



# DuPont™ Kalrez® 8900

For Semiconductor Thermal Processes

Technical Information— January 2012

## Product Description

DuPont™ Kalrez® 8900 perfluoroelastomer parts are a black product for all thermal processes, e.g., oxidation, diffusion furnace, metal CVD, ALD and LPCVD. 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 continuous service temperature of 325 °C 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 (pellet)	73
Hardness <sup>3</sup> , Shore M (O-ring)	82
100% Modulus <sup>4</sup> , MPa	12.21
Tensile Strength at Break <sup>4</sup> , MPa	20.75
Elongation at Break <sup>4</sup> , %	137
Compression Set <sup>5</sup> , %	
70 hr at 204 °C	9
70 hr at 300 °C	32
70 hr at 325 °C	59
Maximum Continuous Service, Temperature <sup>6</sup> , °C	325

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

<sup>2</sup> ASTM D2240 (pellet test specimens)

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

<sup>4</sup> ASTM D412 (dumbbell test specimens)

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

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

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.



The miracles of science™

**Case Report #11069 — Exceeded 4 Month PM Target at Major AP Fabline**

- Exhibited less degradation than incumbent seals after 5 months in service
- Equipment Platform — Major Japanese OEM
- Process — LPCVD Nitride
- Process Chemistry —  $\text{Si}_2\text{Cl}_6$ ,  $\text{NH}_3$
- Cleaning Chemistry —  $\text{HF} + \text{F}_2$  at 150 °C
- Seal Locations — Complete seal kit

**Case Report #11932 — Improved Performance vs Incumbent at Major AP Fab Line**

- No evidence of degradation in aggressive seal locations after 6 months of service
- Equipment Platform — Major Japanese OEM
- Process — LPCVD Nitride
- Process Chemistry —  $\text{SiH}_2\text{Cl}_2$ ,  $\text{NH}_3$
- Cleaning Chemistry —  $\text{HF} + \text{F}_2$
- Seal Location — Complete seal kit

**Case Report #12007 — 3x Improvement in Seal Life @ Major US Fabline**

- Eliminated excessive seal leakage and particle contamination versus incumbent seals
- Equipment Platform -- HKE Quikace Furnace
- Processes -- Diffusion Radical Oxide & Pyro
- Process Chemistry --  $\text{H}_2$ ,  $\text{O}_2$ ,  $\text{N}_2$ ,  $\text{N}_2\text{O}$
- Cleaning Chemistry --  $\text{HCl}$
- Seal Locations -- G400 O-ring and upper quartz cap seal



**Seal & Design**  
**Corporate Headquarters**  
Ph: (716)-759-3344  
Info@SealAndDesign.com  
[www.SealAndDesign.com](http://www.SealAndDesign.com)