KLR-9100 Preliminary Product Data Sheet

Product Description
KLR-9100 is a new, developmental product targeted specifically for semiconductor plasma and gas deposition applications, i.e., ALD, HDPCVD, PECVD, SACVD, etc. It has been specifically designed for minimal particle generation and low contamination in harsh plasma environments. It has exhibited excellent performance in HDPCVD STI and in MONOVAT® bonded door applications in PECVD Black Diamond® Processes @ Major US and European Semiconductor Fablines (see Case Reports listed on Page # 2). KLR-9100 offers outstanding thermal stability, very low outgassing and excellent mechanical strength properties and is well suited for both static and dynamic sealing applications. A maximum continuous service temperature of 300°C is suggested. Ultrapure post-cleaning and packaging is standard for all parts made from KLR-9100.

Features/Benefits
- Low erosion rate and ultra-low particle generation in oxygen and fluorne-based plasmas
- Excellent resistance to dry process chemistry
- Excellent thermal stability
- Very low outgassing properties
- Very low metals content
- Excellent (low) compression set properties
- Excellent elastic recovery properties

Suggested Applications
- Gas inlet seals
- Gas orifice seals
- Chamber lid seals
- Isolation valve seals
- Bonded slit valve door seals
- Bonded gate valves

Typical Physical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Typical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Amber</td>
</tr>
<tr>
<td></td>
<td>Translucent</td>
</tr>
<tr>
<td>Hardness, Shore M²</td>
<td>74</td>
</tr>
<tr>
<td>100% Modulus, MPa</td>
<td>4.27</td>
</tr>
<tr>
<td>Tensile Strength @ Break, MPa</td>
<td>11.85</td>
</tr>
<tr>
<td>Elongation @ Break, %</td>
<td>220</td>
</tr>
<tr>
<td>Compression Set, %</td>
<td></td>
</tr>
<tr>
<td>70 Hrs. @204°C</td>
<td>17</td>
</tr>
<tr>
<td>70 Hrs. @250°C</td>
<td>21</td>
</tr>
<tr>
<td>70 Hrs. @300°C</td>
<td>53</td>
</tr>
<tr>
<td>Maximum Continuous Service, Temperature, °C</td>
<td>300</td>
</tr>
</tbody>
</table>

1 Not to be used for specification purposes
2 ASTM D2240 & D1414 (AS568 K214 O-ring test specimens)
3 ASTM D412 & D1414 (AS568 K214 O-ring test specimens)
4 ASTM D395B & D1414 (AS568 K214 O-ring test specimens)
5 DuPont Performance Elastomers proprietary test method
Case Report #5903 - PM Cycle Extended 3X! @ Major US Fab Line
- Fab line has extended pm cycle from 60 days to 180 days
- No evidence of erosion, leakage, mechanical damage or compression set after 180 days of service
- Equipment Platform -- Novellus Concept Two Speed®
- Process -- HDPCVD / STI
- Process Chemistry -- SiH₄, He, O₂
- Cleaning Chemistry -- NF₃ plasma @ 4000 watts
- Seal Locations -- slit valve door, inner gas manifold ring, MESC flange insert, Iso-poppet valve, turbo gate, dome lid

Case Report #6376- PM Cycle Improved 2X! @ A Major European Fab Line
- Fab line has extended pm cycle from 30,000 to >55,000 pairs of wafers
- No evidence of erosion, mechanical damage, compression set or deformation of the seal lip after processing >55,000 pairs of wafers
- Equipment Platform -- Applied Materials Producer low-k
- Process -- PECVD / Black Diamond
- Process Chemistry -- Trimethyl silane (TMS), O₂
- Cleaning Chemistry -- NF₃ plasma via remote plasma source
- Seal Location -- VAT MONOVAT® bonded door

For further information please contact one of the offices below, or visit our website at www.dupontelastomers.com/kalrez

Global Headquarters -- Wilmington, DE USA
Tel. +1-800-853-5515
+1-302-792-4000
Fax +1-302-792-4450

European Headquarters - Geneva
Tel.  +41-22-717-4000
Fax +41-22-717-4001

South & Central America Headquarters - Brazil
Tel.  +55-11-4166-8978
Fax +55-11-4166-8989

Asia Pacific Headquarters - Singapore
Tel.  +65-6275-9383
Fax +65-6275-9395

Japan Headquarters -- Tokyo
Tel.  +81-3-6402-6300
Fax. +81-3-6402-6301

The information set forth herein is furnished free of charge and is based on technical data that DuPont Performance Elastomers believes to be reliable. It is intended for use by persons having technical skill, at their own discretion and risk. 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 material, evaluation of any compound 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. While the information presented here is accurate at the time of publication, specifications can change. Check www.dupontelastomers.com for the most up-to-date information.

Caution: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, discuss with your DuPont Performance Elastomers customer service representative and read Medical Caution Statement H-69237.

DuPont™ is a trademark of DuPont and its affiliates.
Kalrez® is a registered trademark of DuPont Performance Elastomers.
Concept Two Speed® is a registered trademark of Novellus
Black Diamond® and Producer™ are registered trademarks of Applied Materials.
MONOVAT® is a registered trademark of VAT Vacuumvalves A.G.

Copyright © 2006 DuPont Performance Elastomers. All Rights Reserved.