Heraeus Opaque Quartz OM®
the unique thermal management solution

RETAIN THE HEAT
OF YOUR WORLD

Chemical Purity

<table>
<thead>
<tr>
<th>ppm</th>
<th>Li</th>
<th>Na</th>
<th>K</th>
<th>Mg</th>
<th>Ca</th>
<th>Fe</th>
<th>Cu</th>
<th>Ti</th>
<th>Al</th>
</tr>
</thead>
<tbody>
<tr>
<td>OM® 100</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>&lt;0.03</td>
<td>0.4</td>
<td>0.1</td>
<td>&lt;0.01</td>
<td>1.1</td>
<td>15</td>
</tr>
<tr>
<td>Synthetic OM®</td>
<td>&lt;0.005</td>
<td>0.01</td>
<td>0.02</td>
<td>&lt;0.01</td>
<td>0.1</td>
<td>0.02</td>
<td>&lt;0.005</td>
<td>&lt;0.01</td>
<td>&lt;0.1</td>
</tr>
</tbody>
</table>

Surface Finish

OM® 100
- raw
- flame polished
- etched

Competitor material
- raw
- flame polished
- etched

Complete Thermal Management
- white opaque quartz
- full heat radiation control
- clear fused quartz
- black opaque quartz

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The uniquely high hemispheric reflection of OM®100 enables this to be the ideal heat blocking material. In such applications as adiabatic plates OM®100 will improve your total cost of ownership. By reducing heat loss you can benefit from improved process control, reduced energy needs and improved lifetime of your heating components. The heat blocking properties of OM®100 out-perform any comparable material available on the market today.

The patented manufacturing method of OM®100 allows it to be manufactured close to the dimensions of the finished component. This reduces excess material and lowers machining steps. This improved efficiency in manufacturing contributes to a lower cost for the finished part.

White opaque quartz is often used as flanges or chamber seals to thermally protect the O-ring material. To ensure an optimal seal at the O-ring, the smoothest surface possible is critical. The unique physical properties of OM®100 allow for a greatly improved surface finish after manufacturing and multiple refurbishment cycles, giving you the best seal possible every time and an extended lifetime of use for when compared to parts made from other opaque quartz materials.

One of the key features of our OM®100 material is it comparable processing properties to clear fused quartz (e.g. HSQ®300) for both hot and cold processes. OM®100 is 100% compatible to the hot working and cold machining of clear fused quartz and as required can be welded, fire polished or thermally reformed. In addition if using OM®100 for demanding applications it can be CNC ground and optically polished to the highest precision.

OM®100 offers you a total level of impurities of <50ppm and is both suitable and qualified for even the most challenging semiconductor processes of today. A synthetic version of Heraeus OM® is now developed to support the next generation of semiconductor processes where impurities are one of the biggest challenges. Utilizing a synthetic opaque material from Heraeus will offer you a total level of impurities of <1ppm to support your advanced processes, with all the other advantages of OM®100.

**Near Net Shape Manufacturing**

**Heat blocking properties**

- **Reflectivity**
  - Hemispherical reflectivity [%]
  - Wavelength [nm]
  - Synthetic OM®
  - OM® 100
  - Competitor

**OM® – Physical Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density g/cm³</td>
<td>2.15 – 2.18</td>
</tr>
<tr>
<td>Porosity</td>
<td>&lt; 2.3%</td>
</tr>
<tr>
<td>Pore size [µm]</td>
<td>&lt; 20 µm</td>
</tr>
<tr>
<td>CTE (0–900°C)</td>
<td>0.47 x 10⁻⁶</td>
</tr>
<tr>
<td>Max. working temp. – continuous</td>
<td>1100°C</td>
</tr>
<tr>
<td>Max. working temp. – short term</td>
<td>1300°C</td>
</tr>
<tr>
<td>Specific heat [J/(gK)], RT</td>
<td>0.70</td>
</tr>
<tr>
<td>Heat conductivity [W/(mK)], RT</td>
<td>1.24</td>
</tr>
<tr>
<td>Dielectric constant (ε), RT, 13.56 MHz</td>
<td>3.7</td>
</tr>
<tr>
<td>Dielectric loss angle (tan δ), RT, 13.56 MHz</td>
<td>1 x 10⁻⁴</td>
</tr>
</tbody>
</table>