

# DuPont™ Kalrez® 8900

For Semiconductor Oxidation, Diffusion, ALD, and LPCVD Applications

Technical Information - March, 2017

## Product Description

DuPont™ Kalrez® 8900 perfluoroelastomer parts are a black product for oxidation, diffusion, ALD, and LPCVD applications. It offers outstanding thermal stability, very low outgassing and excellent (low) compression set properties. Kalrez® 8900 parts exhibit excellent retention of physical properties at elevated temperatures, have excellent mechanical strength and are well-suited for both static and dynamic sealing applications. A maximum application temperature of 325°C (617°F) is suggested. Short excursions to higher temperatures may also be possible. Ultrapure post-cleaning and packaging is standard for all Kalrez® 8900 parts.



## Features/Benefits

- Outstanding thermal stability
- Excellent (low) compression set properties
- Very low outgassing properties
- Very low moisture content
- Excellent retention of physical properties at elevated temperatures
- Excellent resistance to fluorine gas

## Suggested Applications

- Quartz Tube Seals
- Plenum Seals
- Chamber Seals
- Fittings
- Center Ring Seals

## Typical Physical Properties<sup>1</sup>

Color	Black
Hardness <sup>2</sup> , Shore A (plied slab)	76
Hardness <sup>3</sup> , Shore M (O-ring)	85
100% Modulus <sup>4</sup> , MPa (psi)	13.33 (1933)
Tensile Strength at Break <sup>4</sup> , MPa (psi)	20.94 (3037)
Elongation at Break <sup>4</sup> , %	135
Compression Set <sup>5</sup> , %	
70 hr. at 204 °C (400°F)	8
70 hr. at 300 °C (572°F)	32
70 hr. at 325 °C (617°F)	59
Max. Application Temperature <sup>6</sup> , °C (°F)	325 (617°F)

<sup>1</sup> Not to be used for specification purposes

<sup>2</sup> ASTM D2240 (plied slab test specimens)

<sup>3</sup> ASTM D2240 and D1414 (AS568 K214 O-ring test specimens)

<sup>4</sup> ASTM D412 and D1414 (AS568 K214 O-ring test specimens)

<sup>5</sup> ASTM D395B and D1414 (AS568 K214 O-ring test specimens)

<sup>6</sup> DuPont proprietary test method

<sup>†</sup> Kalrez® 7075UP should be used for chlorine-based Metal CVD applications



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DuPont™ Kalrez®  
PERFLUOROELASTOMER PARTS

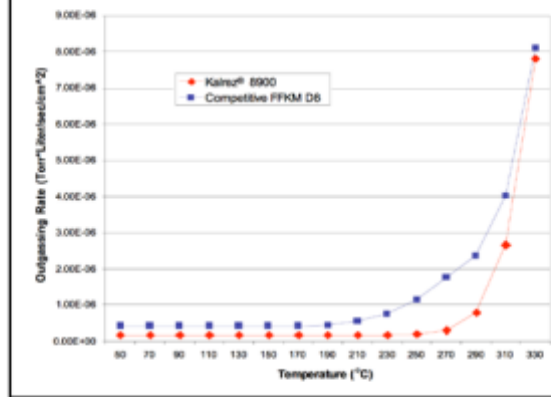
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## Low Outgassing of Kalrez® 8900 parts

The crosslinking structure of elastomeric seals can become damaged as a result of exposure to high heat and temperature spikes. As a result, elastomeric seals can degrade causing outgassing to occur. Outgassing from sealing materials can be absorbed by the exposed substrate and affect the properties of the grown film. Figure 1 shows the outgassing properties of Kalrez® 8900 versus a competitive perfluoroelastomer.

Figure 1. Total Outgassing (50–330°C)



## Fabs Choose Kalrez® 8900 for Improved Performance

Kalrez® 8900 has been reported to significantly improve wafer production in semiconductor thermal process applications where aggressive gases are used during the cleaning cycle.

### Case Report #12007 —Improved PM Performance 3x at Major US Fabline

- Exhibited less degradation than incumbent seals after 6 months in service
- Equipment Platform — Hitachi Kokusai Quixace®
- Process — Oxidation Diffusion
- Process Chemistry — H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, N<sub>2</sub>O
- Cleaning Chemistry — HCl
- Seal Locations — Complete Chamber O-ring kit

Visit us at [kalrez.dupont.com](http://kalrez.dupont.com) or [vespel.dupont.com](http://vespel.dupont.com)

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