Industry

Oxide Fiber Composites
Oxide Fiber Composites (OFC)

Components that are used in corrosive or oxidative environments must withstand extreme conditions. Schunk uses innovative manufacturing technology for oxide fiber reinforced composite materials that can significantly increase the service life of your system components or tools. In collaboration with you, we can develop reliable components for your application.

Advantages
- Significantly longer service life through resistance to oxidation and corrosion
- Low thermal conductivity
- High damage tolerance (due to high strain to failure ratio)
- Good thermo-mechanical properties
- Highly resistant to heat and thermal shock
- Electrical insulator
- Lightweight construction (thin wall thicknesses can be realized)
- Metal-like, sheet-like constructions possible
- Low heat capacity leads to optimized production times
- Ideal for automated loading and unloading
- Significantly lower fixture weight compared to alloy based fixtures

Manufacturing technology
- Pressing technology for plates of up to 1000 x 750 mm, other dimensions on request
- Filament winding technology for pipes of up to Ø 1500 x 1000 mm
- Laminating and vacuum technology for 3D curved parts also over 2 meters in length

<table>
<thead>
<tr>
<th>Material: Oxide Fiber Composite (OFC)</th>
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<tbody>
<tr>
<td>Reinforcement</td>
<td>Fabric</td>
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<tr>
<td>Matrix</td>
<td>Al₂O₃</td>
</tr>
<tr>
<td>Density [g/cm³]</td>
<td>2.80</td>
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<tr>
<td>Porosity [%]</td>
<td>30–35</td>
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<tr>
<td>Bending strength [X/Y direction plate] [MPa]</td>
<td>160–260</td>
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<tr>
<td>Young’s modulus [X/Y direction plate] [GPa]</td>
<td>65–80</td>
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<tr>
<td>Elongation at break [X/Y direction plate] [%]</td>
<td>0.25–0.30</td>
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<tr>
<td>ILSS [MPa]</td>
<td>10–12</td>
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Areas of application:
- Exhaust gas routing / Hot gas ducting components (pipes and flaps, heat exchanger, hot gas filter)
- Fixture systems in furnace construction
- Diffusion barrier to prevent carbon diffusion
- Furnace components (such as doors, flaps etc.)
- Thermal protection
- Processing of aluminum (crucibles, dosing launders, dosing systems)
- Stationary turbines and aircraft gas turbine (combustion chambers, stationary guide vanes)
- Lightweight construction for engine components (cylinder head, engine block, valves, exhaust manifold)
- Special applications (porous burners, solar receivers)
- Components for chemical engineering
- Flame-/burner tubes
Schunk – A worldwide success. Always at your side.

Schunk focuses on development, manufacture and application of carbon and ceramic solutions. It combines innovative spirit and technological expertise with exceptional customer service to provide a range of products and services unique to the market.

In Schunk, you have a partner who can offer all the technological possibilities of an international company and implement ideas custom-tailored to your needs, both for high-volume industrial markets and for highly specialized niche markets.

The Schunk Group

Empowering, idea driven, collaborative – if you hope to apply technology to develop better products and capture new markets, we can help. The Schunk Group has been supporting customers with innovative technologies since 1913. As an idea driven technology company, innovation is fundamental to our culture. We forge long-lasting, cooperative working relationships with our clients.

The Schunk Group is a globally operating technology company with a global business unit structure. The company is a leading supplier of products made of high-tech materials – such as carbon, technical ceramics and sintered metal – as well as of machines and systems – from environmental simulation through air conditioning technology and ultrasonic welding to optical machines. The Schunk Group employs more than 9,100 people in 29 companies and made a turnover of € 1.35 billion in 2019.

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