Ceramic Laser Phosphor Converter

Enabler for High Luminance Light Sources
Ceramic Converter – Enabling high luminance for your laser pumped phosphor light sources

SCHOTT experts have developed phosphor ceramic converter components for laser pumped phosphor light sources. They enable superior luminance in laser phosphor wheels for digital projectors.

Thanks to this new material, laser projectors offer reliable performance, specifically in terms of brightness and color that remains constant over time. There is no need to change bulbs, which significantly lowers the total cost of ownership and energy costs. In addition, they do not require a warm-up period and are free of any environmentally harmful mercury.

Since this component is a pure, inorganic phosphor material, it exhibits a high temperature stability and outstanding heat conductivity. This leads to superior efficiency and reliability, which makes SCHOTT’s Ceramic Converter a unique solution on the market.

The basis for this is an ingenious, reproducible production process that delivers reliable, quality-tested products.

To address the complete color gamut for digital projection, SCHOTT Ceramic Converter components are available in either yellow or green ceramic phosphor material. In addition, SCHOTT has the processing capability to manufacture customized products including sub assemblies for various applications.

**Advantages**

Your brighter solution from SCHOTT is based on:
- Inorganic material for a long lifetime performance:
  - High temperature stability
  - Good heat conductivity
  - Customized scatter-properties
  - High Efficacy
- Fit to color gamut
- Ability to design to customer needs in size and color

Contact our experts anytime to discuss your personal product needs! Together we will find your perfect solution!

**Applications**

- Phosphor wheel for digital projection
- Specialty lighting such as spotlights and search lights
- High luminance light sources for microscopy and machine vision and general lighting

**Supply Forms**

SCHOTT is manufacturing ceramic phosphor converters for digital projection
- from two standard materials such as yellow (SY) and green (SG) and
- in different standard geometries.

Customized geometries and materials are available on request.

*e.g.: for applications like specialty and general lighting*

Color coordinates of yellow and green Ceramic Converter material in the 1931/2° color space
Technical Details

<table>
<thead>
<tr>
<th>Technical features</th>
<th>Yellow phosphor material</th>
<th>Green phosphor material</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tradename</td>
<td>SY</td>
<td>SG</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>SY-B</td>
<td>SG-A</td>
<td></td>
</tr>
</tbody>
</table>

Optical specifications

<table>
<thead>
<tr>
<th>Phosphor conversion efficacy</th>
<th>325 ± 15 lm/W</th>
<th>330 ± 20 lm/W</th>
<th>Color coordinates are defined within the CIE 1931/2° color space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emission color coordinates</td>
<td>c_x: 0.417 ± 0.005</td>
<td>c_x: 0.337 ± 0.005</td>
<td>c_y: 0.560 ± 0.005</td>
</tr>
</tbody>
</table>

Material properties

| Thermal quenching stability @ 170°C | >89% | >92% | | |
|------------------------------------|------|------|| |
| Temperature damage threshold       | >250°C | >250°C | | |
| Thermal conductivity in temperature range from 25°C to 200°C | 5 – 10 W/(m·K) | data on request | Thermal conductivity is temperature dependent. Please contact SCHOTT for details. |

Notes:
- For details on measurement methods and precision, please contact SCHOTT
- For customer specific material developments, please contact SCHOTT

Notes:
- For details on measurement methods and precision, please contact SCHOTT
- For customer specific material developments, please contact SCHOTT

![Graph of power spectral density vs. wavelength (nm)](image)

<table>
<thead>
<tr>
<th>Outer Diameter mm</th>
<th>Inner Diameter mm</th>
<th>Thickness mm</th>
<th>Available shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>88</td>
<td>74</td>
<td>0.2</td>
<td>available</td>
</tr>
<tr>
<td>64</td>
<td>50</td>
<td>0.2</td>
<td>available</td>
</tr>
<tr>
<td>49</td>
<td>35</td>
<td>0.2</td>
<td>available</td>
</tr>
<tr>
<td>New</td>
<td>35</td>
<td>0.2</td>
<td>available</td>
</tr>
</tbody>
</table>

Customized geometries are possible for large volume. Please contact SCHOTT representative person for more information
- The thickness of all rings and segments is 200 –0/+50 μm
- The products have a polished surface. Surface quality is specified with
  – a surface roughness (R_s) smaller than 0.1 μm and
  – maximum size of surface defects (scratch/dig) is 60/40 according to MIL-PRF-13830B
- Detailed drawings of the products are available on request