



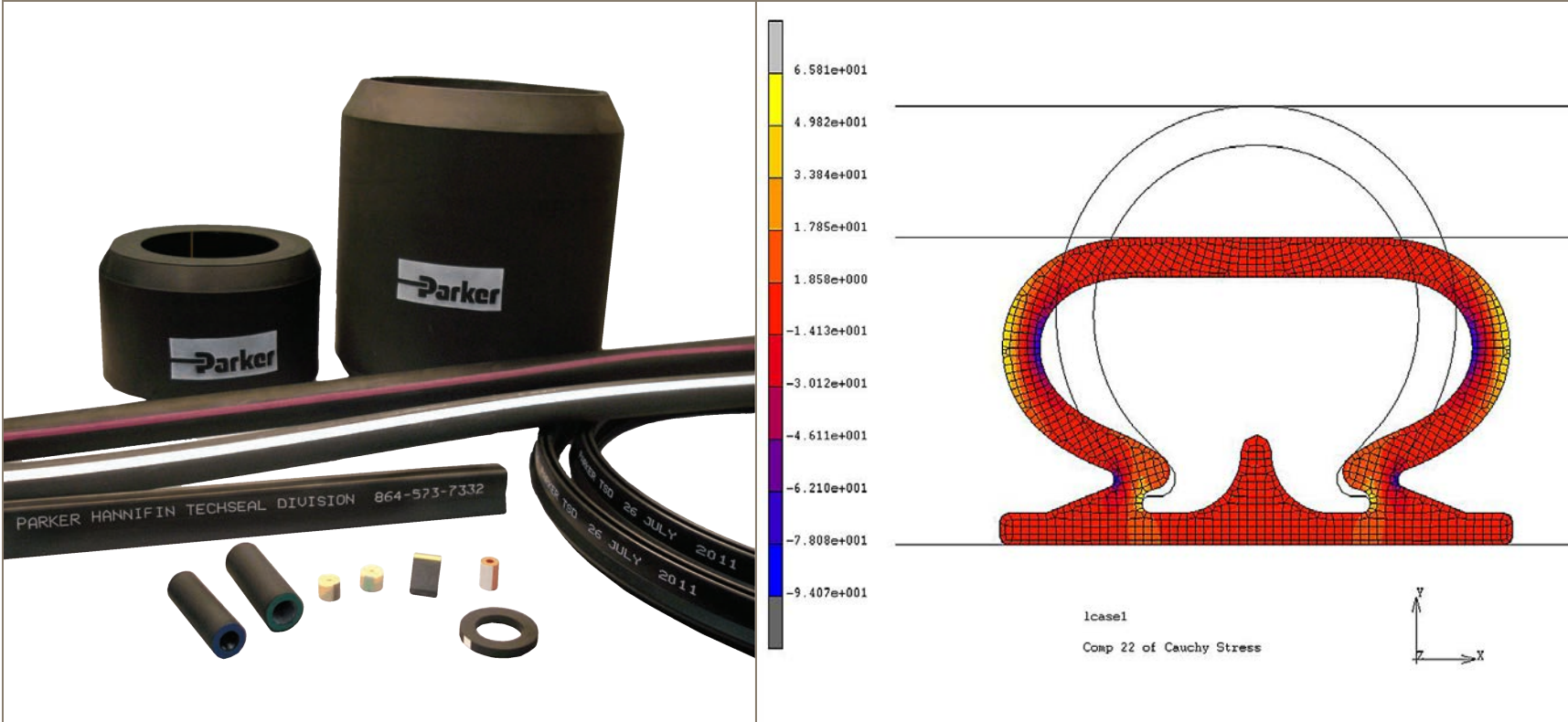
aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



# TechSeal Division Overview



ENGINEERING YOUR SUCCESS.



Headquartered in Spartanburg, South Carolina, Parker's TechSeal Division specializes in the design and manufacture of custom sealing solutions utilizing advanced engineering and a set of unique extrusion, cutting and fabrication technologies.

Each of the TechSeal Division's five manufacturing facilities are ISO 9001 and ISO/TS 16949 certified and specialize in a different market or manufacturing technology allowing us to deliver premier customer service and exceptional quality.

Our Application Engineering team is available to develop customized sealing solutions for the most demanding applications. Using non-linear elastomeric Finite Element Analysis (FEA) software we can perform accurate simulations of seal performance based on material test data. These simulations eliminate the need for multiple iterations of costly prototype and reduce development time. State of the art technical support is just one of our many value added services.

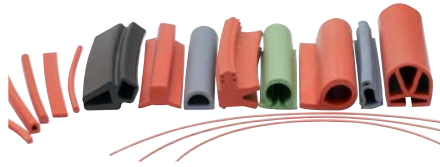
## Value Added Services

- Custom engineered sealing systems
- Application engineering support
- Finite Element Analysis (FEA)
- Design validation testing
- Material development
- Short lead time prototypes
- Medical grade, USP Class VI, FDA, NSF, and UL compliant materials and processes
- Ultra High Purity (UHP) manufacturing
- Part marking and printing
- Packaging and kitting
- Worldwide distribution and service center network

Parker is a leading global provider of precision engineered sealing solutions. We develop strong customer partnerships by creating value through innovation, dedication and world class quality.

