

# DuPont™ Kalrez® Sahara™ 8475

For Semiconductor Applications

Technical Information—Rev. 5, July 2010

## Product Description

DuPont™ Kalrez® Sahara™ 8475 perfluoroelastomer parts are a white product that have been specifically developed to meet the challenging requirements associated with sealing applications in semiconductor thermal processes (i.e., oxidation, diffusion furnace, LPCVD, RTP, lamp anneal, etc.). It exhibits excellent thermal stability and long-term sealing performance, less IR absorption and significantly reduced outgassing properties at elevated temperatures. Kalrez® Sahara™ 8475 has good mechanical properties and is well-suited for static and low stress/low sealing force applications (e.g., quartz tube seals, ball joint seals, bell jar seals, plenum seals). A maximum continuous service temperature of 300 °C is suggested. Ultrapure post-cleaning and packaging is standard for all 8475 parts.

## Product Features Contribute to Extended Seal Life

- Very low outgassing
- Excellent resistance to “dry” gas process environments
- White color reduces IR absorption and reduces seal temperature
- Improved (lower) compression set
- Excellent long-term seal force retention

## Suggested Applications

- Kalrez® Sahara™ 8475 is an excellent choice for:
- Quartz tube seals
- Ball joint seals
- Gas feedthrough seals
- Bell jar seals
- Plenum seals
- Other thermal applications

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

Color	White
Hardness, Shore A (pellet) <sup>2</sup>	60
Hardness, Shore M (O-ring) <sup>3</sup>	71
100% Modulus <sup>4</sup> , MPa	2.20
Tensile Strength at Break <sup>4</sup> , MPa	11.35
Elongation at Break <sup>4</sup> , %	225
Compression Set <sup>5</sup> , %, 70 hr at 204 °C	23
Max. Continuous Service Temperature <sup>6</sup> , °C	300

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

<sup>2</sup> ASTM D2240 (pellet test specimens)

<sup>3</sup> ASTM D2240 and ASTM D1414 (AS568 K214 O-ring test specimen)

<sup>4</sup> ASTM D412 (dumbbell test specimens)

<sup>5</sup> ASTM D395B and ASTM D1414 (AS568 K214 O-ring test specimens)

<sup>6</sup> DuPont proprietary test method



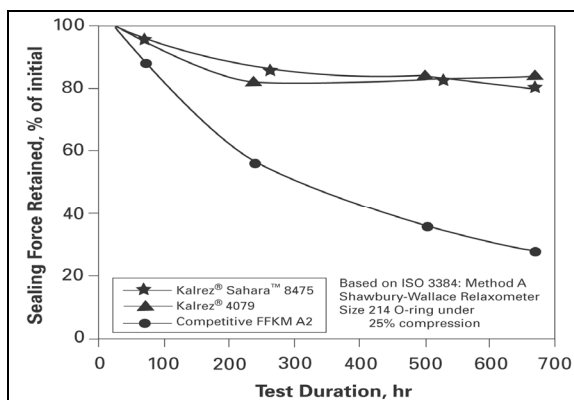
The miracles of science™

**Typical O-Ring Compression Set Performance\* (70 hr data)**

Material Tested, % C/S at	204 °C	250 °C	300 °C
Kalrez® Sahara™ 8475	23	30	45
Kalrez® 4079	37	41	45
Competitive FFKM A2	43	100	Sample Failed

\*ASTM D 395B and D1414 (AS568 K214 O-ring test specimens)

**Typical Long-Term Seal Force Retention at 204 °C**



**DuPont™ Kalrez® Sahara™ 8475—Minimal Outgassing at Elevated Service Temperatures  
TG-MS Outgassing Analysis\* (Room Temperature to 400 °C at 10 °C/min)**

Gas Evolved	R.T. to 100 °C, ppm	R.T. to 200 °C, ppm	R.T. to 300 °C, ppm	R.T. to 400 °C, ppm
H <sub>2</sub> O	2	255	324	345
HF+	0	0	0	1
CF+	0	0	0	12
CO <sub>2</sub>	0	0	2	103
CF <sub>2</sub>	0	0	0	19
CHF+	0	0	0	20
CF <sub>3</sub> +	0	0	0	119
C <sub>2</sub> F <sub>3</sub> +	0	0	0	23
CF <sub>3</sub> O+	0	0	0	0
C <sub>2</sub> F <sub>4</sub> +	0	0	0	9
C <sub>2</sub> F <sub>5</sub> +	0	0	0	1
C <sub>3</sub> F <sub>5</sub> +	0	0	0	31
<b>Total Outgas, %</b>	<b>0.00</b>	<b>0.03</b>	<b>0.03</b>	<b>0.07</b>
<b>Weight Loss, %</b>	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	<b>0.07</b>

\* Data provided by independent testing laboratory.

Visit us at [kalrez.dupont.com](http://kalrez.dupont.com) or [vespel.dupont.com](http://vespel.dupont.com)

Contact DuPont at the following regional locations:

**North America**  
800-222-8377

**Latin America**  
+0800 17 17 15

**Europe, Middle East, Africa**  
+41 22 717 51 11

**Greater China**  
+86-400-8851-888

**ASEAN**  
+65-6586-3688

**Japan**  
+81-3-5521-8484

The information set forth herein is furnished free of charge and is based on technical data that DuPont believes to be reliable and falls within the normal range of properties. It is intended for use by persons having technical skill, at their own discretion and risk. This data should not be used to establish specification limits nor used alone as the basis of design. Handling precaution information is given with the understanding that those using it will satisfy themselves that their particular conditions of use present no health or safety hazards. Since conditions of product use and disposal are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information. As with any product, evaluation under end-use conditions prior to specification is essential. Nothing herein is to be taken as a license to operate or a recommendation to infringe on patents.

**Caution:** Do not use in medical applications involving permanent implantation in the human body. For other medical applications, discuss with your DuPont customer service representative and read Medical Caution Statement H-50103-3.

Copyright © 2010 DuPont. The DuPont Oval Logo, DuPont™, The miracles of science™, Kalrez®, Kalrez® Sahara™, and Vespel® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company or its affiliates. All rights reserved.

(06/03) Reference No. KZE-H82172-00-G0710



The miracles of science™