Feature and application

**Al₂O₃**

Feature
- high wear and high heat resistance
- high corrosion resistance
- good electrical insulation
- high mechanical strength
- comparatively low price

Application
- wear resistant liner
- components for textile and paper manufacturing
- heat resistant components
- pump parts and mechanical seal
- components for semiconductor production
- electrical insulation parts

**ZrO₂**

Feature
- high wear resistance
- high fracture toughness
- brilliant surface
- low thermal conductivity

Application
- wire and pipe extension
- various dies for extrusion
- various guide rollers and cutters
- various valves for air and fluid pressure

**SiC**

Feature
- high wear corrosion and oxidation resistance
- high thermal conductivity
- not lowering in strength at high temperatures.

Application
- mechanical seal and bearing
- chemical pump parts
- milling machine liner
- burner and nozzle
- heat exchanger

**Si₃N₄**

Feature
- high thermal shock resistance
- high mechanical and bending strength at high temperatures
- high wear and corrosion resistance

Application
- heat exchanger and burner nozzle
- reaction tube
- bearing and guide roller
- pin chuck, location and welding jig

**ALN**

Feature
- High thermal conductivity properties
- Good electrical performance
- High chemical resistance

Application
- Microwave parts
- Heat sinks
- Semiconductor parts
- Evaporation boats
## C-Technology main materials

<table>
<thead>
<tr>
<th><strong>C-Technology main materials</strong></th>
<th><strong>Alumina</strong></th>
<th><strong>Silicium Carbide</strong></th>
<th><strong>Silicium Nitride</strong></th>
<th><strong>Aluminium Nitride</strong></th>
<th><strong>Machinable glass</strong></th>
<th><strong>Quartz</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimension unit</strong></td>
<td>CT92</td>
<td>CT96</td>
<td>CT997</td>
<td>CT999</td>
<td>CT997P</td>
<td></td>
</tr>
<tr>
<td><strong>Classification as per DIN ISO</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Main component</strong></td>
<td>Weigh - %</td>
<td>92% Al₂O₃</td>
<td>94% ZrO₂</td>
<td>99% AlN</td>
<td>Y₂O₃-ZrO₂</td>
<td>MGC</td>
</tr>
<tr>
<td><strong>Colour</strong></td>
<td>-</td>
<td>White</td>
<td>Yellow</td>
<td>ivory</td>
<td>Gray/black</td>
<td>White</td>
</tr>
<tr>
<td><strong>Density</strong></td>
<td>g/cm³</td>
<td>3.65</td>
<td>3.16</td>
<td>3.16</td>
<td>3.16</td>
<td>3.16</td>
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<tr>
<td><strong>Open porosity</strong></td>
<td>Vol - %</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td><strong>Bending strength</strong></td>
<td>MPa</td>
<td>&gt;300</td>
<td>&gt;400</td>
<td>&gt;750</td>
<td>&gt;350</td>
<td>&gt;90</td>
</tr>
<tr>
<td><strong>Compressive strength</strong></td>
<td>MPa</td>
<td>2450</td>
<td>3500</td>
<td>3820</td>
<td>488</td>
<td>1100</td>
</tr>
<tr>
<td><strong>Module of elasticity</strong></td>
<td>GPa</td>
<td>&gt;290</td>
<td>&gt;200</td>
<td>&gt;270</td>
<td>&gt;220</td>
<td>65</td>
</tr>
<tr>
<td><strong>Vickers hardness</strong></td>
<td>Vmm-2</td>
<td>&gt;15.000</td>
<td>&gt;12.000</td>
<td>&gt;25.000</td>
<td>&gt;10.500</td>
<td>&gt;8.000</td>
</tr>
<tr>
<td><strong>Fracture toughness</strong></td>
<td>MPA m/2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td><strong>Weibull modulus</strong></td>
<td>-</td>
<td>10</td>
<td>12</td>
<td>15</td>
<td>20</td>
<td>-</td>
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<tr>
<td><strong>Linear thermal expansion coefficient</strong></td>
<td>10-6 K-1</td>
<td>8.2</td>
<td>8.2</td>
<td>4.1</td>
<td>4.6</td>
<td>8.6</td>
</tr>
<tr>
<td><strong>Thermal conductivity</strong></td>
<td>Wm-1 K-1</td>
<td>22</td>
<td>26</td>
<td>120</td>
<td>170-180</td>
<td>1.68</td>
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<tr>
<td><strong>Max. working temperature in air</strong></td>
<td>°C</td>
<td>1550</td>
<td>1600</td>
<td>1700</td>
<td>1700</td>
<td>1100</td>
</tr>
</tbody>
</table>

The values were determined on test specimens and are typical for the respective material. The product attributes can vary depending on the design and production process. Other materials are available on request.

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