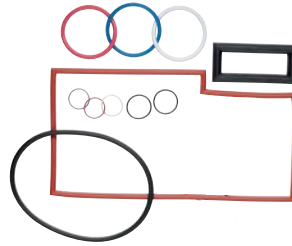
## Featured Products

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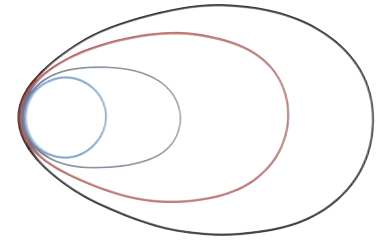
### ParFab™ Extruded Profiles

Parker offers a wide variety of common extruded profiles in many configurations, such as solid and hollow O, solid and hollow D, U channel, rectangular, solid and hollow square and hollow dart. These products can be shipped on spools in long continuous length.



### ParFab Spliced/Fabricated Gaskets

These products are manufactured using a hot vulcanization process to provide spliced hollow and solid rings and custom gaskets from either standard or custom cross-sections. ParFab parts can be fabricated into low closure force seals, large diameter O-rings, non-standard O-rings, and custom profiles.



### ParFab Spliced O-rings

These O-rings are an economical alternative to molded product. The TechSeal Division's extruded and spliced O-ring manufacturing process allows for quick turnaround, eliminates the upfront tooling costs associated with molded product and offers design flexibility.



### ParFab Hollow O-rings

Parker's hollow O-rings are friction fit, low closure force seals whose cross-sectional dimensions can be customized at no tooling cost for more design flexibility. Those O-rings have physical properties of a higher durometer material with the compressive force of a lower durometer material.



### Static Face Seals

Our custom static face seals offer many technical advantages over traditional molded and die cut static face seal products. Typical applications include sensors, cap seals, specimen vials, pump seals, plumbing systems and metal housing seals with a size range as small as .030" up to 19" in diameter.



### Specialty Cut Profiles

Specialty cut profiles are available in the form of square cuts, D-rings, chamfered lathe cuts, lip seals, and numerous other custom configurations. Custom configurations are available from as small as 1" up to 19" in diameter with little or no up-front tooling costs.



### Oil & Gas Packer Elements

Parker TechSeal offers high quality standard and custom Packer Elements for the oil & gas industry. These products are available in a variety of materials including extrusion and fracking fluid resistant elastomers. TechSeal's unique manufacturing process allows for design flexibility, low up-front tooling cost, and rapid response.



### Filter Seals and Gaskets

Our custom rubber products include: Lathe cut outer gaskets for spin on filters, molded anti drain back valves, and molded grommets. Parker Hannifin's TechSeal Division is a leading global provider of sealing products for the filtration industry utilizing dedicated manufacturing facilities in North America and Asia.



### Bumpers, Isolators, and Sleeves

Parker's precision extrusion and cutting technologies offer a wide range of elastomeric and thermoplastic engineered products. These custom products can be supplied in the form of sleeves, tubing, bumpers, grips, stoppers, plugs, rollers, and a variety of other configurations.

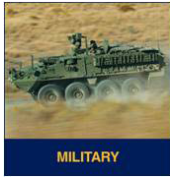
# TechSeal Division Polymer Families

Polymer Families	Specifications	Characteristics
Acrylonitrile-Butadiene / Nitrile / Buna-N (NBR)	AMS, MIL FDA 21 CFR UL 157	Excellent resistance to petroleum-based fluids, good balance of physical properties and wide temperature range. Relatively low ozone and weather resistance. Good general purpose elastomer.
Chloroprene Rubber / Neoprene (CR)	AMS, MIL	Good general purpose polymer. Exhibits good ozone, aging, and chemical resistance - primarily used in refrigerants.
Ethylene Propylene Rubber (EPDM, EPM, EP, EPR)	AMS, MIL USP Class VI, FDA 21 CFR NSF 61	Widely specified seal material - excellent resistance to alcohols, ketones, steam, brake fluids, Skydrol®, and other phosphate ester-based hydraulic fluids. Excellent weathering resistance. Not recommended for use in petroleum fluids.
Fluorocarbon (FKM, FPM)	AMS, MIL FDA 21 CFR UL 157	Wide-spectrum chemical resistance and broad temperature range. Some specialty FKM compounds have low temperature static sealing to -40°F [-40°C]. Commonly used in fuels and oils. Bio fuel and coolant resistant versions are also available. Oil & Gas grades available (Resistant to extrusion and explosive decompression).
Fluorosilicone (FVMQ)	AMS, MIL	Combines temperature range of silicone with good resistance to petroleum-based fuels and lubricants. Applications with high heat that are combined with potential exposure to petroleum oils and / or hydrocarbon fuels.
Hydrogenated Nitrile (HNBR, HSN)	NORSOK approved	Similar to nitrile with improved high temperature capabilities and ozone resistance. Excellent resistance to petroleum-based fluids. Oil & Gas grades available (Resistant to extrusion and explosive decompression).
Polyacrylate (ACM, AEM)	Approved to many automotive OEM specifications	Outstanding resistance to petroleum-based fuels, oils, and automotive transmission fluids (ATF). Good resistance to oxidation, ozone, and sunlight - resists flex cracking.
Silicone (VMQ, PVMQ, PMQ)	AMS, MIL USP Class VI, FDA 21 CFR UL 94 V-0, UL 94 HB, UL 157	Ozone and weather resistant. Wide service temperature range and good insulating properties. Excellent choice for environmental seals. Relatively low resistance to fuels and oils.
Thermoplastic Elastomer (TPR, TPE)	USP Class VI, FDA 21 CFR NSF 61	A cost friendly alternative to rubber with similar physical properties. Limited resistance to high temperature. High tear resistance. Low surface friction.

