Sealing Solutions for Automotive and Heavy Duty Equipment

Techseal Division - TSD 5442

Parker

ENGINEERING YOUR SUCCESS.
The automotive and heavy duty industries are transitioning into a new era of rapid innovations. The industry original equipment manufacturers (OEMs) are pushing towards technologies that are more fuel efficient, cleaner, safer and smarter.

Parker’s TechSeal Division is ready to assist OEMs in quickly adapting to the megatrends of the industry. Whether the changes are related to the stringent environmental regulations, global market dynamics, or consumer mobility needs and preferences, Parker can help OEMs expand their geographical footprint and achieve optimal operational efficiency.

Parker’s elastomer products are highly engineered and customized to meeting demanding application requirements. The team of Application Engineers at Parker is available to provide design assistance and partner with OEMs to develop materials that meet high performance specifications.

### Sealing Environments
- Extreme temperatures
- Coolants, refrigerants, brake fluids, ATF and other chemical solvents
- Oil, gasoline, fuel, diesel and grease
- Water, steam, dirt, dust and debris
- Environmental elements: ozone, oxidation, sun light, fungus, et cetera.
- Dynamic operating conditions

### Typical Applications
- Transmissions and drivelines
- Diesel engines
- Oil filter and fuel systems
- Valve covers
- Engine oil pans
- Cylinder liners
- Hybrid-electric vehicles
- Sensors
- Steering systems

### Value Added Services
- Finite Element Analysis simulation and design validation testing
- Application Engineering support and material development
- Industry grade materials that are approved to OEM specifications
- Printing and marking on parts

**Together, we can go the distance.**
Featured Products

**Transmission and Drive Line Seals**

**Clutch Seals**
Parker TechSeal’s specialty cut D-rings, double chamfered seals and lip seals are suitable for radial static and semi-dynamic, oscillating or reciprocating conditions. Clutch seal designs and dimensions can be customized with little to no tooling charges.

**Cover Seals**
Transmission cover seals are typically custom spliced seals, press-in-place seals, or seals with rectangular cross sections. These seals prevent the leakage of automatic transmission fluid (ATF) from the transmission pan or the drive line interfaces.

**Pump-to-Case Seals**
Using an extruding and precision cutting process, TechSeal manufactures rectangular seals that provide a cost effective static face seal between the transmission pump and case.

**Fluid Transfer Seals**
The TechSeal Division offers extruded and cut seals for the transfer of ATF between the clutch housing and the transmission housing. Fluid transfer seals are available in compounds that have excellent resistance to ATF as well as other automotive fluids.

**Engine Seals**

**Oil Pan and Cover Seals**
Custom designed extruded profiles include easy to install, friction-fit self-retaining profiles manufactured from a wide range of material choices to fit specific application requirements.

**Static Face Seals**
TechSeal extrudes and precision cuts static face seals in standard and custom configurations. Custom static face seals can be designed in sizes from .030” to 19” in diameter.

**Steering System Seals**

**Cylinder Liner Seals**
Machined D-ring or double chamfer seals are ideal solutions for cylinder liner applications. These seals are custom designed to allow for optimal squeeze and gland fill condition. High performance materials such as coolant resistant FKM and other OEM-approved compounds are available.

**Static Face Seals for Steering**
Parker offers custom designed precision cut seals with engineered squeeze, providing an optimal sealing footprint and other technical advantages over molded seals. Custom sizes range from .030” to 19”.
Environmental and Electronic Seals

**Sensor Seals**
Parker’s extruded and precision cut seals provide reliable sealing in many sensor applications including fuel systems, brake pressure, oil pressure, air conditioning, power steering, suspension systems and many more. These sensor seals are engineered to provide robust static sealing and to withstand aggressive fluids and extreme temperatures.

**Hybrid-Electric Vehicle Battery Seals**
Extruded and spliced using a hot vulcanization process, Parker battery pack seals provide optimal sealing conditions for large battery enclosures requiring low closure force to minimize deflection of the battery pack case. Battery seals are available in solid and hollow O-ring and various custom profiles.

**Cap Seals**
Static environmental seals for caps, fuel handling systems, and fuel dispensing systems can be customized to meet specific application requirements. Cap seals are available in a wide range of materials including fuel resistant compounds.

**Bumpers and Isolation Grommets**
TechSeal manufactures a wide variety of custom bumpers and isolation grommets to dampen vibration, reduce noise and protect critical components. These products can be supplied in the form of sleeves, tubing, bumpers, grips, stoppers, plugs, rollers and a variety of other custom configurations.

Filter Seals and Gaskets

**Anti-Drain Back Valves**
Rubber anti-drain back valves are compression molded from industry grade materials including hi-temp and oil resistant materials. TechSeal's anti-drain back valves can withstand higher temperatures and maintain their sealing integrity over a longer period of time.

