DuPont™ Kalrez® W240

Perfluoroelastomer Parts

For Photovoltaic Wet Manufacturing Processes

Technical Information - December 2014

Product Description

DuPont™ Kalrez® W240 perfluoroelastomer parts are a black product for photovoltaic wet manufacturing processes requiring a wide range of chemical resistance. W240 provides an excellent combination of properties (resistance to acids/bases) and is the product of choice for wet processes as an upgrade from standard elastomers, i.e., FKM, NBR, EPDM, etc. A maximum service temperature of 230°C is suggested.

Features/Benefits

- Excellent resistance/low volume swell in a wide range of wet chemistries (acids/bases)
- Excellent resistance to amine-based chemistries versus standard elastomers
- Low metals content
- Very good mechanical strength/compression set properties

Suggested Applications

- Wet etch tools
- Roller applications for wet inline tools
- Wet chemical management systems
- Filter, pumps, etc., for wet process applications

Typical Physical Properties[1]	
Color	Black
Hardness[2], Shore M (O-ring)	79
100% Modulus[3], MPa	7.85
Tensile Strength at Break[3], MPa	19.08
Elongation at Break[3], %	159
Compression Set[4], %	
70 hr at 204 °C	20
Maximum Service Temperature[5], °C	230

[1]Not to be used for specification purposes
[2]ASTM D2240 and D1414 (AS568 K214 O-ring test specimens)
[3]ASTM D412 and D1414 (AS568 K214 O-ring test specimens)
[4]ASTM D395B and ASTM D1414 (AS568 K214 O-ring test specimens)
[5]DuPont proprietary test method

Chemical Resistance

For many applications, low volume swell/weight gain (change) of elastomers is critical for proper equipment operation. Excessive swell/weight gain (change) may cause permanent seal failure due to equipment hang-up, extrusion, etc. While other physical property testing may be needed to adequately define product performance in a particular application, volume swell/weight gain (change) is an excellent indicator of resistance to chemical attack. Table 1 provides chemical resistance (% volume swell) test data for Kalrez® W240 in various acids, bases, solvents and water. Table 2 compares the weight gain and volume swell of Kalrez® W240 versus standard FKM in an amine-based chemistry.

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Table 1: Chemical Resistance, % Volume Swell[1, 2]

Chemical	Exposure Time	Temperature (°C)	% Volume Swell Kalrez® W240
Acetic Acid	70	100	4
Ammonium Hydroxide	70	100	4
Ethylene Diamine	70	90	5
Nitric Acid (70%)	70	85	1
Nitric Acid (70%)	672	85	3
Sulfuric Acid (98%)	70	150	3
Sulfuric Acid (98%)	672	150	5
Toluene	70	100	7
Toluene	672	100	6
Water	70	225	6

[1] ASTM D471 and D1414 (AS568 K214 O-ring test specimens)

[2] Please consult a Kalrez® Application Engineer to asses performance fit in your specific application

Table 2: Amine-Based Chemistry Resistance (MEA: DMSO 70:30 Mixture) [1, 2]

	% Volume Swell	
Property	**Kalrez® W240**	**Competitive FKM K7**
Weight Change, %	1.0	Test Specimen Melted
Hardness Change, pts.	-3	Test Specimen Melted
Surface Condition After Exposure	No Surface Degradation	Test Specimen Melted

[1] MEA = Monoethanol Amine; DMSO = Dimethyl Sulfoxide

[2] DuPont Proprietary Test Method: 14 days @ 80°C

Visit us at **kalrez.dupont.com**

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