

DuPont™ Kalrez® PV8030

For Photovoltaic Manufacturing Processes

Technical Information — Rev. 2, July 2010

Product Description

DuPont™ Kalrez® PV8030 perfluoroelastomer parts are a black product for PV cell manufacturing processes requiring resistance to “wet” process/cleaning chemistry including sawing damage removal, wafer surface texturing, P silicate removal and CdS buffer layer chemical bath deposition. It exhibits excellent resistance to aggressive chemicals including strong acids, bases, solvents and metal organic precursors. It also offers low metallic, anionic and total organic carbon (TOC) extractables and has excellent (low) compression set properties. Kalrez® PV8030 has good mechanical strength properties and is well suited for both static and dynamic sealing applications. A maximum continuous service temperature of 275 °C is suggested.

Features/Benefits

- Excellent chemical resistance
- Low metallic, anionic and total organic carbon (TOC) extractables
- Excellent (low) compression set and good mechanical strength properties

Suggested Applications

- Rollers for chemical baths
- Seals for wet pumps
- Seals for dispenser systems
- Seals for flowmeters, injectors and filters
- Tubing connections and fittings

Typical Physical Properties ¹	Kalrez® PV8030
Color	Black
Hardness ² , Shore M (O-ring)	83
Maximum continuous service temperature ³ , °C	275
Compression Set ⁴ , % 70 hr at 204 °C	30

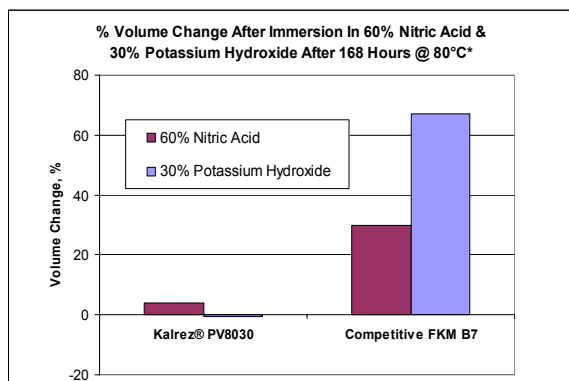
¹ Not to be used for specification purposes

² ASTM D2240 and ASTM D1414 (AS568 K214 O-ring test specimens)

³ DuPont proprietary test method

⁴ ASTM D395B and ASTM D1414 (AS568 K214 O-ring test specimens)

Figure 1.



* Testing performed per ASTM D471 and D1414 (AS568 K214 O-ring test specimens)

Chemical Resistance

Low volume swell (change) of elastomers is critical for proper equipment operation. Excessive swell (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 (change) is an excellent indicator of resistance to chemical attack. Figure 1 shows the % volume change (swell) of Kalrez® PV8030 versus a typical fluoroelastomer (competitive FKM B7) product after immersion in 60% nitric acid and 30% potassium hydroxide for 168 hours at 80 °C. Kalrez® PV8030 exhibited minimal volume change (swell).



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UPDI Water Extractables

Elastomeric seals can leach contaminants into the process system and ultimately contaminate the finished product. Since ultrapure deionized (UPDI) water is used in many rinsing steps, maintaining purity is an important factor. Table 1 shows the metallic and total organic carbon (TOC) extractables of DuPont™ Kalrez® PV8030 versus a typical fluoroelastomer (competitive FKM B7) product after immersion in UPDI water after 1 month at 80 °C. The metallic and TOC extractables from Kalrez® PV8030 were significantly lower than from the typical FKM (competitive FKM B7) product, indicating less risk of contamination to the process.

Table 1.

Extractables Performance of Fluorinated Polymers in 18M UPDI (1 month at 80 °C, Parts Per Billion [ppb, µg/L] ICP-MS/GF-AA/IC)*

Extractable Detected	FKM	Kalrez® PV8030
Aluminum (Al)	9.50	3.43
Barium (Ba)	ND	0.13
Calcium (Ca)	15.40	0.00
Copper (Cu)	0.90	0.11
Iron (Fe)	3.60	0.47
Magnesium (Mg)	2.70	0.75
Silicon (Si)	ND	5.05
Sodium (Na)	ND	1.27
Tin (Sn)	ND	0.00
Titanium (Ti)	ND	0.06
Zinc (Zn)	0.50	0.07
Total Organic Carbon (TOC)	1540	491

*Testing performed per DuPont proprietary test method

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