

DuPont™ Kalrez® 7075UP

For Semiconductor Metal CVD Applications

Technical Information – March, 2017

Product Description

DuPont™ Kalrez® 7075UP perfluoroelastomer parts are a black product targeted specifically metal CVD applications. It offers outstanding thermal stability, very low outgassing and excellent compression set properties. Kalrez® 7075UP exhibits excellent seal force retention, has good mechanical properties and is well suited for both static and dynamic sealing applications. A maximum application temperature of 327°C (620°F) is suggested. Short excursions to higher temperatures may also be possible. Ultrapure post-cleaning and packaging is standard for all parts made from Kalrez® 7075UP.

Performance Features/Benefits

- Outstanding thermal stability
- Very low outgassing
- Excellent resistance to ClF_3
- Excellent (low) compression set properties
- Excellent seal force retention properties
- Excellent response to temperature cycling effects

Typical Physical Properties¹

Color	Black
Hardness, Shore A (pellet) ²	75
Hardness, Shore M (O-ring) ³	85
100% Modulus ⁴ , MPa (psi)	10.54 (1529)
Tensile Strength at Break ⁴ , MPa (psi)	17.26 (2503)
Elongation at Break ⁴ , %	148
Compression Set ⁵ , %	
70 hr. at 204 °C (400°F)	15
70 hr. at 300 °C (572°F)	19
70 hr. at 325 °C (617°F)	34
Max. Application Temperature ⁶ , °C (°F)	327 (620)

¹ Not to be used for specifications

² ASTM D2240 (pellet test specimens)

³ ASTM D2240 and ASTM D1414 (AS568 K214 O-ring test specimens)

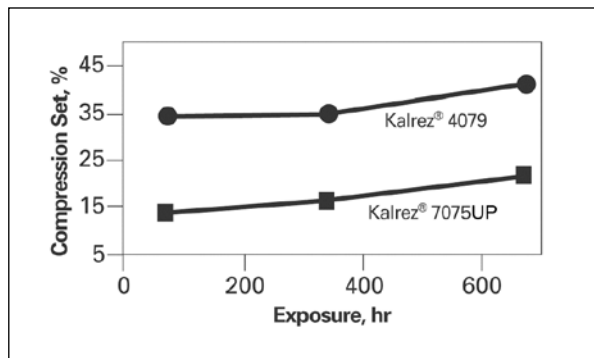
⁴ ASTM D412 (dumbbell test specimens)

⁵ ASTM D395B and ASTM D1414 (AS568 K214 O-ring test specimens)

⁶ DuPont proprietary test method

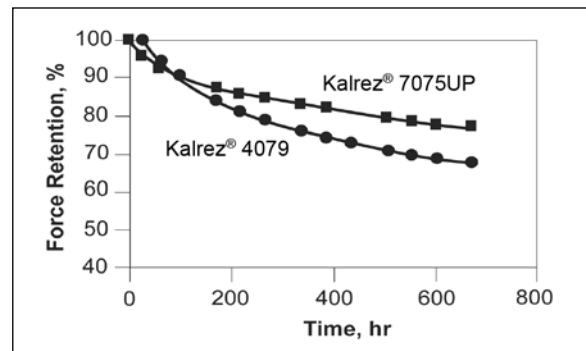
Compression Set/Seal Force Retention

Figure 1. Compression Set at 204°C (400°F) *



*ASTM D395B & D1414 (AS568 K214 O-ring test specimens)

Figure 2. Seal Force Retention at 200°C (400°F)



* ISO 3384, Method A, (AS568 K214 O-ring specimens)

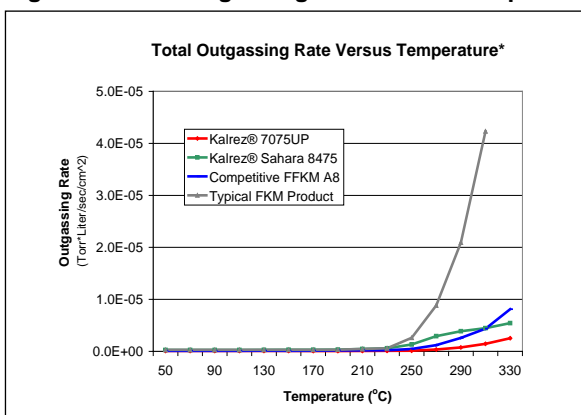


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Outgassing

High heat and temperature spikes can degrade elastomeric seals causing their crosslinking structure to become irreversibly damaged. In addition elastomeric seals can degrade under high temperatures causing outgassing to occur, thereby contaminating the process environment. The result is unscheduled downtime, or even worse, product loss. Figure 3 shows the outgassing properties of Kalrez® 7075UP versus Kalrez® 8475, Competitive FFKM D8 and a typical FKM product. Kalrez® 7075UP exhibited the lowest total outgassing rate.

Figure 3. Total Outgassing Rate versus Temperature*



*DuPont proprietary test method

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