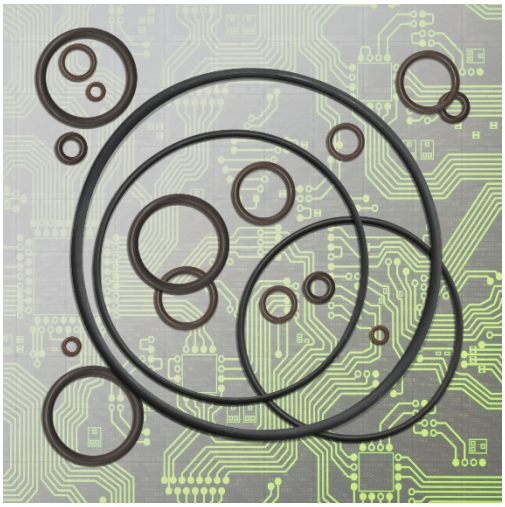
DuPont™ Kalrez® 9600

For High Temperature Semiconductor Applications Involving Fluorine & Oxygen Plasma Radicals

Preliminary Technical Information – November, 2017

Product Description

DuPont™ Kalrez® 9600 perfluoroelastomer parts are designed for high purity, high temperature vacuum applications where seals are exposed to damaging Fluorine and Oxygen plasma radicals. In addition to its extremely low erosion rate and weight loss from plasma attack, this well balanced material provides excellent chemical resistance to Ammonia, Ozone, and Water Vapor. Its outstanding resilience in compression and ultra-low outgassing at high temperature conditions makes it especially suitable for applications where purity of the process environment is paramount, such as Plasma-Enhanced Atomic Layer Deposition and Chemical Vapor Deposition processes used in fabricating next generation semiconductor chips. A maximum application temperature of 315°C is suggested. Ultrapure cleaning and packaging are standard for all Kalrez® 9600 parts.



Performance Features and Benefits

- Exceptional thermal stability
- Outstanding erosion resistance to damaging Fluorine and Oxygen plasma radicals
- Ultra-low particle generation
- Excellent (low) compression set properties
- Superb seal force retention properties
- Ultra-low outgassing
- Increased tool uptime and yield
- Reduced total cost of ownership

Suggested Applications

- Gas and plasma delivery system seals
- Reaction chamber seals
- Bonded gate and slit valve seals
- Pendulum and isolation valve seals

Typical Physical Properties[1]

Color	Olive-Green
Hardness, Shore A (Plied Slab)[2]	70
100% Modulus[3], MPa (psi)	4.76 (690)
Tensile Strength at Break[3], MPa (psi)	13.43 (1948)
Elongation at Break[3], %	218
Compression Set[4], %	
70 h at 204°C (400°F)	15
70 h at 300°C (572°F)	43
Maximum Application Temperature[5], °C (°F)	315 (600)

[1] Not to be used for specifications
[2] ASTM D2240 (plied slab test specimens)
[3] ASTM D412 (dumbbell test specimens)
[4] ASTM D395B and ASTM D1414 (AS568 K214 O-ring test specimens)
[5] DuPont proprietary test method

