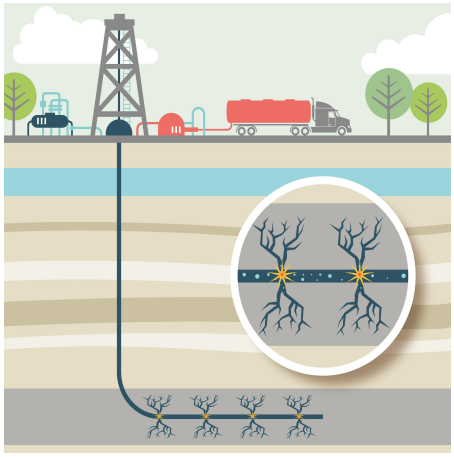
Packer Elements

Precision Machined Solutions for
Well Completion Systems



Expanding Possibilities

Fracking, or hydraulic fracturing, is enabling the oil and gas industry to expand production to reserves that were previously unreachable. Parker's packer element technology is making that transition possible in a safe and efficient way.

The packer element systems are developed to function in both open-hole and cased-hole completion systems. TechSeal manufactures these elements from a variety of oil field grade materials including those for high pressure and high temperature environments. AST style and custom designed packer elements are available for order with various backup options.

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Product Features:

- Compatible with a variety of completion tools
- High expansion and extrusion resistance
- Broad temperature range capability including high pressure, high temperature
- NORSOK M-710, API and ISO 23936 certifications

Design Engineering:

- Application Engineers available for design assistance and technical support
- Non-linear elastomeric Finite Element Analysis (FEA)
- Material and functional testing
- Elastomer material development

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Oil Field Grade Elastomers

The most highly engineered materials for consistent performance in harsh operating conditions: high pressures, high temperatures, abrasive completion fluids and corrosive subterranean environments.

Applications		Materials	
Conditions	**Descriptions**	**Featured Compounds**	**Material Characteristics**
Base fluids	Fracking fluids with a high pH	V7821-75	FEPM (Aflas®) compounds. Compatible with various base fluids.
		V4461-90	
High expansion	Applications with large radial gaps	KA270-70	Hydrogenated nitrile (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	Hydrogenated nitrile (HNBR) compound. Excellent extrusion resistance.
		VG109-90	Fluorocarbon (FKM) compound. Excellent low and high temp flexibilities. Certifications: ISO 23936-2 RGD, API 6A, and NORSOK M710 RGD and H_2S (sour gas).
		VA298-90	Fluorocarbon (FKM) compounds. Excellent extrusion resistance and high temp performance.
		VA275-95	
Steam	Steam injection wells where high pressure steam is required for efficient oil production	E0962-90	Ethylene propylene (EPDM) compound. Outstanding resistance to high temp steam.
Standard well condition	General use	NA523-70	Nitrile (NBR) compounds. Good extrusion resistanace and proven test performance.
		NA524-80	
		NA525-90	

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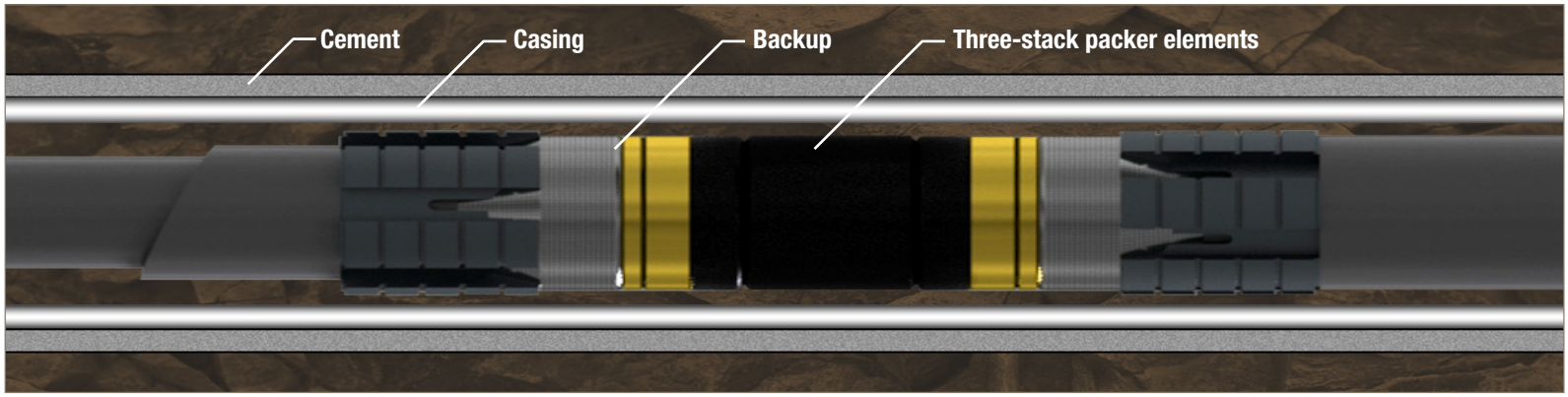
Note: This table presents most common Parker TechSeal compounds for the oil and gas applications, providing general guidelines on material selections. Please consult our Application Engineers for specific recommendations for your applications. Material reports and test data are available upon request.



Non-retrievable bridge plug packer elements in uncompressed form

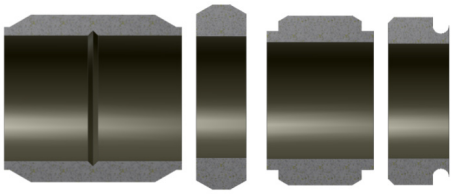
*The graphic above is for illustration purposes only.

