

DuPont KLX-10004

For Photovoltaic Manufacturing Processes

Technical Information - December 2010

Product Description

DuPont KLX-10004 perfluoroelastomer parts are a black product that has been specially formulated to bridge the performance gap between standard fluoroelastomers (FKM) and perfluoroelastomers (FFKM) for sealing applications in photovoltaic (PV) cell manufacturing equipment. The product is designed to perform in a wide range of wet process chemistries including strong acids, bases and solvents. It also exhibits excellent performance in most dry process chemistries at elevated temperatures. The maximum continuous service temperature is 230 °C (471 °F). Short excursions to higher temperatures may also be possible.*

Features/Benefits

- Improved resistance to aggressive acids bases and solvents
- Excellent resistance to dry chemistries
- Improved thermal stabilities from FKM
- Excellent sealing functionality
- Excellent mechanical strength

Suggested Applications

- Rollers for wafer and glass transfer
- Seals for wet etch benches
- Connector seals for wet chemical systems
- Chamber lid/gate seals for CVD systems
- Gas feedthrough seals

Chemical Resistance

For many applications, low volume swell of elastomers is critical for proper equipment operation. Excessive swell 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 is an excellent indicator of resistance to chemical attack. Table 1 compares the volume swell of DuPont KLX-10004 and standard FKM in different types of chemical environments.

Typical Physical Properties¹

Color	Black
Hardness ² , Shore M (O-ring)	82
100% Modulus ³ , MPa	8.49
Tensile Strength at Break ³ , MPa	15.42
Elongation at Break ³ , %	137
Compression Set ⁴ , %	
70 hr at 204 °C	19

¹Not to be used for specification purposes

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

³ASTM D412 and ASTM D1414 (AS568 K214 O-ring test specimens)

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

* Contact a Kalrez® Application Engineer to assess performance fit for your specific application



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Table 1. Percentage Volume Change¹ of O-rings after chemical exposure

Immersion chemistry (Concentration)	Exposure conditions	Volume Swell	
		DuPont KLX10004	Competitive FKM B7
HF (49%)	80°C 168 hrs	0	10
HNO ₃ (60%)	80°C 168 hrs	4	30
NaOH (60%)	80°C 168 hrs	0	-20
KOH (30%)	80°C 168 hrs	0	67

¹ DuPont proprietary testing method

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