

Sealing Solutions for Energy, Oil and Gas

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

TechSeal Division - TSD 5441



ENGINEERING YOUR SUCCESS.



Since the industrial revolution, energy has been playing a key role in sustaining and enhancing economic activities.

Oil and gas sources account for more than 60% of the world's energy consumption. The rising energy demand continues to drive companies to focus more on production efficiency, productivity and impact on the environment. New technology developments are pushing towards more extreme operating conditions in order to meet the world's demand for energy.

Taking on the challenge, Parker develops and manufactures advanced sealing solutions to support companies with production expansion, efficiency boost and performance improvement.

Parker engineers sealing products to perform in consistently harsh conditions such as high pressures, high temperatures, abrasive completion fluids and corrosive subterranean natural environments.

Sealing Environments

- **High pressure and high temperature applications**
- **Completion and fracking fluids**
- **Natural reservoir formation gases and fluids**
- **H₂S (sour gas), CO₂, NH₃ (ammonia), hydrocarbon gases, et cetera.**
- **Steam, crude, seawater, muds, corrosion inhibitors, pH regulators, hydrocarbon fluids, etc.**
- **Rapid gas decompression (explosive decompression)**

Typical Applications

- **Well completion systems**
- **Horizontal drilling and fracturing**
- **Natural gas extraction**
- **Sliding sleeve systems**
- **Plug and perforating systems**
- **MWD vibration dampening**
- **MWD compensator membrane**
- **Hydraulic pump seals**
- **High pressure valves**

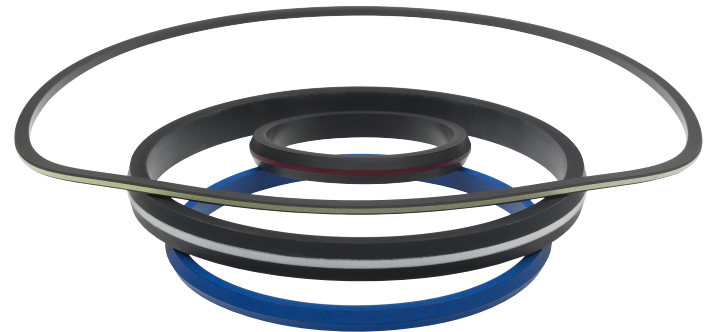
Together, we can enable technologies that keep the world running.

TechSeal Featured Products for Oil and Gas Applications



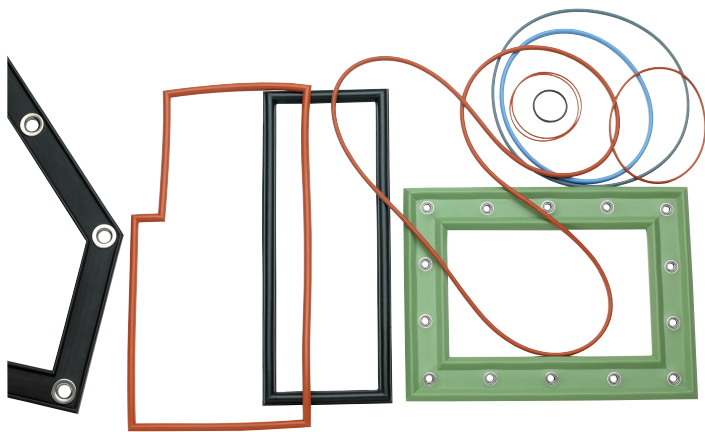
Packer Elements

TechSeal supplies standard and custom Packer Elements in various sizes and configurations for many downhole applications. These Packers are available in a variety of industry grade materials, including specific compounds for extrusion resistant and high expansion performance. TechSeal also offers options of pre-assembled Packer Element systems with a variety of back-up configurations.



Machined and Precision-Cut Seals

Parker TechSeal's line of custom machined and precision-cut seals includes static face seals with rectangular cross sections and radial seals such as D-rings and double chamfer seals. The rectangular cross section provides both gland stability and maximum sealing contact surface area for face seal applications. D-rings and double chamfer seals have a flat base to provide operating stability and prevent spiral failure, and a chamfered sealing surface to optimize squeeze and installation. These radial seals are manufactured for both static and dynamic applications in many areas of the oil field, including well completion systems.



ParFab™ Enclosure O-rings and Gaskets

ParFab custom O-rings and gaskets for enclosures are extruded and fabricated in multiple sizes, shapes and cross sections. These O-rings and gaskets are manufactured using a hot vulcanizing method and therefore exhibit consistent, strong bond integrity at the splice joints. TechSeal also offers enclosure gaskets with torque limiters to prevent seal over-compression during assembly. ParFab spliced rings are ideal environmental seals for many static applications such as electronic control system or field storage containers. Spliced hollow O-rings provide a low closure force and a friction-fit groove design option.



