DuPont™ Kalrez® 8475

For Semiconductor Lamp Anneal and RTP Processes

Technical Information—Rev. 6, June 2011

Product Description

DuPont™ Kalrez® 8475 perfluoroelastomer parts are a white product that have been specifically developed to meet the challenging requirements associated with lamp anneal and RTP sealing applications in semiconductor thermal processes. It exhibits excellent thermal stability and long-term sealing performance, less IR absorption and significantly reduced outgassing properties at elevated temperatures. Kalrez® 8475 has good mechanical properties and is well-suited for static and low stress/low sealing force applications (e.g., quartz tube seals, ball joint seals, bell jar seals, plenum seals). A maximum continuous service temperature of 300 °C is suggested. Ultrapure post-cleaning and packaging is standard for all 8475 parts.

Product Features Contribute to Extended Seal Life

- Very low outgassing
- Excellent resistance to “dry” gas process environments
- White color reduces IR absorption and reduces seal temperature
- Improved (lower) compression set
- Excellent long-term seal force retention

Suggested Applications

- Quartz tube seals
- Ball joint seals
- Gas feedthrough seals
- Bell jar seals
- Plenum seals
- Other thermal applications

Typical Physical Properties[1]	
Color	White
Hardness, Shore A (pellet)[2]	60
Hardness, Shore M (O-ring)[3]	71
100% Modulus[4], MPa	2.20
Tensile Strength at Break[4], MPa	11.35
Elongation at Break[4], %	225
Compression Set[5], %, 70 hr at 204 °C	23
Max. Continuous Service Temperature[6], °C	300

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

Typical O-Ring Compression Set Performance* (70 hr data)

Material Tested	% C/S at 204 °C	250 °C	300 °C
Kalrez® 8475	23	30	45
Kalrez® 4079	37	41	45
Competitive FFKM A2	43	100	Sample Failed

*ASTM D 395B and D1414 (AS568 K214 O-ring test specimens)

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DuPont™ Kalrez® 8475—Minimal Outgassing at Elevated Service Temperatures
TG-MS Outgassing Analysis* (Room Temperature to 400 °C at 10 °C/min)

Gas Evolved	R.T. to 100 °C, ppm	R.T. to 200 °C, ppm	R.T. to 300 °C, ppm	R.T. to 400 °C, ppm
H_2O	2	255	324	345
HF+	0	0	0	1
CF+	0	0	0	12
CO_2	0	0	2	103
CF_2	0	0	0	19
CHF+	0	0	0	20
CF_3+	0	0	0	119
C_2F_3+	0	0	0	23
CF_3O+	0	0	0	0
C_2F_4+	0	0	0	9
C_2F_5+	0	0	0	1
C_3F_5+	0	0	0	31
Total Outgas, %	**0.00**	**0.03**	**0.03**	**0.07**
Weight Loss, %	**0.00**	**0.00**	**0.01**	**0.07**

* Data provided by independent testing laboratory.

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