DuPont™ Kalrez® Spectrum™ 7075

High Temperature Resistance & Low Compression Set

Technical Information - Rev. 1, July 2019

Product Description

DuPont™ Kalrez® perfluoroelastomer parts are the material of choice for mechanical seals, valves, flanges and other demanding chemical and hydrocarbon processing applications.

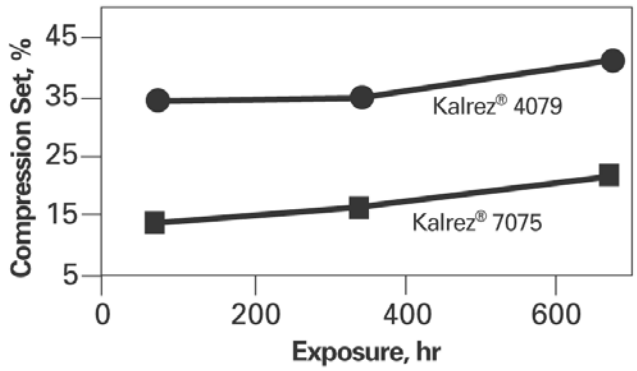
Kalrez® Spectrum™ 7075 is positioned in the Kalrez® Spectrum™ family of products which are designed for the chemical processing industry. Compound 7075 offers enhanced physical performance properties including very low compression set (Figure 1).

Typical Physical Properties[1]

Color	Black
Hardness[2], Shore A	75
100% Modulus[3], MPa (psi)	11.23 (1629)
Tensile at Break[3], MPa (psi)	17.91 (2598)
Elongation at Break[3], %	160
Compression Set[4], %	
70 hr at 204 °C (400 °F)	10
Compression Set[5], %	
70 hr at 204 °C (400 °F)	13
Max. Service Temp.[6], °C (°F)	327 (620)
Lowest Service Temp.[6], °C (°F)	-18 (-0.4)

[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 D395B D395B & D1414, (AS568 K214 O-ring test specimens)
[6] DuPont proprietary test method; performance will vary with seal design and application specifics

Figure 1. Compression Set at 204 °C



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 as measured by ASTM D395 to predict heat resistance. DuPont 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. Lower compression set results in improved sealing and longer service life.

Applications

DuPont™ 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, with reduced spring force retention, put additional demands on elastomeric O-rings with reduced cross sections. 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.

Chemical Resistance to:	DuPont™ Kalrez® Spectrum™ 7075	DuPont™ Kalrez® Spectrum™ 4079	DuPont™ Kalrez® Spectrum™ 6375
Aromatic/Aliphatic Oils	++++	++++	++++
Acids	++++	++++	++++
Bases	++	++	++++
Alcohols	++++	++++	++++
Aldehydes	++++	+++	+++
Amines	++	+	++++
Ethers	++++	++++	++++
Esters	++++	++++	++++
Ketones	++++	++++	++++
Steam/Hot Water	x	x	+++
Strong Oxidizers	++	++	++
Ethylene Oxide	+++	x	++++
Hot Air	++++	++++	+++

++++ = Excellent +++ = Very Good ++ = Good + = Fair X = Not Recommended

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(06/05) Reference KZE-H90161-00-H0719