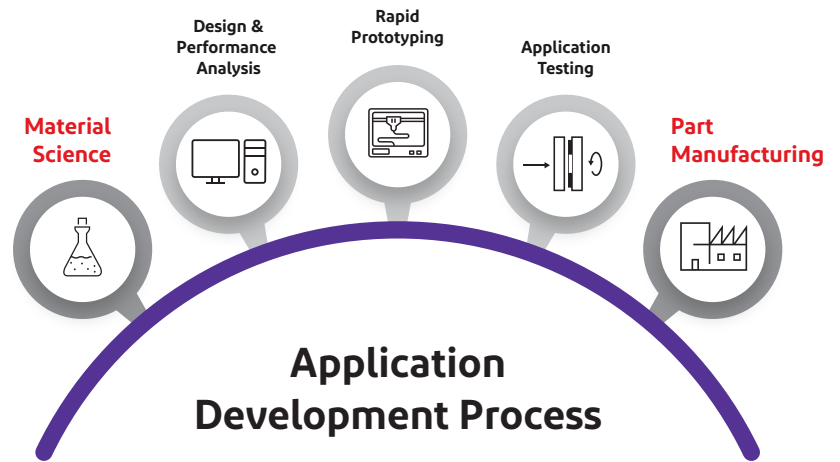
Transmission transfer case

Potential Benefits of Vespel® Parts vs. Metals



DuPont Application Development: From Material Science to High Performance Parts

DuPont has a long history of collaborative innovation in material science and part manufacturing to help customers develop solutions for the industry's most stringent challenges. The DuPont™ Vespel® portfolio offers a range of high performance polyimide parts and application testing capabilities that can enable customers to meet the most stringent industry regulations in terms of emissions, reliability and efficiency for these critical applications.



Application testing capabilities include:

- Planetary Gear Washer Testing
- Vertical & Horizontal Thrust Washer Testing
- Seal Ring Wear and Friction Testing
- Low and High Temperature Testing
- Chemical Aging
- Dry and Lubricated Wear and Friction Testing
- Mechanical Property Testing
- Linear & Rotational Wear Testing
- Global Network of Application Testing Centers of Excellence

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