

# DuPont™ Kalrez® 6230

## Perfluoroelastomer Parts

### For Pharmaceutical and Food Handling Applications

Technical Information — August 2015

#### Product Description

DuPont™ Kalrez® 6230/6230A\* perfluoroelastomer parts are a black product that provide superior chemical resistance and low contamination from extractables in pharmaceutical and food handling applications where FDA compliance is required. DuPont™ Kalrez® 6230/6230A parts are especially suited for Water for Injection (WFI) systems, Steam-in-Place (SIP) cleaning and other critical systems. Kalrez® 6230/6230A parts are thermally stable up to 260°C (500°F), permitting them to be used in Stage II Sterilization processes, where other elastomers lose their sealing ability.

#### Typical Physical Properties<sup>1</sup>

Color	Black
Maximum Application Temperature <sup>2</sup> , °C (°F)	260 (500)
Durometer, Shore A <sup>3</sup>	75
100% Modulus <sup>4</sup> , MPa (psi)	7.03 (1019)
Tensile Strength at Break <sup>4</sup> , MPa (psi)	16.54 (2398)
Elongation at Break <sup>4</sup> , %	170
Compression Set <sup>5</sup> , %, 70 hr at 200 °C (392 °F)	24

<sup>1</sup> Not to be used for specification purposes

<sup>2</sup> DuPont proprietary test method

<sup>3</sup> ASTM D2240 (plied sheet test specimen)

<sup>4</sup> ASTM D1414

<sup>5</sup> ASTM D395B (Pellet test specimen)

#### Aggressive Water Resistance

In aggressive pharmaceutical processing environments, seal failure from excess swelling, embrittlement, or decomposition can cause unscheduled downtime or product contamination. Elastomeric materials that come in contact with highly pure and aggressive water (e.g. WFI) must be chosen with care in order to prolong seal life. The perfluoroelastomer compounds used in Kalrez® parts have been shown to have extremely low, to non-detectable extractable levels in aggressive water systems. Because the perfluoroelastomer polymer in Kalrez® parts is fully saturated, it is also well suited for Ozonated Deionized Water service. Kalrez® parts also exhibit very low swell and loss of mechanical properties after repeated steam cycling.

\*Kalrez® 6230A used exclusively for Sanitary Gaskets

\*\*For additional information on FDA compliance, please refer to Food Contact Notification (FCN) number 101. USP <87> and <88> class VI compliance was tested at 121°C



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## General Chemical Resistance\*

The overall chemical resistance of EPDMs, silicone elastomers and fluoroelastomers (FKM) is limited by their respective polymer structures. Kalrez® parts, on the other hand, offer the same universal chemical resistance as PTFE, but unlike PTFE, they have elastomeric properties, which help them maintain their sealing capabilities. The following table lists the chemical compatibility of Kalrez® perfluoroelastomer parts and other elastomers used as sealing materials in the pharmaceutical and food handling industries.

Chemical/Product	Kalrez® 6230/6230A	EPDM	Si	FKM
Acetic Acid	A	A	A	B
Acetone	A	A	C	U
Citric Acid	A	A	A	A
Hydrogen Peroxide	A	B	B	B
Isopropyl Alcohol	A	A	A	A
Methyl Ethyl Ketone	A	A	U	U
Mineral Oil	A	U	B	A
NaOH	A	A	B	B
Nitric Acid	A	B	B	A
Sodium Hypochlorite	A	B	B	A
Soybean Oil	A	C	A	A
Steam (<150°C)	A	A	C	C
Steam (>150°C)	A	C	U	U
Toluene	A	U	U	A
Xylene	A	U	U	A
Maximum Service Temperature	260°C (500°F)	135°C (275°F)	200°C (392°F)	200°C (392°F)

\* Data has been drawn from DuPont tests and industry sources. Data is presented for use only as a general guide and should not be the basis of design decisions. Contact DuPont for further information.

A = little or no effect      B = slight swelling and/or loss of physical properties      C = moderate to severe swelling and/or loss of physical properties/limited functionality      U = not suitable or recommended

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The information provided in this data sheet corresponds to our knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relate only to the specific material designated; these data may not be valid for such material used in combination with any other materials, additives or pigments or in any process, unless expressly indicated otherwise.

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