

Kalrez® O-rings

Table 1

Typical Physical Properties

Kalrez®Products	Standard Compound			Special Compound				
	6375	7075	4079	6380	7090	0090	0040	1050LF
Maximum Application Temperature ² , °C	275	327	316	225	325	250	220	288
°F	527	620	600	437	617	482	428	550
Durometer Hardness, Shore A ³ , points ±5	75	75	75	80	90	95	70	82
100% Modulus ⁴ , MPa	7.24	7.58	7.24	6.89	15.50	(50% Modulus) 14.20	6.60	12.40
psi	1,050	1,100	1,050	1,000	2,2248	2,057	959	1,800
Tensile Strength at Break ⁴ , MPa	15.16	17.91	16.88	15.86	22.75	19.50	13.70	18.60
psi	2,200	2,600	2,450	2,300	3,300	2,827	1,885	2,700
Elongation at Break ⁴ ,%	160	160	150	160	75	80	180	125
Compression Set ⁵ , % 70 hr at 204°C (400°F)	30	12	25	38	12	40	38	35
Tr10 ⁶ , °C	-3	-4	-2	-5	-5	-7	-17	-4
°F	26.6	24.8	28.4	23.0	23.0	19.4	1.4	24.8

¹Not to be used for specifications

²DuPont Performance Elastomers proprietary method; performance will vary with seal design and application specifics

³ASTM D2240

⁴ASTM D412, 500 mm/min (20 in/min)

⁵ASTM D395 - Method B, pellets

⁶ASTM 1329

Standard Compound

1. Kalrez® Spectrum™ 6375 is a carbon black-filled product for general use in O-rings, seals, diaphragms and other parts specifically for the chemical process industry. This product has excellent broad chemical resistance, good mechanical properties, and outstanding hot-air aging properties. Kalrez® Spectrum™ 6375 is well suited for use in mixed process streams because of its excellent resistance to acids, bases, and amines. It is also recommended for use in hot water, steam, pure ethylene oxide and propylene oxide.

2. Kalrez® Spectrum™ 7075 has enhanced physical properties including very low compression set and improved seal force retention. It is a carbon black-filled product utilizing proprietary cure chemistry cure chemistry. Its mechanical properties are designed for improved sealing performance in both high temperature environments and temperature cycling situations. Kalrez® Spectrum™ 7075 O-rings have a glossy finish. This product was specifically developed for the chemical and hydrocarbon industries to provide improved chemical and thermal resistance better than the industry standard set by Kalrez® 4079.

3. Kalrez® 4079 is a low compression set product for general-purpose use in O-rings, diaphragms, seals, and other parts used in the process and aircraft industries. It is a carbon black-filled product with excellent chemical resistance, good mechanical properties, and outstanding hot air aging properties. It exhibits low swell in organic and inorganic acids and has good response to temperature cycling effects. This product is not recommended for use in hot water/steam applications or in contact with certain hot aliphatic amines, ethylene oxide, or propylene oxide.

Special Compound

Note: Before ordering Kalrez® parts in specialty products, please consult with us or DuPont Performance polymers to determine properties needed for the application. Special products are generally not held in inventory.

4. Kalrez® Spectrum™ 6380 is a non-black product specifically developed for chemical processes involving hot, aggressive amines. It has also been successfully used in applications involving highly oxidizing chemicals. In addition, It has excellent overall chemical resistance. This cream colored product is easily identifiable when selecting an O-ring material for harsh chemical plant services.

5. Kalrez® Spectrum™ 7090 is a product for uses requiring higher hardness/higher modulus than more typical applications. Kalrez® Spectrum™ 7090 perfluoroelastomer parts are well suited for both static and dynamic applications as well as specific sealing applications requiring extrusion resistance at high temperatures. These special black parts have excellent thermal and mechanical properties, including excellent compression set and seal force retention, resistance to temperature cycling effects, and rapid gas decompression (RGD). Short excursions to higher temperatures may also be possible.

6. Kalrez® 0090 is a black product with broad chemical resistance combined with high modulus and high hardness. Kalrez® 0090 parts have outstanding resistance to extrusion and rapid gas decompression (RGD). This product has been independently tested and certified by the Materials Engineering Research Laboratory (MERL – UK) to meet NORSOK-M-710 Rev 1 requirements.

7. Kalrez® Spectrum™ 0040 is a black product specifically designed for low temperature environments where significant chemical resistance is required. Kalrez® Spectrum™ 0040 parts maintain elasticity and seal force at temperatures unattainable by other perfluoroelastomers.