Skydrol® is a registered trademark of Solutia Inc.

**Note: This table only provides general guidelines on material selections, please consult our Application Engineers for specific recommendations for your applications.**

# Applications by Markets



## Aerospace / Military

Parker Hannifin has long been a supplier to many major aerospace and military

companies. Our engineered sealing solutions play a vital role in protecting critical systems from water and dust intrusion, nuclear / biological contamination cleansing solutions, and chemical spills.

- Environmental seals for electronics housings
- Lighting, sensing and detection system seals
- Target acquisition system seals
- Aircraft and ground vehicle access panel seals
- Structure, case and cover seals
- Handheld devices

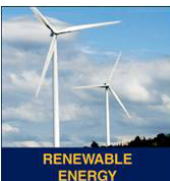
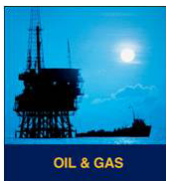


## Automotive / Heavy Duty

Parker has been a major supplier to the automotive and heavy duty diesel markets for

over 30 years. We offer a variety innovative and cost effective solutions that reduce warranty claims, improve assembly time and improve product performance. Some applications include:

- Automatic transmission seals
- Automotive sensor seals
- Cylinder linear seals (D-rings)
- Large valve cover and housing seals

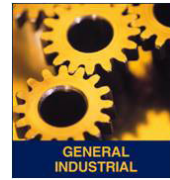


## Energy, Oil & Gas

The rising demand for energy continues to drive companies into more extreme environments and to develop new tech-

nologies that meet tomorrow's challenges. The Parker TechSeal Division offers a variety of engineered solutions for Oil & Gas, power generation and renewable energy applications that meet these challenges.

- Advanced materials for down hole Oil and Gas applications: high temp, explosive decompression resistant, Norsok approved materials, extrusion resistant materials, steam resistant EPDM, and swellable materials
- Standard and custom packer elements
- Specialty sealing solutions for power generations units
- Dynamic sealing solutions for wind turbine bearings
- Environmental and grease containment seals for large gearboxes and housings



## General Industrial & Consumers

The depth of our products and manufacturing capabilities allow us to support a variety of

general industrial and consumer applications. The possibilities are endless but some of these applications include:

- Static face seals for industrial filters and sensors
- Dampening bumpers
- Isolation sleeves
- NSF approved and chloramine resistant materials for potable water and plumbing applications
- Drum seals
- Environmental seals for LED lighting systems



## Life Sciences

As life sciences drive smaller and smaller technologies, Parker TechSeal rises to the challenge by designing and manufacturing tight tolerance custom extrusions. TechSeal is able

to provide engineered options that offer our customers reduced lead times and components that are both easier to install and more durable.

- Medical vial cap seals
- Low closure force seals on plastic devices
- Medical grade tubing
- Specialty tubing
- Chamber door seals
- Septa

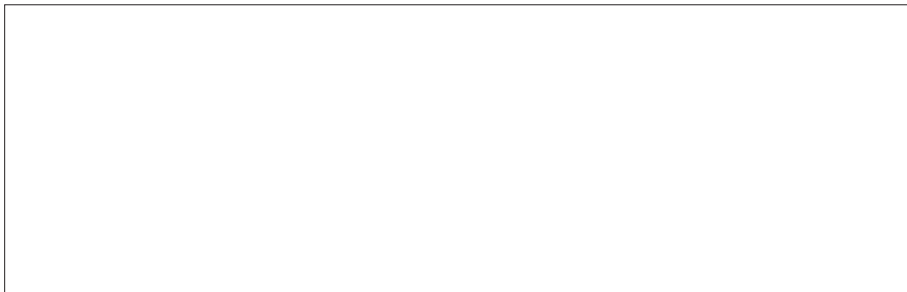


## Telecommunications

Protecting critical communications infrastructure from extreme environments can be challenging. That's why TechSeal offers highly engineered environmental sealing solutions that

improve serviceability, reduce the chance of failure and exceed functional test requirements.

- Hollow friction fit environmental seals
- Parfab extruded and spliced four-corner gaskets
- UL 94 V-0 and fungus resistant materials
- Low closure force and large clearance gap seals



Your Local Authorized Parker Distributor



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