

DuPont™ Kalrez® PV8070

For Photovoltaic Manufacturing Processes

Technical Information — Rev. 2, July 2010

Product Description

DuPont™ Kalrez® PV8070 perfluoroelastomer parts are a black product for PV cell manufacturing processes requiring high temperature resistance including doping for n-type layer formation (bulk c-Si), diffusion for diselenide thermal implantation (CGIS) and TCS-based thermal CVD for poly-silicon feedstock production. It exhibits outstanding thermal stability and has excellent (low) compression set and outgassing properties. It also offers excellent resistance to both chlorine and fluorine gas as well as other dry process chemistry. Kalrez® PV8070 perfluoroelastomer parts have excellent mechanical strength properties and are well suited for both static and dynamic sealing applications. A maximum continuous service temperature of 325 °C is suggested. Short excursions to higher temperatures may also be possible.

Features/Benefits

- Outstanding thermal stability
- Excellent (low) compression set and outgassing properties
- Excellent resistance to dry process chemistry
- Excellent mechanical strength properties

Suggested Applications

- Chamber lid and door seals
- Center ring seals and fittings
- Isolation valve seals
- Quartz tube seals
- Substrate handling pads

Typical Physical Properties ¹	Kalrez® PV8070
Color	Black
Hardness ² , Shore M (O-ring)	83
Maximum continuous service temperature ³ , °C	325
Compression Set ⁴ , %	
70 hrs at 204 °C	9
70 hrs at 300 °C	32

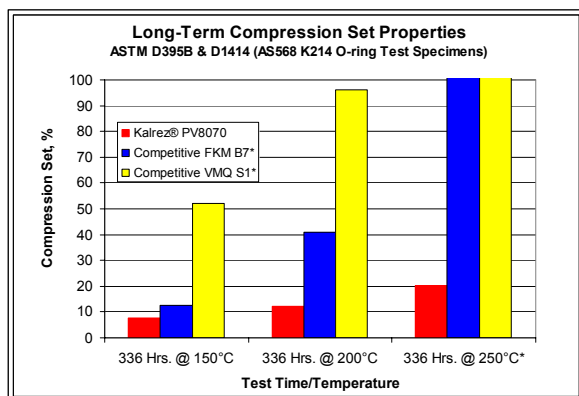
¹ Not to be used for specification purpose

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.



* Competitive FKM B7 and competitive VMQ S1 O-ring test specimens broke apart after 336 hr at 250 °C.

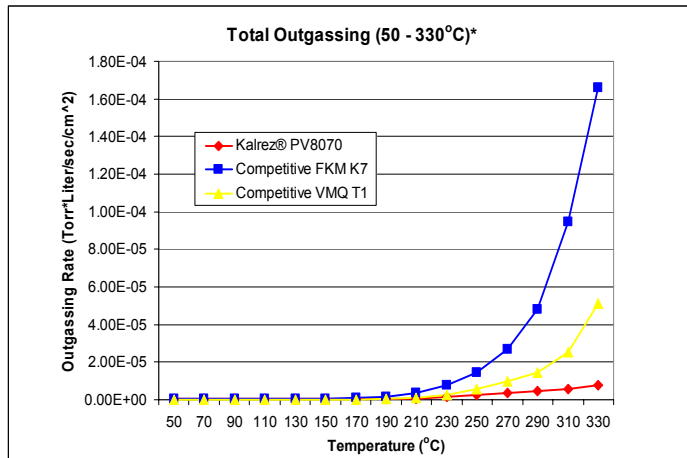
Compression Set

Compression set is routinely used to compare relative sealing performance, particularly at elevated temperatures. However, in many cases, short-term (70 hour) test data is used which is not indicative of long-term sealing performance. Figure 1 shows the long-term compression properties of DuPont™ Kalrez® PV8070 versus a typical fluoroelastomer (competitive FKM B7) and silicone (competitive VMQ S1) product. Kalrez® PV8070 exhibited excellent (low) compression set properties.



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Figure 2.



* Testing performed per DuPont proprietary test method.

Outgassing

High heat and temperature spikes can degrade elastomeric seals causing their crosslinking structure to become irreversibly damaged. In addition, elastomeric seals can degrade under high temperatures causing outgassing to occur, thereby contaminating the process environment. The result is unscheduled downtime, or even worse, product loss. Figure 2 shows the outgassing properties of Kalrez® PV8070 versus a typical fluoroelastomer (competitive FKM K7) and silicone (competitive VMQ T1) product. Kalrez® PV8070 exhibited excellent (low) outgassing properties.

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