Surface chemistry is just as delicate as walking on water

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AEROSIL® optimizes:
- powder coatings
- air bags
- silicone sealants
- seals, e.g. coated bottle caps
- toothpastes
- creams, lotions, gels
- deodorants
- golf balls
- chemical anchors
- foils and films
- plastic bags
- toner for copiers and laser printers
- insulation materials
- shoe soles
- technical rubber goods
- dental composites and fillers
- ground herbs and spices
- 2-component mortar and concrete
- marine paints
- technical components, e.g. wind turbines
- adhesives
- tablets
- thermal insulation
- battery gels
- greases & lubricants
- inkjet paper
For more than 70 years, people at Evonik have been working for, on, and with AEROSIL®. They promise their customers a lot—after all, the claim of the AEROSIL® brand is “Invented to improve.” This promise has been kept for more than 70 years. How is this possible?

The worldwide success of AEROSIL® is based on the particular strengths of the product and the people behind AEROSIL®. They invented AEROSIL® and keep reinventing it: modifications, new applications, and effects.

The service provided for the product family is unique in the world, since scientists and engineers at Evonik are mastering the technology—their own and that of the customers. As a result of this, customers are given the best possible support in the areas of research, applied technology, and handling. We are always looking for continuous improvement. This is the claim of everyone who is involved with AEROSIL®. It means improving our own products and processes and helping to make our customers’ products and production processes just that little bit better. Often it’s just that little bit that makes them stand out from the competition.

It’s simple and simply reassuring to work together with the AEROSIL® experts, since reliability and security are important to Evonik and stands for a whole range of topics: on-time delivery, product safety, quality assurance—at the highest level worldwide.

Worldwide is precisely the right term. AEROSIL® is produced in eight production sites throughout the world based on the same strict benchmarks, but, in every case, very close to the markets and the customers. Customer proximity also applies to the regional laboratories for research and applied technology, which Evonik operates for AEROSIL® on three continents. This is also especially true for the sales teams, who provide competent support for AEROSIL® customers on all continents.

However, if a brand is able to lead the market in the chemical industry for more than 70 years, it is because of something that you cannot plan, talk up, or force: the trust of the customers. We are very proud of our long-term customer relationships. Rightly so, since, in the final analysis, this proves that our customers get more than just white powder. Namely, always exactly the right solution.

AEROSIL®. Invented to improve.
Along with the traditional polyester, silicone, paints and coatings applications, hydrophilic AEROSIL® products are used with increasing success in high technology fields. To meet these needs several grades have been developed with especially high chemical purity and distinctive particle nature.

Furthermore, the hydrophilic AEROSIL® grades are characterized by an amorphous structure (determined by X-ray diffraction and high resolution TEM). Depending on the market and application, products with different BET surface areas. Certain types are also available as densified, pharmaceutical, or food grades.

Positive Effects:
• Optimum adjustment of rheology during processing
• Reinforcement of silicone elastomers
• Thickening of non-polar liquids
• Free-flow of foodstuffs and industrial powders
• High chemical purity
• Excellent insulation properties, even at high temperatures
• Conversion of liquids to powders, e.g. pharmaceuticals, cosmetics
• Gelification of battery acids
• Rheology control of greases & lubricants

When it comes to extreme temperature fluctuations, AEROSIL® keeps you always well insulated

