

# DuPont™ Kalrez® 8085

For Semiconductor Processes

Technical Information—Rev. 9, June 2011

## Product Description

DuPont™ Kalrez® 8085 perfluoroelastomer parts are a beige, general purpose product for “select” etch, ash/strip and deposition processes. It has been formulated for minimal particle generation in NF<sub>3</sub> plasma. Kalrez® 8085 exhibits very low particle generation and low weight loss in oxygen and fluorine-based plasmas, has excellent mechanical strength and is well-suited for both static and dynamic sealing applications (e.g., bonded slit valve doors, bonded gate valves, bonded pendulum valves, gas orifice seals, gas feedthrough seals, chamber lid seals, etc.) A maximum continuous service temperature of 240 °C is suggested. Kalrez® 8085 can also withstand short-term excursions to 275 °C. Ultrapure post-cleaning and packaging is standard for all Kalrez® 8085 parts.

## Performance Features/Benefits

- Very low particle generation in NF<sub>3</sub> plasma
- Excellent mechanical strength properties
- Longer seal life
- Reduced PM time and increased equipment uptime
- Lower cost of ownership

## Suggested Applications

- Bonded slit valve door seals
- Bonded gate valves
- Chamber lid seals
- Gas inlet seals
- Gas orifice seals
- Gas feedthrough seals

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

Color	Beige
Hardness, Shore A (pellet) <sup>2</sup>	80
Hardness, Shore M (O-ring) <sup>3</sup>	86
100% Modulus <sup>4</sup> , MPa	7.5
Tensile Strength at Break <sup>4</sup> , MPa	16.3
Elongation at Break <sup>4</sup> , %	159
Compression Set <sup>5</sup> , %	
70 hr at 150 °C	28
70 hr at 175 °C	35
70 hr at 204 °C	42
Max. Continuous Service Temperature <sup>6</sup> , °C	240
Max. Excursion Temperature <sup>6</sup> , °C	275

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

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

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

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

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

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

## Fabs Choose Kalrez® 8085 for Improved Performance

Kalrez® 8085 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.

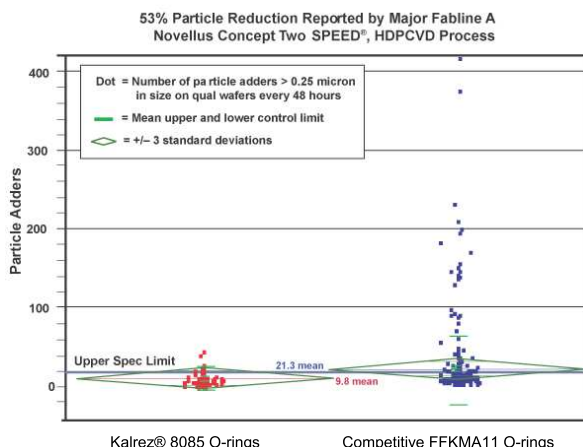
In a number of evaluations at fabline customers, Kalrez® 8085 exhibited improved mechanical strength, lower particle generation and longer seal life compared to competitive perfluoroelastomer parts in both static and dynamic sealing applications.



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**Case Report #3137 — DuPont™ Kalrez® 8085 Reported to Reduce Particle Adders by 53% Over Competitive Perfluoroelastomer (FFKM A11)**

- HDPCVD O-ring
- Process chemistry: Silane
- Cleaning chemistry:  $\text{NF}_3$ ,  $\text{O}_2$  and  $\text{O}_3$
- Competitive FFKM generated significantly more particle adders



**Case Report #4115 — Kalrez® 8085 Extended Seal Life 100% versus Competitive Perfluoroelastomer (FFKM A18)**

- PECVD RPS cleaning module O-ring seals
- Process chemistry:  $\text{SiH}_4$ ,  $\text{O}_2$
- Cleaning chemistry:  $\text{NF}_3$
- Competitive perfluoroelastomer failed due to severe plasma attack, i.e., erosion, cracking, etc.

**Case Report #6553 — Kalrez® 8085 Improved Wafer Production over 25% versus Competitive Perfluoroelastomer (FFKM A2)**

- PECVD gas box, shower head and plate seal
- Process chemistry: TEOS,  $\text{O}_2$  at 400 °C
- Cleaning chemistry:  $\text{NF}_3$  plasma at 3500 watts
- Competitive perfluoroelastomer failed due to cracking and excessive leakage

**Case Report #2883 — Kalrez® 8085 Extended Seal Life 100% versus Competitive Perfluoroelastomer (FFKM A2)**

- Ash isolation valve poppet seal
- Process chemistry:  $\text{O}_2$ ,  $\text{CF}_4$
- Cleaning chemistry: N/A
- Competitive perfluoroelastomer failed due to cracking and excessive leakage

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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**  
+65-6586-3688

**Japan**  
+81-3-5521-8484

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