AR-GLAS®

Tubing and Rod of Special Glass
SCHOTT is a leading international technology group in the areas of specialty glass and glass-ceramics. With more than 130 years of outstanding development, materials and technology expertise we offer a broad portfolio of high-quality products and intelligent solutions that contribute to our customers’ success.

With a production capacity of more than 140,000 tons and production sites in Europe, South America and Asia, SCHOTT Tubing is one of the world’s leading manufacturers of glass tubes, rods and profiles. Approximately 60 glass types are produced in large outside diameters and a variety of lengths based on strategies in development, production and quality assurance applying to all sites. SCHOTT Tubing provides customized products and services for international growth markets such as pharmaceutics and electronics as well as industrial and environmental engineering.
Content

4 AR-GLAS® – The best in quality and service

6–10 Product Range

11–12 Physical and Chemical Properties

13 Packing
AR-GLAS®
The best in quality and service

Scientific Services
The Scientific Services department of SCHOTT is available to customers for all questions concerning glass properties, processing and the various applications of AR-GLAS®. Equipped with its own chemical and physics laboratories this team of qualified experts is optimally suited to handle any question.
### AR-GLAS® Tubing

<table>
<thead>
<tr>
<th>Outside Diameter (OD)</th>
<th>Wall Thickness (WT)</th>
<th>Weight per Tube</th>
<th>Carton/ DENSOPACK®</th>
<th>Pallet Load</th>
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**AR-GLAS® Tubing**

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<th>Weight per Tube</th>
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## AR-GLAS® Tubing

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<th>Outside Diameter (OD)</th>
<th>Wall Thickness (WT)</th>
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### AR-GLAS®
#### Tubing

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<th>Outside Diameter (OD)</th>
<th>Wall Thickness (WT)</th>
<th>Weight per Tube</th>
<th>Carton / DENSOPACK®</th>
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<td>Number of Tubes</td>
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In addition to the dimensions above, different lengths and outside diameters up to 70 mm are available upon request.

Standard length: 1500 mm
Special sizes of tubing between 1200 and 4000 mm long and with an outside diameter range of 18 to 38 mm are available upon request.

Tubing with outside diameters between 5 – 30 mm can be additionally coated to protect from scratches (minimum quantity is 2 tons).
AR-GLAS®
Rod

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<th>Carton Contents</th>
<th>Pallet</th>
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Rod with an outside diameter of up to 30 mm is available upon request.

Standard length: 1500 mm

All tubing and rod dimensions shown in this brochure are available on short notice. All carton contents and weights are approximate.
**AR-GLAS®**  
**Physical and Chemical Properties**

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<th>Physical Properties</th>
<th>Value</th>
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<td>Temperature of the glass at viscosity $\eta$ in dPa · s:</td>
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<td>$10^{7.6}$ (softening point)</td>
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<td>$10^4$ (working point)</td>
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<td>Density $\rho$ at 25 °C</td>
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<td>Modulus of elasticity $E$ (Young's modulus)</td>
<td>$73 \cdot 10^3$ N · mm$^{-2}$</td>
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<td>Poisson's ratio $\mu$</td>
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<td>Thermal Conductivity $\lambda_w$ at 90 °C</td>
<td>1.1 W · m$^{-1}$ · K$^{-1}$</td>
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<td>Temperature for the specific electrical resistance of $10^4$ Ω · cm (DIN S2 326) $t_k$</td>
<td>200 °C</td>
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<td>Logarithm of the electric volume resistivity ($\Omega$ · cm)</td>
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<tr>
<td>at 250 °C</td>
<td>7.1</td>
</tr>
<tr>
<td>at 350 °C</td>
<td>5.7</td>
</tr>
<tr>
<td>Dielectric properties (1 MHz, 25 °C)</td>
<td></td>
</tr>
<tr>
<td>Dielectric constant (permittivity) $\varepsilon$</td>
<td>7.2</td>
</tr>
<tr>
<td>Dielectric loss factor (dissipation factor) $\tan \delta$</td>
<td>$70 \cdot 10^{-4}$</td>
</tr>
<tr>
<td>Refractive index ($\lambda = 587.6$ nm) $n_d$</td>
<td>1.514</td>
</tr>
<tr>
<td>Stress-optical coefficient (DIN S2 314) $K$</td>
<td>$2.7 \cdot 10^{-4}$ mm$^2$ · N$^{-1}$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Composition</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO$_2$</td>
<td>69</td>
</tr>
<tr>
<td>B$_2$O$_3$</td>
<td>1</td>
</tr>
<tr>
<td>K$_2$O</td>
<td>3</td>
</tr>
<tr>
<td>Al$_2$O$_3$</td>
<td>4</td>
</tr>
<tr>
<td>Na$_2$O</td>
<td>13</td>
</tr>
<tr>
<td>BaO</td>
<td>2</td>
</tr>
<tr>
<td>CaO</td>
<td>5</td>
</tr>
<tr>
<td>MgO</td>
<td>3</td>
</tr>
</tbody>
</table>

main components in approx. weight %
AR-GLAS®
Physical and Chemical Properties

### Chemical Resistance

<table>
<thead>
<tr>
<th>Class</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrolytic Class (DIN ISO 719)</td>
<td>HGB 3</td>
</tr>
<tr>
<td>Acid Class (DIN 12116)</td>
<td>Class S 1</td>
</tr>
<tr>
<td>Alkali Class (DIN ISO 695)</td>
<td>Class A 2</td>
</tr>
</tbody>
</table>

### Transmission

![Transmission Graph]

Transmission (%)

Wall Thickness = 1 mm

Wave Length (nm)
AR-GLAS®

Packing

≤ OD 7 mm = Cartons
≥ OD 8 mm = DENSOPACK®

DENSOPACK®:
Tightly packed and covered with shrink film = effective transport protection

Technical Terms of Supply

Detailed information on permissible faults, definition of faults, testing methods and testing units are available upon request. Reduced tolerances are also available upon request. In case of quality complaints the relevant “Technical Terms of Supply” for the application apply to all sales and are binding unless separate written agreements with respect to quality have been entered into.

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Subject to technical alterations.

We thank our customers and partners for their kind assistance in providing product samples and photos.