<table>
<thead>
<tr>
<th>Hydrophilic Fumed Silica</th>
<th>AEROSIL® Grades</th>
<th>BET Surface Area [m²/g]</th>
<th>Loss on Drying [%wt.]</th>
<th>pH value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEROSIL® 90</td>
<td>75 - 105</td>
<td>≤ 1.0</td>
<td>3.7 - 4.7*</td>
<td></td>
</tr>
<tr>
<td>AEROSIL® 130</td>
<td>105 - 155</td>
<td>≤ 1.5</td>
<td>3.7 - 4.5*</td>
<td></td>
</tr>
<tr>
<td>AEROSIL® 150</td>
<td>135 - 165</td>
<td>≤ 1.5</td>
<td>3.7 - 4.5</td>
<td></td>
</tr>
<tr>
<td>AEROSIL® 200</td>
<td>175 - 225</td>
<td>≤ 1.5</td>
<td>3.7 - 4.5*</td>
<td></td>
</tr>
<tr>
<td>AEROSIL® 200 F</td>
<td>175 - 225</td>
<td>≤ 1.5</td>
<td>3.7 - 4.5</td>
<td></td>
</tr>
<tr>
<td>AEROSIL® 200 Pharma</td>
<td>175 - 225</td>
<td>≤ 2.5**</td>
<td>3.5 - 5.5**</td>
<td></td>
</tr>
<tr>
<td>AEROSIL® 250</td>
<td>230 - 280</td>
<td>≤ 1.5</td>
<td>3.7 - 4.5</td>
<td></td>
</tr>
<tr>
<td>AEROSIL® 300</td>
<td>270 - 320</td>
<td>≤ 1.5</td>
<td>3.7 - 4.5*</td>
<td></td>
</tr>
<tr>
<td>AEROSIL® 300 Pharma</td>
<td>270 - 320</td>
<td>≤ 2.5**</td>
<td>3.5 - 5.5**</td>
<td></td>
</tr>
<tr>
<td>AEROSIL® 380</td>
<td>350 - 410</td>
<td>≤ 2.0</td>
<td>3.7 - 4.5*</td>
<td></td>
</tr>
<tr>
<td>AEROSIL® 380 F</td>
<td>350 - 410</td>
<td>≤ 2.0</td>
<td>3.7 - 4.5</td>
<td></td>
</tr>
<tr>
<td>AEROSIL® OX 50</td>
<td>35 - 65</td>
<td>≤ 1.5</td>
<td>3.8 - 4.8</td>
<td></td>
</tr>
<tr>
<td>AEROSIL® TT 600</td>
<td>150 - 250</td>
<td>≤ 2.5</td>
<td>3.6 - 4.5</td>
<td></td>
</tr>
<tr>
<td>AEROPERL® 300/300</td>
<td>270 - 330</td>
<td>≤ 3.5</td>
<td>4.0 - 6.0</td>
<td></td>
</tr>
<tr>
<td>AEROPERL® 300 Pharma</td>
<td>260 - 320</td>
<td>≤ 2.5**</td>
<td>3.5 - 5.5**</td>
<td></td>
</tr>
</tbody>
</table>

* Narrower range possible
** Tested according to USP/NF, Ph.Eur. and JP

The data represents typical values.
Numerous grades of hydrophobic AEROSIL® fumed silica have been developed to solve particular technical problems. AEROSIL® hydrophobic fumed silica is produced by a chemical treatment of hydrophilic grades with silanes or siloxanes. In the finished product, the treatment agent is chemically bonded to the former hydrophilic oxide.

AEROSIL® hydrophobic products are characterized, among other things, by a low moisture adsorption, excellent dispersibility and their ability to adjust rheological behavior, even that of polar systems.

AEROSIL® grades such as R 7200, R 8200 and R 9200 undergo additional structural modification ideal for higher loading levels without impacting the viscosity. These properties are especially useful in generating scratch resistance effects.

**Positive Effects:**
- Optimum rheology during processing
- Thickening of polar liquids, e.g. epoxy resins
- Reinforcement of silicone elastomers
- High levels of loading, e.g. molding compounds
- Excellent water-repelling properties leading to improved corrosion-protection
- Improvement of dielectric properties, e.g. in cable compounds
- Free-flow of powders, e.g. in fire extinguishers
- Increased scratch resistance, e.g. in paints and plastics

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**Hydrophobic Fumed Silica**

AEROSIL® gives water-repellent paints and coatings an edge

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**Hydrophobic Fumed Silica**

