

Technical Information

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Kalrez® perfluoroelastomer
parts

From DuPont Performance Elastomers

Kalrez® Spectrum™ 7075

Product Overview

Kalrez® perfluoroelastomer parts have been the material of choice for mechanical seals, valves, flanges and other demanding chemical and hydrocarbon processing applications for over 30 years.

To meet the increasing needs in more demanding applications, DuPont Performance Elastomers (DPE) continues to develop new products with even better sealing performance. Kalrez® Spectrum™ 7075 expands on the capabilities of Kalrez® 4079 by offering much lower compression set, increased seal force retention, broader chemical resistance and higher temperature stability.

Kalrez® Spectrum™ 7075

Kalrez® Spectrum™ 7075 joins the family of Kalrez® Spectrum™ products designed for the chemical processing industry. Compound 7075 broadens the family of Spectrum™ sealing options with enhanced physical performance properties including very low compression set (Figure 1) and improved seal force retention (Figure 2). Kalrez® 7075 o-rings have a glossy finish for dynamic applications that may benefit from less drag.

Typical Physical Properties¹

Color	Black
Hardness ² , Shore A	75
100% Modulus ³ , MPa (psi)	7.58 (1100)
Tensile at Break ³ , MPa (psi)	17.91 (2600)
Elongation at Break ³ , %	160
Compression Set, %	
70 hr at 204°C (400°F) ⁴	12
70 hr at 204°C (400°F) ⁵	15
Maximum Service Temperature ⁶ , °C (°F)	327 (620)

¹ Not to be used for specifications

² ASTM D2240 (pellet test specimens)

³ ASTM D412 (dumbbell test specimens)

⁴ ASTM D395B, (pellet test specimens)

⁵ ASTM D395 (AS568 K214 O-ring test specimens)

⁶ DuPont Performance Elastomers proprietary test method

Thermal, Chemical, and Mechanical Performance

Kalrez® Spectrum™ 7075 is designed for general-purpose use as o-rings or custom sealing components in the chemical and hydrocarbon processing industries. It is a carbon black-filled compound with mechanical properties designed for improved sealing performance in temperature cycling applications. 7075 has improved thermal resistance that extends maximum service temperature to 327°C (620 °F). It is not suggested for use in severe aqueous and amine applications where Kalrez® Spectrum™ 6375 remains the preferred compound. As always, we recommend the specific chemicals, service temperature and pressure be reviewed for the optimal compound selection in each application.

Kalrez® Spectrum™ 7075 offers very low compression set (Figure 1) as measured by ASTM D395 to predict heat resistance. DuPont Performance Elastomers compression set testing extends the standard ASTM 70 hour protocol to include 336 and 672-hour compression set testing, which better predicts long-term o-ring performance. Less

compression set results in improved sealing and longer service life.

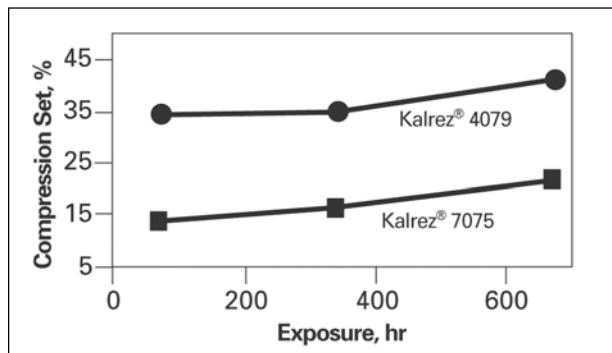
Kalrez® Spectrum™ 7075 also offers approximately 10% higher seal force retention than Kalrez® 4079, as measured under the conditions of ISO 3384 (Figure 2). Higher seal force retention equates to better elastomeric properties at service temperature and pressure, resulting in more reliable, long-term seal performance.

Applications

Kalrez® Spectrum™ 7075, with its low compression set, is a great choice for today's smaller and lighter mechanical seals, which are expected to perform as efficiently as larger mechanical seals. The smaller mechanical seal designs of today, with reduced spring force retention, put additional demands on elastomeric o-rings as their cross section decreases. The smaller cross-section o-rings are more prone to compression set which can reduce their functional effectiveness, thereby reducing the operability of the mechanical seal.

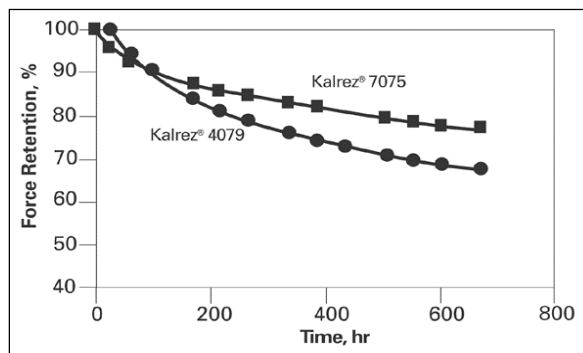
Quick connector couplings also benefit from the outstanding compression set of Kalrez® Spectrum™ 7075 and its enhanced temperature cycling capabilities. Combined with low swell in a wide range of chemicals, this compound ensures reliable performance of modern fluids handling systems.

Figure 1. Compression Set at 204°C*



*ASTM D395B 214 O-ring

Figure 2. Seal Force Retention at 200°C*



*ISO 3384: 1991, Method A, 214 O-ring

Table 2

Chemical Resistance to:	Kalrez®		
	Spectrum™ 7075	Kalrez® 4079	Kalrez® 6375
Aromatic/Aliphatic Oils	++++	++++	++++
Acids	++++	++++	++++
Bases	+++	+++	++++
Alcohols	++++	++++	++++
Aldehydes	++++	+++	++++
Amines	++	+	++++
Ethers	++++	++++	++++
Esters	++++	++++	++++
Ketones	++++	++++	++++
Steam/Hot Water	++	+	++++
Strong Oxidizers	++	++	++
Ethylene Oxide	+++	X	++++
Hot Air	++++	++++	+++
++++ = Excellent +++ = Very Good ++ = Good + = Fair X = Not Recommended			

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