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[1]	
Color	Black
Hardness[2], Shore A (pellet)	73
Hardness[3], Shore M (O-ring)	82
100% Modulus[4], MPa	12.21
Tensile Strength at Break[4], MPa	20.75
Elongation at Break[4], %	137
Compression Set[5], %	
70 hr at 204 °C	9
70 hr at 300 °C	32
70 hr at 325 °C	59
Maximum Continuous Service, Temperature[6], °C	325

[1] Not to be used for specification purposes
[2] ASTM D2240 (pellet test specimens)
[3] ASTM D2240 and D1414 (AS568 K214 O-ring test specimens)
[4] ASTM D412 (dumbbell test specimens)
[5] ASTM D395B and D1414 (AS568 K214 O-ring test specimens)
[6] 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.

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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 — Si_2Cl_6, NH_3
- Cleaning Chemistry — HF + 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 — SiH_2Cl_2, NH_3
- Cleaning Chemistry — HF + 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 -- H_2, O_2, N_2, N_2O
- Cleaning Chemistry -- HCl
- Seal Locations -- G400 O-ring and upper quartz cap seal

Visit us at **kalrez.dupont.com** or **vespel.dupont.com**

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(06/08) Reference No. KZE-A10711-00-E0112

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