From left to right: Retrievable packer element with metal spring backup, sub-assembly elements, packer element with PEEK back-ups, and pre-assembled packer elements with custom shrink wrapping and labeling.

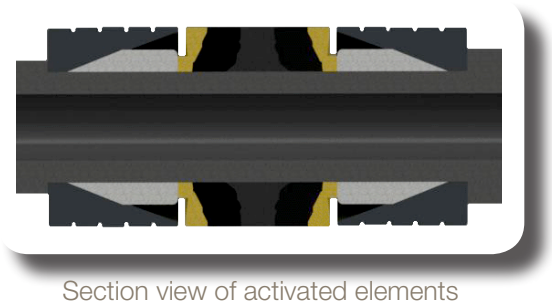
Packer Design and Backup Systems

Packer Element Design

TechSeal designs and develops packer elements to function in open-hole and cased-hole well completion systems. The elements are offered in standard and custom configurations. ID sizes range from 1.000” to 18.000”, wall thickness can go up to 1.250”, and the length of the element can go up to 5+ feet.



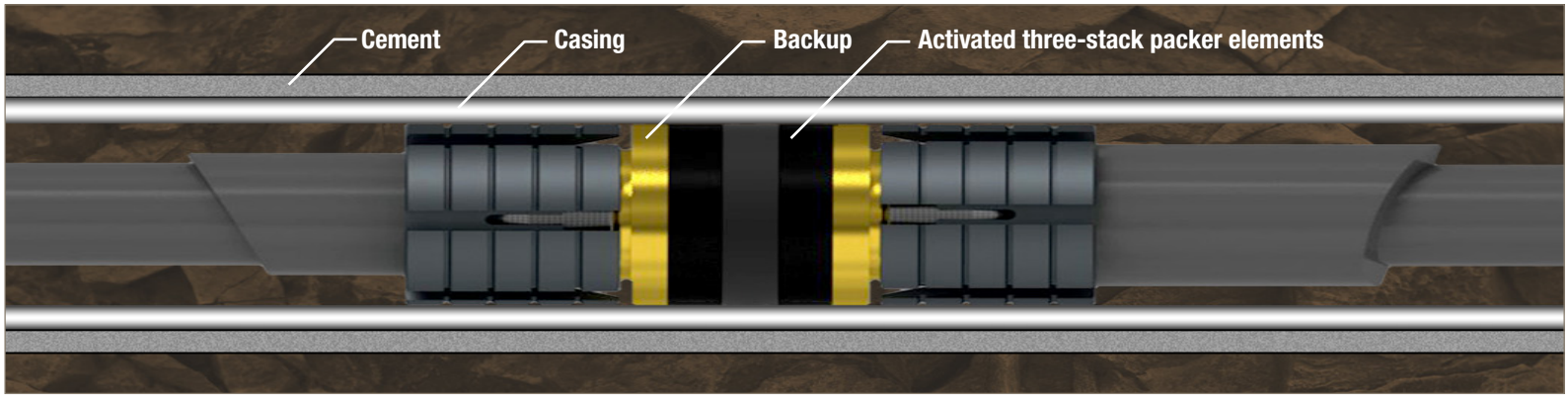
Custom element configurations



Section view of activated elements

Custom Backup Configurations

Often a single rubber element is not adequate to seal the high temperatures and high pressures seen in demanding downhole applications. Parker TechSeal provides pre-assembled solutions with backup systems that are engineered to meet your application requirements. The backup configurations can include both metallic and non-metallic options such as metal springs, PEEK rings, PTFE rings, composite rings and other custom backup designs.



Non-retrievable bridge plug packer elements after setting

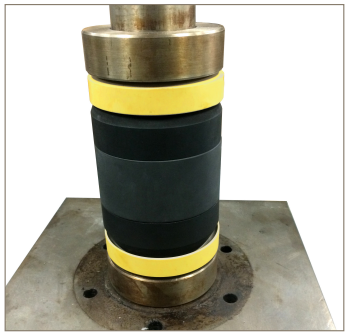
*The graphic above is for illustration purposes only.

Functional and Material Testing

Functional Testing

TechSeal has the capability to perform functional testing for single, double or triple element stacks. Hydraulic testing can be performed up to 400°F [~205°C] and 12,000 psi.

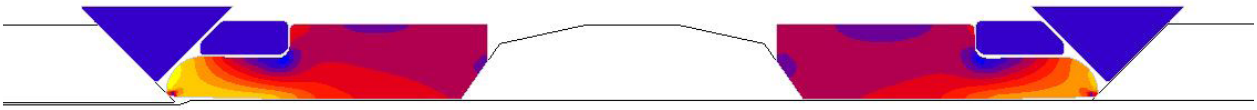
Triple element stack test fixture style 1



Triple element stack test fixture style 2

Material Testing

Parker TechSeal's material laboratory can develop new compounds or test existing rubber compounds to confirm the material's compatibility with the application's operating environment. Additionally, we have the ability to characterize all materials for accurate Finite Element Analysis (FEA) predictions. FEA simulations can predict the element's behavior in specific application conditions, eliminating the need for multiple prototype iterations.



An FEA simulation of packer elements with backups

Manufacturing and Services

Manufacturing Processes

- Flexible extrusion and machining processes allow for easy customization
- The unique patented manufacturing process produces parts with no voids, no flash and proven performance in the field
- Ideal for a wide range of element design geometries
- ISO certified facilities in North America

Additional Finishing Services

- Surface marking for element identification
- Part labeling
- Shrink wrapping and assembly packaging
- Surface coatings

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