DuPont™ Kalrez® 8002

For Semiconductor Processes

Technical Information—Rev 9, June 2011

Product Description

DuPont™ Kalrez® 8002 perfluoroelastomer parts are a clear product for ash/strip and "select" etch and deposition processes. This unfilled product offers excellent plasma-cracking resistance and ultra-low particle generation in oxygen and fluorine-based plasmas versus mineral-filled products. Kalrez® 8002 exhibits excellent resistance to dry process chemistry, has good mechanical strength and is well suited for static, low stress/low sealing force and "select" bonded door seal applications. A maximum continuous service temperature of 275 °C is suggested. Ultrapure post cleaning and packaging is standard for all Kalrez® 8002 parts.

Performance Features/Benefits

- Ultra-low particle generation in oxygen and fluorine-based plasmas
- Excellent (low) compression set properties
- Excellent plasma-cracking resistance
- Excellent resistance to dry process chemistry

Suggested Applications

- Gas inlet seals
- Gas orifice seals
- Gas feedthrough seals
- "Select" bonded door seals
- Other static and low stress/low sealing force applications

Typical Physical Properties[1]	
Color	Clear
Hardness, Shore A (plied slabs)[2]	69
Hardness, Shore M (O-ring)[3]	76
100% Modulus[4], MPa	2.88
Tensile Strength at Break[4], MPa	15.95
Elongation at Break[4], %	246
Compression Set[5], %, 70 hr at 204 °C	15
Max. Continuous Service Temperature[6], °C	275

[1] Not to be used for specification purposes
[2] JIS 6253 test method (plied slab test specimens)
[3] ASTM D2240 and ASTM D1414 (AS568 K214 O-ring test specimens)
[4] JIS 6251 test method (dumbbell test specimens)
[5] ASTM D395B and ASTM D1414 (AS568 K214 O-ring test specimens)
[6] DuPont proprietary test method

Fabs Choose DuPont™ Kalrez® 8002 for Improved Performance

Kalrez® 8002 has been reported to significantly improve wafer production in a variety of semiconductor plasma process applications where oxygen and fluorinated plasmas are used during the cleaning cycle. In a number of evaluations at fabline customers, Kalrez® 8002 exhibited improved crack resistance, lower particle generation and longer seal life compared to competitive perfluoroelastomers in both static and dynamic sealing applications.

Case Report #6548 — Kalrez® 8002 Improved Wafer Production by 100% versus Competitive Fluoroelastomer (FKM K3)

- Oxide etch VAT pendulum valve gate seal
- Process chemistry: O_2, C_4F_8
- Cleaning chemistry: N/A
- Competitive fluoroelastomer failed due to erosion, cracking and excessive leakage.

DUPONT
The miracles of science™

Case Report #4536 — Kalrez® 8002 Improved Wafer Production Over 50% versus Incumbent Perfluoroelastomer

- Ash top/bottom plasma tube seals
- Process chemistry: O_2, CF_4
- Cleaning chemistry: N/A
- Incumbent perfluoroelastomer failed due to erosion and excessive particle generation

Case Report #6901 — Kalrez® 8002 Improved Wafer Production Over 60% versus Competitive Perfluoroelastomer (FFKM A11)

- HDPCVD e-chuck top ring seal
- Process chemistry: SiH_4, O_2, He
- Cleaning chemistry: NF_3 plasma generated via remote plasma source
- Competitive perfluoroelastomer failed due to erosion and excessive leakage

Case Report #7252 — Kalrez® 8002 Improved Wafer Production by Over 75% versus Incumbent Perfluoroelastomer (FFKM A2)

- SACVD shower head, gas box and lid insulator seals
- Process chemistry: TEOS, O_3
- Cleaning chemistry: NF_3
- Competitive product failed due to severe erosion and melting

Case Report #6554 — Kalrez® 8002 Exhibited Improved Crack Resistance and Lower Particle Generation versus Competitive Perfluoroelastomer (FFKM A2)

- PECVD gas box, shower head and foreline seals
- Process chemistry: TEOS, TMB, O_3 at 1000 watts
- Cleaning chemistry: C_3F_8 at 2000 watts
- Competitive perfluoroelastomer failed due to cracking and excessive leakage

---

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

Contact DuPont at the following regional locations:

North America
800-222-8377

Latin America
+0800 17 17 15

Europe, Middle East, Africa
+41 22 717 51 11

Greater China
+86-400-8851-888

ASEAN
+65-586-3688

Japan
+81-3-5521-8484

(06/05) Reference No. KZE-A10024-00-J0611

The miracles of science™