DuPont™ Kalrez® MS220

Perfluoroelastomer Parts

Technical Information — June 2018

Product Description

DuPont™ Kalrez® MS220 perfluoroelastomer parts are designed for mechanical seals where superior chemical resistance and low compression set are critical for successful sealing performance.

Kalrez® MS220 continues the DuPont tradition of providing high value in use perfluoroelastomer parts to extend equipment mean time between repair (MTBR), while offering an excellent combination of properties (resistance to steam, acids and bases) at temperatures up to 230°C (446°F).

It is an effective alternative to other general purpose competitive perfluoroelastomers (see table 2) and is the product of choice for high volume O-rings.

Table 1: Typical Physical Properties[1]

Color	Black
Maximum Application Temperature[2], °C (°F)	230 (446)
Durometer, Shore A[3]	76
100% Modulus[4], MPa (psi)	6.93 (1005)
Tensile Strength at Break[4], MPa (psi)	15.93 (2310)
Elongation at Break[4], %	154
Compression Set[5], 70 hr at 204 °C (400 °F)	24
Low Temperature Sealing[2], °C (°F)	-14 (6)
Linear Coefficient of Thermal Expansion[2], °C (°F)	3.85 x 10E-4 (2.14 x 10E-4)

[1] Not to be used for specification purposes
[2] DuPont proprietary test method
[3] ASTM D2240 (plied sheet test specimen)
[4] ASTM D412, 500 mm/min (AS568 K214 O-ring test specimens)
[5] ASTM D395B (AS568 K214 O-ring test specimens)

Chemical Resistance

Integrity of seal properties is closely associated with low elastomer swell. Excessive swell may cause seal damage, extrusion, leaks and other failures due to equipment malfunction. Assuming proper seal design, low volume swell can be a reliable predictor of elastomer seal performance in mechanical seal applications.

The following data is the result of lab compatibility testing to determine the volume swell of Kalrez® MS220 parts when exposed to various fluids. The chemicals represent some of the most aggressive substances in industrial applications. Additional physical property testing may be needed to further define product performance. Because every application is unique, it is strongly recommended that immersion testing be performed in the actual composition of the process fluids.

Table 2: Comparison of Volume Swell* (% Change) between MS220 and nearest competitive FFKM after 672 hours immersion

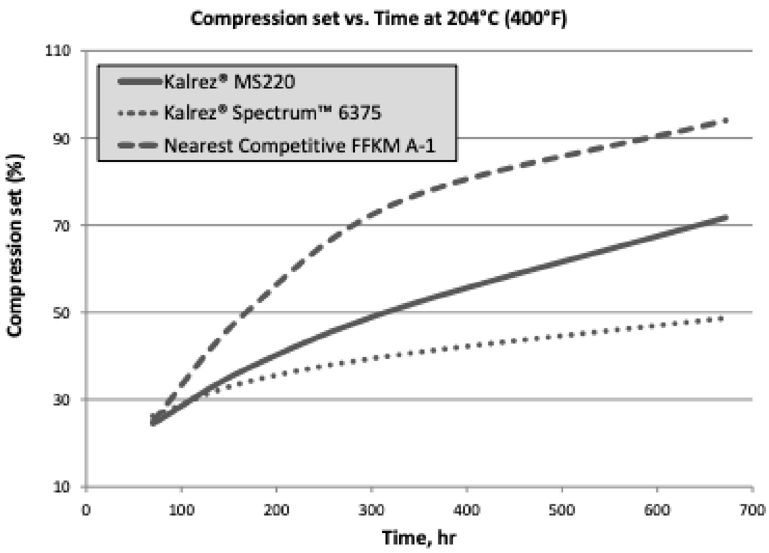
Fluid	Temperature °C (°F)	MS220	Nearest competitive FFKM A-1
Steam	225 (437)	A	NR
Nitric Acid (70%)	85 (185)	A	C
Butyraldehyde,	70 (158)	B	B
Sulfuric Acid (96-98%)	150 (302)	A	C
Glacial Acetic Acid	100 (212)	A	A
Ammonium Hydroxide	100 (212)	B	B
Ethylenediamine	90 (194)	C	C
1,2 Dichloroethane	100 (212)	A	NR
Methanol	100 (212)	A	NR
Toluene	100 (212)	A	A
HCFC	25 (77)	A	NR

*AS568 K214 O-ring test specimens.

Volume swell rating: A= 0-10%, B= 10-20%, C= >20%, NR= No Rating Available

Thermal Resistance

One method of predicting heat resistance is compression set. This is defined as the percentage by which a standard test piece (typically an O-ring or a pellet) fails to return to its original thickness after being subjected to a standard compressive load or deflection and temperature for a fixed period of time. This chart shows some elastomer comparisons with regard to compression set resistance (ASTM D395 Method B).



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