BALIQ CARBOS – The perfect solution for your requirements

Open a new world of possibilities with BALIQ CARBOS
Get in touch with us today!

The ideal application areas of BALIQ CARBOS
- Tribologically highly loaded parts e.g. combustion engine piston pins and valve train parts
- Sharp and durable food processing components
- Fibre resistant textile components
- High and decorative parts
- Medical instruments

BALIQ CARBOS in comparison with other carbon coatings

<table>
<thead>
<tr>
<th>Coating material</th>
<th>WALINIT® B</th>
<th>WALINIT® DLC</th>
<th>WALINIT® DLC STAR</th>
<th>WALINIT® CARBON</th>
<th>WALIQ® CARBOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical coating thickness [µm]</td>
<td>1 – 4</td>
<td>1 – 3</td>
<td>2 – 5</td>
<td>2 – 6</td>
<td>5 – 8</td>
</tr>
<tr>
<td>Friction against steel, dry running</td>
<td>0.1 – 0.2</td>
<td>0.1 – 0.2</td>
<td>0.1 – 0.2</td>
<td>0.1 – 0.2</td>
<td>0.1 – 0.2</td>
</tr>
<tr>
<td>Coating temperature [°C]</td>
<td>&lt; 250</td>
<td>&lt; 250</td>
<td>&lt; 250</td>
<td>&lt; 250</td>
<td>&lt; 250</td>
</tr>
</tbody>
</table>

BALIQ CARBOS – The amorphous carbon coating beyond DLC

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Our worldwide coating centre network addresses are listed at:
www.oerlikon.com/balzers
Oerlikon Balzers proudly presents the brand new BALIQ® CARBOS amorphous carbon coating. BALIQ® CARBOS is a hydrogen free carbon coating which is based on our S3p® technology (Scalable Pulsed Power Plasma) that intelligently combines the advantages of Arc Evaporation and Sputtering.

The S3p® process generates a superior coating with a high level of diamond bonds which enables hardness levels of up to 40 GPa. The superior hardness is combined with the low friction of carbon coatings and the excellent low roughness typical for coatings applied in sputter processes. The coating is used for applications where DLC coatings reach their tribological performance limit, typically when contact pressures or sliding speeds exceed the limits.

### Coating hardness

<table>
<thead>
<tr>
<th>Coating</th>
<th>Hardness (GPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BALIQ® CARBOS</td>
<td>40</td>
</tr>
<tr>
<td>BALINIT® CARBON</td>
<td>20</td>
</tr>
</tbody>
</table>

BALIQ® CARBOS has higher hardness and therefore improved abrasive wear resistance compared to standard DLC coatings.

### High wear resistance

<table>
<thead>
<tr>
<th>Wear Coefficient [10^-15 m^3/Nm]</th>
<th>BALIQ® CARBOS</th>
<th>BALINIT® DLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>0.2</td>
<td>1.2</td>
<td>0.7</td>
</tr>
<tr>
<td>0.4</td>
<td>1.4</td>
<td>1.0</td>
</tr>
<tr>
<td>0.6</td>
<td>1.6</td>
<td>1.3</td>
</tr>
<tr>
<td>0.8</td>
<td>1.8</td>
<td>1.6</td>
</tr>
<tr>
<td>1.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
</tbody>
</table>

BALIQ® CARBOS exhibits 3 times lower abrasive wear than a 20 GPa hard DLC coating.

### Smooth surface and dense structure

Dense structure of BALIQ® CARBOS in a SEM cross section.

All given data are approximate values, they depend on application, environment and test conditions.