<table>
<thead>
<tr>
<th>AEROSIL® Grades</th>
<th>BET Surface Area [m²/g]</th>
<th>Loss on Drying [%]</th>
<th>pH Value</th>
<th>Carbon Content [wt. %]</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEROSIL® R 972</td>
<td>90 - 110</td>
<td>± 0.5</td>
<td>3.6 - 5.5*</td>
<td>0.6 - 1.2*</td>
</tr>
<tr>
<td>AEROSIL® R 972 Pharma</td>
<td>90 - 110</td>
<td>± 0.5**</td>
<td>3.6 - 5.5**</td>
<td>0.6 - 1.2**</td>
</tr>
<tr>
<td>AEROSIL® R 974</td>
<td>150 - 190</td>
<td>± 0.5</td>
<td>3.4 - 5.0</td>
<td>0.9 - 1.5</td>
</tr>
<tr>
<td>AEROSIL® R 976</td>
<td>225 - 275</td>
<td>± 1.0</td>
<td>3.8 - 5.0</td>
<td>1.3 - 2.2</td>
</tr>
<tr>
<td>AEROSIL® R 976 S</td>
<td>215 - 260</td>
<td>± 0.5</td>
<td>4.0 - 5.5</td>
<td>1.8 - 2.7</td>
</tr>
<tr>
<td>AEROSIL® R 104</td>
<td>125 - 175</td>
<td>± 1.5</td>
<td>≥ 4.0</td>
<td>1.0 - 2.0</td>
</tr>
<tr>
<td>AEROSIL® R 106</td>
<td>220 - 280</td>
<td>± 0.5</td>
<td>≥ 3.7</td>
<td>1.4 - 3.0</td>
</tr>
<tr>
<td>AEROSIL® R 202</td>
<td>80 - 120</td>
<td>± 0.5</td>
<td>4.0 - 6.0</td>
<td>3.5 - 5.0</td>
</tr>
<tr>
<td>AEROSIL® R 202 S</td>
<td>80 - 120</td>
<td>± 0.5</td>
<td>4.0 - 6.0</td>
<td>3.5 - 5.0</td>
</tr>
<tr>
<td>AEROSIL® R 208</td>
<td>80 - 140</td>
<td>± 0.5</td>
<td>4.5 - 6.5</td>
<td>4.5 - 6.5</td>
</tr>
<tr>
<td>AEROSIL® R 805</td>
<td>125 - 175</td>
<td>± 0.5</td>
<td>3.5 - 5.5</td>
<td>4.5 - 6.5</td>
</tr>
<tr>
<td>AEROSIL® R 812</td>
<td>230 - 290</td>
<td>± 0.5</td>
<td>5.5 - 8.0</td>
<td>2.0 - 3.0</td>
</tr>
<tr>
<td>AEROSIL® R 812 S</td>
<td>195 - 245</td>
<td>± 0.5</td>
<td>5.5 - 9.0</td>
<td>3.0 - 4.0</td>
</tr>
<tr>
<td>AEROSIL® R 816</td>
<td>170 - 210</td>
<td>± 1.0</td>
<td>4.0 - 5.5</td>
<td>0.9 - 1.8</td>
</tr>
<tr>
<td>AEROSIL® R 7200</td>
<td>125 - 175</td>
<td>± 1.5</td>
<td>4.0 - 6.0</td>
<td>4.5 - 6.5</td>
</tr>
<tr>
<td>AEROSIL® R 8200</td>
<td>135 - 185</td>
<td>± 0.5</td>
<td>≥ 5.0</td>
<td>2.0 - 4.0</td>
</tr>
<tr>
<td>AEROSIL® R 9200</td>
<td>150 - 190</td>
<td>± 1.5</td>
<td>3.0 - 5.0</td>
<td>0.7 - 1.3</td>
</tr>
<tr>
<td>AEROSIL® R 711</td>
<td>125 - 175</td>
<td>± 1.5</td>
<td>4.0 - 6.0</td>
<td>4.5 - 6.5</td>
</tr>
</tbody>
</table>

The data represents typical values.
* Narrower range possible.
** Tested according to USP/NF and Ph.Eur.

Developmental products are labeled with the VP designation. Their commercialization depends on market response. Even though they are produced in commercial quantities, future availability should be verified. In some cases, these products may not have undergone complete testing.
Fumed Mixed Oxides

From an optical perspective, AEROSIL® add clarity

AEROSIL® MOX grades are recommended for the production of highly-loaded low viscous aqueous dispersions. The fumed mixed oxides are manufactured using a co-fumed process and may be regarded as a mixture of SiO₂ and Al₂O₃ on the molecular level. AEROSIL® COK 84 is a physical mixture of SiO₂ and Al₂O₃ which provides strong thickening effects in aqueous media.

