AEROSIL® fumed silica are excellently suited as fillers for dental impression materials. They improve properties such as tensile strength, elongation at break and tear resistance.

AEROSIL® fumed silica are available with a broad variety of surface treatments to render them hydrophobic. This enables the optimal incorporation in the polymer matrix. Mechanical post treatment reduces the structure and allows for high filling capability.

<table>
<thead>
<tr>
<th>AEROSIL® fumed silica grades with surface groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEROSIL® fumed silica grade</td>
</tr>
<tr>
<td>Typical surface group</td>
</tr>
</tbody>
</table>
The most common hydrophobic grades used in dental impression materials are AEROSIL® R 974, AEROSIL® R 812 S, AEROSIL® R 202 and AEROSIL® R 208. In addition, Evonik offers the structure modified grades AEROSIL® R 8200 and AEROSIL® R 9200. These types are processed to reduce the aggregate structure resulting in higher tapped density and provide faster incorporation with less dusting.

### Characteristic physico-chemical data

<table>
<thead>
<tr>
<th>Properties and test method</th>
<th>Unit</th>
<th>AEROSIL® R 974</th>
<th>AEROSIL® R 812 S</th>
<th>AEROSIL® R 202</th>
<th>AEROSIL® R 208</th>
<th>AEROSIL® R 8200</th>
<th>AEROSIL® R 9200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific surface area (BET)</td>
<td>m²/g</td>
<td>150 – 190</td>
<td>195 – 245</td>
<td>80 – 120</td>
<td>80 – 140</td>
<td>135 – 185</td>
<td>150 – 190</td>
</tr>
<tr>
<td>pH value in 4% dispersion</td>
<td>–</td>
<td>3.7 – 4.7</td>
<td>5.5 – 9.0</td>
<td>4.0 – 6.0</td>
<td>4.5 – 6.5</td>
<td>≥ 5.0</td>
<td>3.0 – 5.0</td>
</tr>
<tr>
<td>Loss on drying %</td>
<td>≤ 0.5</td>
<td>≤ 0.5</td>
<td>≤ 0.5</td>
<td>≤ 0.5</td>
<td>≤ 0.5</td>
<td>≤ 0.5</td>
<td>≤ 1.5</td>
</tr>
<tr>
<td>Carbon content %</td>
<td>0.7 – 1.3</td>
<td>3.0 – 4.0</td>
<td>3.5 – 5.0</td>
<td>4.5 – 6.5</td>
<td>2.0 – 4.0</td>
<td>0.7 – 1.3</td>
<td></td>
</tr>
<tr>
<td>Tamped density g/L</td>
<td>approx. 50</td>
<td>approx. 60</td>
<td>approx. 60</td>
<td>approx. 60</td>
<td>approx. 140</td>
<td>approx. 200</td>
<td></td>
</tr>
<tr>
<td>SiO₂ content based on ignited material %</td>
<td>≥ 99.8</td>
<td>≥ 99.8</td>
<td>≥ 99.8</td>
<td>≥ 99.8</td>
<td>≥ 99.8</td>
<td>≥ 99.8</td>
<td></td>
</tr>
</tbody>
</table>

The given values are typical data, specifications on request.

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