**Filter Seals**
Parker TechSeal supplies extruded and precision cut seals for spin-on oil filters, coolant filters and many more. With dedicated manufacturing facilities in North America and Asia Pacific, TechSeal is a leading global provider of elastomer sealing products for the filtration industry.
### Recommended Polymer Families

<table>
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<th>Polymer Families</th>
<th>Temperature</th>
<th>Characteristics</th>
<th>Typical Seal Applications</th>
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<tr>
<td>Acrylonitrile-Butadiene / Nitrile / Buna-N (NBR)</td>
<td>-40 to +200°F</td>
<td>Good general purpose elastomer. Good mechanical properties when compared with other elastomers. Excellent resistance to petroleum-based fluids. High wear resistance. Relatively low ozone and weather resistance.</td>
<td>Transmission and engine cover seals, sensor seals, steering seals, anti-drain back valves and oil filter seals.</td>
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<tr>
<td>Aflas® (FEPM)</td>
<td>+15 to +450°F</td>
<td>Outstanding resistance to high temp dry air and coolants. Good oil and fuel resistance. Limited low temp flexibility.</td>
<td>Coolant resistant seals and cylinder liner seals.</td>
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<tr>
<td>Chloroprene Rubber / Neoprene (CR)</td>
<td>-35 to +250°F</td>
<td>Good general purpose polymer. Excellent refrigerants and petroleum oil resistance. Good ozone and aging characteristics. Low resistance to steam, hot water and gasoline.</td>
<td>Bumpers, isolators, sleeves, refrigerant resistant seals and cap seals.</td>
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<tr>
<td>Ethylene Acrylate and Polyacrylate (AEM, ACM)</td>
<td>AEM: -5 to +350°F ACM: -40 to +325°F</td>
<td>Outstanding resistance to oils, automotive transmission fluids (ATF) and power steering fluids. Good resistance to high temp, wear, oxidation and ozone. Limited resistance to water, steam, fuel, gasoline and automotive brake fluids.</td>
<td>Pump-to-case seals, clutch seals, transmission cover seals and fluid transfer seals.</td>
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<tr>
<td>Ethylene Propylene Rubber (EPDM, EPM, EP, EPR)</td>
<td>-50 to +250°F (Up to 300°F in steam)</td>
<td>Outstanding resistance to ozone, weathering, steam and hot water. Excellent resistance to brake fluids, ketones, alcohols and other aggressive solvents. Not recommended for use in petroleum fluids.</td>
<td>Battery seals, sensor seals, bumpers, isolators, sleeves, water / coolant resistant seals, radiator pump seals, environmental seals and cylinder liner seals.</td>
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<tr>
<td>Fluorocarbon (FKM, FPM)</td>
<td>-20 to +400°F</td>
<td>Wide-spectrum chemical resistance and broad temperature range. Excellent high temp resistance. Commonly used in fuels and oils. Bio fuel and coolant resistant versions are also available. Good ozone and weathering resistance. Low resistance to brake fluids.</td>
<td>Cover seals, cylinder liner seals, sensor seals, cap seals, oil pan seals and steering system seals.</td>
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<tr>
<td>Fluorosilicone (FVMQ)</td>
<td>-60 to +300°F</td>
<td>Relatively wide temperature range as silicone with good low temp capability and excellent chemical resistance. Good resistance to petroleum oils, hydrocarbon fuels, lubricants and petroleum-based greases. Not recommended for dynamic applications.</td>
<td>Sensor seals, cap seals and compressed natural gas resistant seals.</td>
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<tr>
<td>Hydrogenated Nitrile (HNBR, HSN)</td>
<td>-13 to +300°F</td>
<td>Similar to nitrile with improved high temperature capabilities and ozone resistance. Excellent resistance to petroleum-based fluids. Excellent mechanical properties and wear resistance. Compatible with HFC refrigerants, oil soluble and water soluble substances. HNBR with low ACN content: Not recommended for gasoline, CFC refrigerants and aggressive solvents.</td>
<td>Oil pan and cover seals, steering system seals, cap seals, sensor seals, bumpers, isolators, sleeves, HFC refrigertant resistant seals and oil filter seals.</td>
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<tr>
<td>Perfluoroelastomers (FFKM)</td>
<td>+5 to +600°F</td>
<td>Extreme high temp capability. Excellent resistance to the broadest range of chemicals. Limited low temp flexibility. Not compatible with fluorinated refrigerants or other fluorinated chemicals.</td>
<td>Turbo charger seals and exhaust system seals.</td>
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<tr>
<td>Silicone (VMQ, PVMQ, PMQ)</td>
<td>-65 to +400°F</td>
<td>Excellent choice for environmental seals. Wide temperature range and good resistance to dry heat. Good ozone and weather resistance as well as good insulating properties. Relatively limited wear resistance and low resistance to fuels and oils. Not recommended for dynamic applications.</td>
<td>Cover seals, sensor seals, battery seals, cap seals, bumpers, isolators, sleeves, steering system seals, anti-drain back valves, oil filter seals and environmental seals.</td>
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**Note:** This table provides general guidelines on material recommendations. Please consult Parker’s Application Engineers for specific compound selections.