8. Kalrez® 1050LF is a carbon black-filled product for O-rings, seals, and other parts used in chemical process industries. It has good hot water/steam, and excellent amine resistance. Kalrez® 1050LF is not recommended for use in organic acids, or inorganic acids at high temperatures.

Note: Other specialty or custom compounds may be available or developed to applications that require different properties than the above compounds offer: 8375, 8385, 8101, 4001.....

Kalrez is a registered trademark of Dupont.

Kalrez® Compound

Kalrez Compound	Industry Segment	Hardness Shore A	Description / Application	100% Modulus Mpa(Psi)	Colour	Max. Service Temp
Spectrum™ 7075	Chemical and Mineral Processing	75	Highest temperature resistance, lowest compression set, temperature cycling	7.6 (1,100)	Black	327 °C
Spectrum™ 6375	Chemical and Mineral Processing	75	Outstanding performance in the widest possible range of chemicals and temperatures	7.2 (1,050)	Black	275 °C
Spectrum™ 6380	Chemical and Mineral Processing	80	Developed specifically for hot aggressive amine environments	6.89 (1,000)	Cream	225 °C
4079	Chemical and Mineral Processing	75	High temperature, low compression set	7.2 (1,050)	Black	316 °C
1050LF	Chemical and Mineral Processing	82	General purpose, hot water/steam, amines	12.4 (1,800)	Black	288 °C
1058	Chemical Processing	65	Softest compound for low sealing force applications	4.7 (675)	Black	260 °C
2037	Chemical Processing/ Semiconductor	79	White filled, high purity, general chemical resistance	6.2 (900)	White	218 °C
2035	Chemical Processing/ Semiconductor	85	Suitable for Ethylene Oxide	8.61 (1,250)	Black	220 °C
Spectrum™ 7090	Chemical and Mineral Processing / Oil & Gas Exploration	90	Excellent explosive decompression resistance, low compression set and high temperature resistance	15.5 (2,248)	Black	325 °C
3018	Chemical and Mineral Processing / Oil & Gas Exploration	91	High hardness, high modulus, extrusion resistance	16.9 (2,450)	Black	288 °C
3065	Oil & Gas industry	90	High hardness, high modulus, extrusion resistance, custom parts	N/A	Black	288 °C
6885	Spray paint Application only	75	Spray Systems	6.89 (1,000)	Black	270 °C
6880	Spray paint Application only	70	Spray Systems	2.48 (360)	White	250 °C
6230	Pharmaceutical & Food Grade	75	Superior chemical resistance and low contamination from extractables; FDA, USP Class VI, FCN 000101	7.1 (1,020)	Black	260 °C
6221	Pharmaceutical & Food Grade	70	Superior chemical resistance and low contamination from extractables; FDA, USP Class VI, FCN 000102	7.2 (1,050)	White	260 °C
6230A	Pharmaceutical & Food Grade	75	Sanitary Seals	7.1 (1,020)	Black	260 °C
7075UP	Semiconductor	75	Recommended compound for thermal applications	7.6 (1,100)	Black	327 °C
6375UP	Semiconductor	75	Wet process application, low elemental extractables, static and dynamic applications	7.2 (1,050)	Black	275 °C
4079UP	Semiconductor	75	Thermal applications	7.2 (1,050)	Black	316 °C
2037UP	Semiconductor	79	High Purity for clean room environment	6.2 (900)	White	218 °C

Kalrez® Compound

Kalrez Compound	Industry Segment	Hardness Shore A	Description / Application	100% Modulus Mpa(Psi)	Colour	Max. Service Temp
8002	Semiconductor	69	Select semiconductor plasma and gas deposition applications, low particle generation	2.9 (420)	Clear	250 °C
Sahara™ 8085	Semiconductor	80	Plasma and deposition HDPCVD, PECVD, SACVD, Etch, Ash, low particle generation o-ring and bonded doors	7.5 (1,085)	Beige	240 °C
Sahara™ 8475	Semiconductor	60	Thermal applications	2.2 (320)	White	300 °C
Sahara™ 8575	Semiconductor	62	Etch-low weight loss in oxygen and fluorine based plasmas	2.5 (360)	White	300 °C
9100	Semiconductor	74	High hardness, high modulus, excellent resistance	4.3 (620)	Amber translucent	300 °C

