DuPont™ Kalrez® Spectrum™ 6375

Broad Chemical & Temperature Resistance

Technical Information - Rev. 4, July 2019

Product Description

DuPont™ Kalrez® perfluoroelastomer parts have been the sealing material of choice for long-term reliable sealing in the harshest chemical environments. Today, elastomeric seals are expected to perform in a variety of even more aggressive chemicals and at higher temperatures. To meet the needs of chemical processors, DuPont™ Kalrez® 6375 parts offers broader chemical resistance while maintaining the high temperature stability you've come to expect from Kalrez® parts.

Kalrez® Spectrum™ 6375 is designed to give outstanding performance in the widest possible range of chemicals and temperatures. Mixed streams, once a problem for many chemical processors, can now be handled by 6375, furthermore, the curing system also allows for a maximum service temperature of 275 °C (525 °F) which translates to increased chemical resistance over all temperature ranges, especially if high temperature process excursions occur. This combination of chemical and thermal resistance provides advantages for chemical processors. However, if optimum chemical resistance is required, then applications must be individually reviewed for the optimum compound selection.

Typical Physical Properties[1]	
Color	Black
Hardness[2], Shore A	75
100% Modulus[3], MPa (psi)	9.11 (1321)
Tensile Strength at Break[3], MPa (psi)	15.16 (2200)
Elongation at Break[3], %	160
Compression Set[4], 70 hr at 204 °C (400 °F), %	24
Compression Set[5], 70 hr at 204 °C (400 °F), %	25
Maximum Service Temperature[6], °C (°F)	275 (527)
Lowest Service Temperature[6], °C (°F)	–20 (–4)

[1] Not to be used for specification purposes
[2] ASTM D2240 (Pellet test specimens)
[3] ASTM D412 (Dumbbell test specimens)
[4] ASTM D395B (Pellet test specimens)
[5] ASTM D395B & D1414 (AS568 K214 O-ring test specimens)
[6] DuPont proprietary method; performance will vary with seal design and application specifics

Chemical Resistance

For many applications, low volume swell of elastomers is critical to proper operation of equipment. Excessive swell may cause permanent seal failure due to equipment hang up, extrusion, etc. The following data is the result of lab testing to determine the volume swell of Kalrez® Spectrum™ 6375 when exposed to various fluids. Other physical property testing is needed to further define product performance; however, volume swell is an excellent predictor of performance. The following chemicals represent some of the most aggressive applications in the industry. These test results are an indication of the performance of compound 6375; however, all applications are unique, and it is strongly recommended that immersion testing be performed in the actual process fluids.

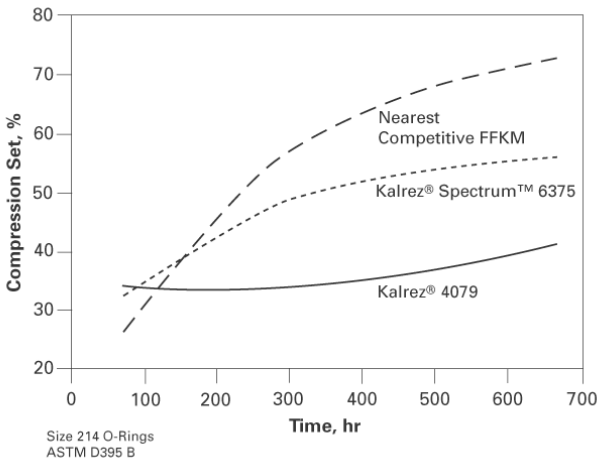
Chemical	Temperature °C (°F)	Kalrez® Spectrum™ 6375 Rating	Nearest Competitive FFKM
Water	225 (437)	A	C
Glacial acetic acid	100 (212)	A	A
Nitric acid (70%)	85 (185)	B	C
Sulfuric acid (98%)	150 (302)	A	C
Maleic acid	90 (194)	A	B
Ammonium hydroxide	100 (212)	B	B
Ethylene oxide	50 (122)	A	A
Urea	175 (347)	A	B
Epichlorohydrin	100 (212)	A	A
Butyraldehyde	70 (158)	A	B
Toluene diisocyanate	100 (212)	A	B
HCFC 134a	25 (77)	A	A

Rating system: A: 0–10% volume swell, B: 10–20% volume swell, C: >20% volume swell

Thermal Resistance

Kalrez® Spectrum™ 6375 has excellent heat resistance to go along with its outstanding chemical resistance. Its proprietary curing technology allows this product to have a maximum service temperature of 275 °C (525 °F). One method of predicting heat resistance is compression set. This is defined as: the amount by which a standard test piece (typically an O-ring or pellet) fails to return to its original thickness after being subjected to a standard compressive load or deflection for a fixed period of time. This chart following shows some elastomer comparisons with regard to compression set resistance.

Compression Set vs. Time at 204 °C (400 °F)



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