Positive Effects:
- High-loading levels of AEROSIL® MOX grades in dispersions
- Strong thickening effect in polar media with AEROSIL® COK 84
- Catalyst support
- Rheology control of greases & lubricants

Fumed Mixed Oxides

<table>
<thead>
<tr>
<th>AEROSIL® Grades</th>
<th>BET Surface Area [m²/g]</th>
<th>Loss on Drying [wt. %]</th>
<th>pH value</th>
<th>Chemical Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEROSIL® MOX 80</td>
<td>60 - 100</td>
<td>≤ 1.5</td>
<td>3.6 - 4.5</td>
<td>SiO₂/Al₂O₃</td>
</tr>
<tr>
<td>AEROSIL® MOX 170</td>
<td>140 - 200</td>
<td>≤ 1.5</td>
<td>3.6 - 4.5</td>
<td>SiO₂/Al₂O₃</td>
</tr>
<tr>
<td>AEROSIL® COK 84</td>
<td>155 - 215</td>
<td>≤ 1.5</td>
<td>3.6 - 4.3</td>
<td>SiO₂/Al₂O₃</td>
</tr>
</tbody>
</table>

The data represents typical values.
The AEROSIL® manufacturing process can also be applied to produce fumed aluminum and titanium oxides. The treatment processes mentioned previously are also applicable here and result in a wide range of fine particle products with extraordinary properties.

AEROSIL® Alu C is a pure aluminum oxide with a hydrophilic character. Their primary use is as a free-flow agent and it regulates triboelectric effects.

AEROSIL® TiO$_2$ P 25 is a titanium dioxide without pigment properties. Due to its purity and fine particle size, it may be used as a catalyst support or as a heat stabilizer for silicone rubber.

Positive Effects:
- Free flow in powder coatings
- Heat stabilization of silicone elastomers
- Optimization of adsorption properties, e.g. inkjet applications

AEROSIL® Alu C extends the life expectancy of fluorescent lamps.

Hydrophilic Fumed Metal Oxides

AEROXIDE® putting you on the brighter side of life

The data represents typical values.

<table>
<thead>
<tr>
<th>AEROXIDE® Grades</th>
<th>BET Surface Area [m$^2$/g]</th>
<th>Loss on Drying [wt.%]</th>
<th>pH Value</th>
<th>Chemical Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEROXIDE® Alu C</td>
<td>85 - 115</td>
<td>≤ 5.0</td>
<td>4.5 - 5.5</td>
<td>Al$_2$O$_3$</td>
</tr>
<tr>
<td>AEROXIDE® Alu 65</td>
<td>55 - 75</td>
<td>≤ 5.0</td>
<td>4.5 - 6.0</td>
<td>Al$_2$O$_3$</td>
</tr>
<tr>
<td>AEROXIDE® Alu 130</td>
<td>110 - 150</td>
<td>≤ 5.0</td>
<td>4.4 - 5.4</td>
<td>Al$_2$O$_3$</td>
</tr>
<tr>
<td>AEROXIDE® TiO$_2$P 25</td>
<td>35 - 65</td>
<td>≤ 1.5</td>
<td>3.5 - 4.5</td>
<td>TiO$_2$</td>
</tr>
<tr>
<td>AEROXIDE® TiO$_2$P 90</td>
<td>70 - 110</td>
<td>≤ 4.0</td>
<td>3.2 - 4.5</td>
<td>TiO$_2$</td>
</tr>
<tr>
<td>AEROXIDE® TiO$_2$P F 2</td>
<td>45 - 70</td>
<td>≤ 2.0</td>
<td>3.5 - 4.5</td>
<td>TiO$_2$ / Fe$_2$O$_3$</td>
</tr>
</tbody>
</table>

The data represents typical values.
Evonik has extensive knowledge, sophisticated equipment and many years of experience, all of which are necessary to produce high quality dispersions. AERODISP® is the ideal solution for the dust-free handling of AEROSIL® fumed silica and AEROXIDE® fumed metal oxides. A special manufacturing process and many years of know-how enable us to provide these products in an exceptional state of dispersion.

