



Kalrez[®] perfluoroelastomer parts

From DuPont Performance Elastomers

Kalrez[®] Seals . . . A Lot Less Expensive Than the Cost of Downhole Seal Failure

Six Years of Downhole Proof No Failures with Kalrez[®] Seals

With over 2,000 wells, the records show it: no well has ever had to be reworked because a Kalrez[®] V-ring failed. Even under torturous conditions of pressure, heat, and man-made chemicals, Kalrez[®] perfluoroelastomer seals have held up and remain virtually unchanged.

Six-Year Field Service Record

Conditions

Depth, m (ft)	4,572 (15,000)
Temperature, °C (°F)	149°C (300°F)
Pressure, MPa (psi)	46 (6,700)
H ₂ S, %	10
CO ₂ , %	20

Production

Oil, BBL/Day	3,000
Water, BBL/Day	125
Gas/Oil Ratio	1.3

Physical Property Comparison

(Kalrez[®] 3065 Compound)

New V-Rings

Tensile at Break, MPa (psi)	20 (3,010)
Elongation, %	27
Hardness, Shore A	95

Six Years Downhole V-Rings

Tensile at Break, MPa (psi)	21 (3,120)
Elongation, %	30
Hardness, Shore A	85

When a seal failure in a 3048-m (10,000-ft) well can mean a \$100,000 rework, why trust anything less than the proven performance of Kalrez[®] perfluoroelastomer seals?

Proven Reliability Since 1976

The deeper the well, the more harsh the conditions, the more you need Kalrez® reliability. Kalrez® has been field-proven across the industry in these applications:

- Tubing-to-Packer Seals
- Subsurface Safety Valves
- Logging Boots
- Casing Tie-Back Seals
- Survey Tool Seals
- Slip-Joint Seals

Kalrez® has been successfully used by these equipment and service companies:

- Arrow Oil Tools
- Baker Hughes
- Camco, Inc.
- Dresser/Guiberson
- Masx Energy Systems
- Otis Engineering
- Schlumberger Well Services

Kalrez® — Downhole with many production companies, including:

- Amerada Hess
- Amoco
- Aramco
- Arco
- BP
- Cities Service
- CITCO
- Coastal Corp.
- Coastal Oil & Gas
- Conoco
- Dowell–Canada
- Exeter
- Exxon, USA
- Hunt Oil
- Marathon
- Mesa
- Mobil
- Patrick Petroleum Co.
- Pennzoil Co.
- Phillips Petroleum
- Shell
- Texaco
- Union Oil

Kalrez® Protects When Downhole Conditions Deteriorate

Downhole conditions can deteriorate rapidly. Blistering heat, corrosive fluids, and toxic gases can destroy the physical properties and sealing performance of other materials. Only Kalrez® combines the resilience and sealing force of rubber with the chemical inertness and thermal stability associated with Teflon®. Kalrez® seals resist attack by all well fluids and additives: hydrogen sulfide, carbon dioxide, brine, sulfuric and hydrochloric acids, amine-based corrosion inhibitors, and solvents including benzene, toluene, acetone, high-aromatic hydrocarbons, and methanol.

Even under grueling long-term service, with temperatures to 260°C (500°F), Kalrez® parts resist swelling, blistering, and embrittlement. To date, over 50,000 Kalrez® V-rings have withstood severe downhole stresses without reported failure. That's Kalrez® reliability.

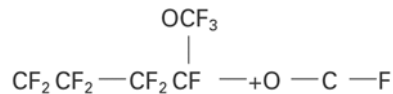
On your next completion, specify Kalrez®—the seal that is good for the life of your well.

Downhole Conditions Change, but Kalrez® Seals Don't

Inside a well, the only constant thing is change. Because they have no active hydrogen, Kalrez® parts successfully resist thermal and chemical fluctuations that cause lesser elastomers to fail .

DuPont Performance Elastomers Kalrez® is perfluorinated—completely protected by inert fluorine atoms. Nothing reacts with it.

Kalrez® Perfluoroelastomer



Common fluoroelastomers have active hydrogen atoms. Under hostile conditions, hydrogen reacts with other elements, gradually degrading the seal.

Kalrez® perfluoroelastomer seals stand up to severe downhole conditions. No chemical or thermal degradation of sealing parts means no loss of sealing reliability.

Because environmental conditions change over the life of a well, specify the seal that doesn't change—Kalrez®.

The DuPont Performance Elastomers Seal of Confidence

DuPont Performance Elastomers manufactures Kalrez® parts to assure you of exacting quality control from start to finish.

The reputation of DuPont Performance Elastomers for technical excellence is behind every Kalrez® seal. That means consistent standards and consistent compounding, time after time, seal after seal.

When you buy Kalrez®, you buy DuPont Performance Elastomers—that's your seal of confidence.

Kalrez® Seals Not Only Protect Your Investment, They Protect Your Reputation

When even a minor seal failure can disrupt a million dollar operation and mean catastrophic repair costs—can you afford not to have Kalrez® on your side?

By preventing the need for workover to reseal, and making it easier to pull the tubing string when necessary, Kalrez® seals save you time and money. They also increase the reliability of safety valves and other flow control devices.

By reducing unnecessary workovers, profit-draining labor costs, disrupted schedules, and missed deadlines, Kalrez® parts work hard to protect your investment—and your reputation.

When you can't afford to jeopardize a completion, you can't afford not to specify Kalrez®—to save the cost of downhole seal failure.

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