Custom Profiles, Vibration Isolators and Dampeners

TechSeal custom manufactures a wide variety of isolation grommets to dampen vibration, reduce noise and protect critical components. Parker vibration isolators and dampeners are available in a large selection of polymer families to ensure application compatibility and industry regulation compliance.

Recommended Polymer Families

Polymer Families	Temperature Range	Recommendations
Acrylonitrile-Butadiene / Nitrile / Buna-N (NBR)	Low temp NBR: -70 to +180°F High temp NBR: -35 to +275°F	Good for general purpose sealing due to the polymer's balance between physical properties and wide temperature range. Excellent low temp, oil, fuel and chemical resistance. Good resistance to gas permeation. Relatively low ozone and weathering resistance.
Aflas® (FEPM)	+15 to +450°F	Recommended for applications requiring resistance to sour gas (H ₂ S), steam, water-based drilling muds and various completion fluids. Excellent high temp capability. Outstanding resistance to ozone and weathering.
Ethylene Propylene Rubber (EPDM, EPM, EP, EPR)	AEM: -5 to +350°F ACM: -40 to +325°F	Excellent resistance to steam, water, ozone and weathering. Good high temp resistance. Not recommended for use in petroleum oils and hydrocarbon fluids.
Fluorocarbon (FKM, FPM)	-15 to +400°F (Low temp -40°F specialty FKM compounds available)	Best option for oil and fuel resistance. Excellent resistance to high temp, ozone, oxidation, sour gas (H ₂ S) and several chemicals. Rapid gas decompression (explosive decompression) resistance with low temperature resiliency. Good extrusion resistance. NORSOK approved compounds are available.
Hydrogenated Nitrile (HNBR, HSN)	-25 to +300°F	Similar to NBR with improved resistance to high temp and ozone. Excellent resistance to extrusion, sour gas (H ₂ S) and rapid gas decompression. Recommended for petroleum oils and natural gas applications. NORSOK approved compounds are available.

Featured Oil Field Grade Compounds

These compounds are some of the most common compounds for the energy, oil and gas applications. Material reports and test data are available upon request.

Applications		Materials	
Conditions	Descriptions	Featured Compounds	Material Characteristics
Base fluids	Fracking fluids with a high pH	V7821-75	Aflas® compounds.
		V4461-90	Compatible with various base fluids.
High expansion	Applications with large radial gaps	KA270-70	HNBR compounds. High expansion capabilities to seal large radial gaps in downhole applications.
		KA280-80	
High pressure and high temperature	Downhole applications where formation temps and pressures push the elastomers' limits	KB292-95	HNBR compounds. Excellent extrusion resistance.
		VG109-90	FKM compounds. Excellent low and high temp flexibilities. Certifications: ISO 23936-2 RGD, API 6A, and NORSOK M710 RGD and H ₂ S.
		VA298-90	FKM compounds. Excellent extrusion resistance and high temp performance.
		VA275-95	
Low temperature	Low temp down to -55°F	V1289-75	FKM compounds. Excellent low temp capability. NORSOK M-710 H ₂ S approved.
Steam	Steam injection wells where high pressure steam is required for efficient oil production	E0962-90	EPDM compounds. Outstanding resistance to high temp steam.

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



Assemblies and Systems

Often, a single seal is not adequate to seal the high temperatures and high pressures seen in demanding downhole applications. When this is the case, Parker TechSeal has the ability to provide pre-assembled packing elements with back-up systems that are engineered to meet your application requirements.

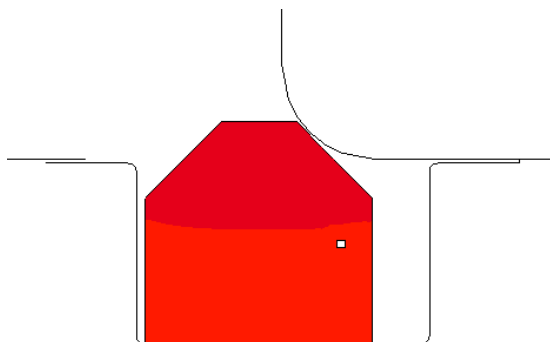
Our team of Application Engineers can assist with the selection of back-up styles, materials and packer configurations, based on the completion techniques and operating conditions. The back-up configurations can include both metallic and non-metallic options, combined with a wide range of polymer choices for the packer elements. These individual components can be pre-assembled with custom shrink wrapping and labeling to help them integrate seamlessly into your manufacturing process.



Design Assistance

Our Application Engineering team is available to develop customized sealing solutions for even the most demanding downhole 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 can eliminate the need for multiple prototype iterations, reducing development time and cost.



Part Identification

TechSeal offers a variety of part marking technologies to aid with seal installation, identification and traceability.

Printing and marking options can include customer information, logos, stripes, O.D. painting, part numbers and other relevant seal identification.





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