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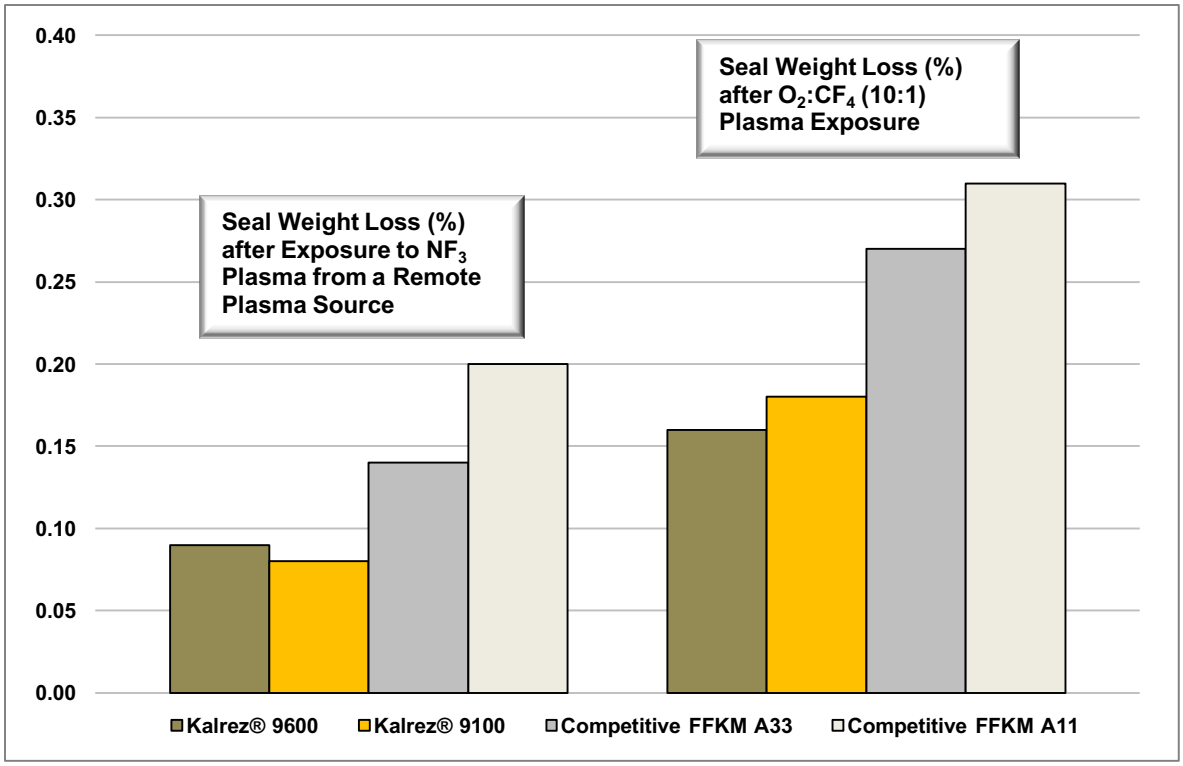
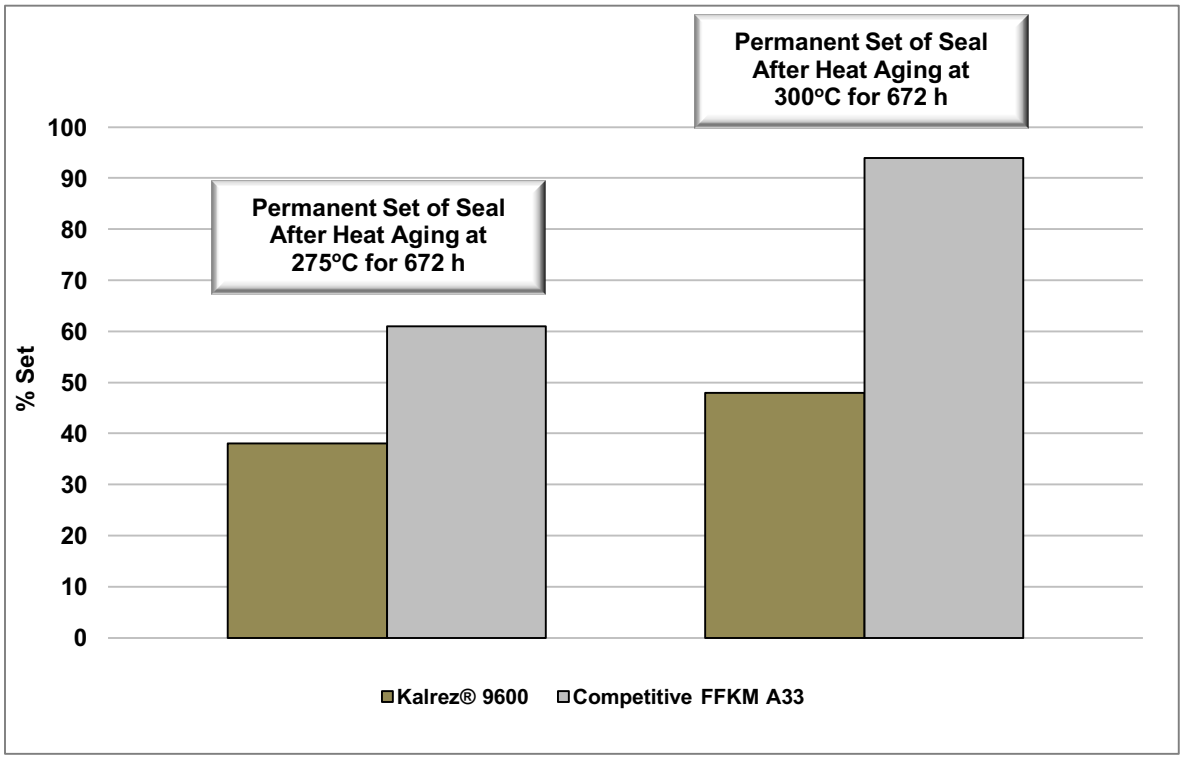
Sealing Performance After Exposure to Fluorine & Oxygen Plasma Radicals[1]



[1] DuPont proprietary test method

Sealing Performance At High Temperatures[1]



[1] DuPont proprietary test method

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Note: Color variations may be observed in DuPont™ Kalrez® 9600 parts. Variations are considered to be cosmetic. See below for additional details. Please contact a Kalrez® Application Engineer if you have any questions or if you need any additional information.

Marks (Dark Spots)

Small marks (dark spots) may be present in Kalrez® 9600 parts. The mark (dark spot) is a result of the curing process and is inherent in the part. It is not indicative of foreign matter and is not expected to have an adverse effect on the performance of the part in service.

Darker Sealing Element — Bonded Door Seal (BDS)

The color of the sealing element in a Kalrez® 9600 bonded door seal (BDS) is darker than a Kalrez® 9600 O-ring for two reasons:

1) Kalrez® 9600 BDS are manufactured at different standard operating conditions versus Kalrez® 9600 O-rings.

2) Since the sealing element is bonded to aluminum on at least one or more sides, less light passes through it. In both cases, this is a color issue, i.e., the darker color is not indicative of foreign material present in the sealing element nor is it expected to have an adverse effect on the performance of Kalrez® 9600 BDS in service.

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

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(06/04) Reference No. KZE-A40061-00-A1117

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