Positive Effects:
- High ink absorptivity in photo inkjet papers
- Improved surface properties for cleaning, polishing and coating of metals, paper, textiles etc.
- Improved mechanical properties of latex rubber
- Optimized adhesion properties of self-adhesive labels
- Improved optical properties of wood stains
- Optimized rheological properties of paints, varnishes and battery gels
- Enhanced anti-blocking effect in PET-film

Dispersions used in the paper industry

Further dispersions of hydrophilic and hydrophobic silica and metal oxides in organic solvents are available on request. The data represents typical values.

1) Solid contents may vary +/-1%
2) Measured according to EN ISO 787-9 method
3) Measured according to DIN EN ISO 3219 at a shear rate of 100 s⁻¹
4) Stabilized with small amounts of aluminum compounds.

Developmental products are labeled with the VP Disp. designation. Their commercialization depends on market response. Even though they are produced in commercial quantities, future availability should be verified. In some cases, these products may not have undergone complete testing.
Special Hydrophobic Silica and Hydrophobic Metal Oxides

Specialized industries have different requirements for fumed oxides with specific properties. In order to fulfill these high technical requirements, combinations of different raw materials (SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, or TiO<sub>2</sub>), surface treatments and many manufacturing processes are employed.

The R and N grades of AEROSIL® products listed below can be used to regulate flow tribo-charge and stability of toner for copiers and laserprinters. AEROXIDE® TIO<sub>2</sub> T 805, an efficient UV-filter, is characterized by its ease of dispersibility and low moisture adsorption.

AEROXIDE® Alox C 805 is especially recommended for moisture sensitive powder coating applications.

Positive Effects:
- Regulation of toner tribo-charge
- Free flow agent for toner
- Improved storage stability of toner
- Loading levels in dental composites
- Effect for the self-cleaning of surfaces
- Increased heat stability of silicone elastomers

包装和运输

我们专注于应用领域

标准包装
AEROSIL®产品被供应在一个多层纸板袋中，并配备有聚乙烯涂层。

柔性中型散装容器（FIBC）
Evonik也提供采用AEROSIL®产品的FIBCs。这些是可折叠的容器，制造成本较低，用于复杂应用，如提升目的。

柔性中型散装容器
AEROSIL® V和AEROSIL® VV的产品有不同，使用AEROPERL®过程。这些产品是采用AEROPERL®技术制造的。AEROPERL®产品显示有热和耐寒性，可以用于加工品。这些产品根据AEROPERL®过程的使用环境而不同。今日包装和运输

这些产品是采用AEROPERL®技术制造的。AEROPERL®产品可以高密度包装，高抗振和高湿度吸附。产品根据AEROPERL®过程的使用环境而不同。今日包装和运输

包装和运输

我们的专业知识集中在包装应用上

标准包装
AEROSIL®产品被供应在一个多层纸板袋中，并配备有聚乙烯涂层。

柔性中型散装容器
AEROSIL®V和AEROSIL®VV的产品

柔性中型散装容器

这些产品可以按需制造。AEROPERL®产品被供应在一个多层纸板袋中，并配备有聚乙烯涂层。
In almost every country in the world, Evonik has experts to give customers help and advice: The AEROSIL® sales teams. Evonik produces AEROSIL® in eight plants on three continents. Research centers and applied technology in Germany, the US, Japan, India, Korea and China help find the best solution. These are the facts. But the AEROSIL® team understands customer proximity to mean much more. It takes the meaning literally: we are close to our customers.

A supplier can say that it is close to its customer only when it really understands the customer’s wishes and problems and is able to fulfill or resolve these. From paints to pharmaceuticals, toners to thermal insulation – customer proximity is the key that opens many doors to innovative companies in many different industries for the market leader AEROSIL®. For the last 70 years.

AEROSIL®, Invented to improve.
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