Value Coatings

Ionbond’s coatings on HSS and cemented-carbide tools are the workhorses in metal cutting. They offer high productivity, extended lifetime, and reduce overall costs.

Maximizer

Maximizer is a new-generation highly tuned AlTiN coating. The average crystallite size and the stress levels are adjusted by special conditioning of the deposition process resulting in increased cutting performance.

- Medium cutting speeds
- Broad range of work piece materials
- Medium lubrication
- HSS and cemented-carbide tools

Ionbond™ multipurpose coatings

The classic multipurpose coatings are the most frequently used coatings for general machining.

- Ionbond™ 01 TiN
- Ionbond™ 10 TiCN
- Ionbond™ 14 TiCrN
- Ionbond™ 15 TiAlCrN
- Ionbond™ 16 TiAlN
- Ionbond™ 18 TiAlCN
- Ionbond™ 30 CrN
- Ionbond™ 41 a-C:H:W + a-C:H
- Ionbond™ 60 ZrN
Comprehensive range of coatings

Ionbond offers a broad portfolio of PVD and CVD cutting tool coatings to suit every machining requirement and workpiece material from low to extremely high cutting speeds.

High-Performance Coatings

The high-performance coatings are specifically designed for tools used in high-speed, high-feed machining of tough and abrasive workpiece materials under minimal lubrication conditions.

Hardcut

Hardcut is a multilayer coating based on TiSiN. The exceptional performance is possible through a patented process that forms a true nanocomposite material. Nanocrystals of Si₃N₄ are contained within TiN – hard particles are contained within a softer matrix.

- Ultrahigh cutting speeds
- Low lubrication
- Abrasive and tough materials
- Exotic alloys

Crosscut™

Crosscut™ is the latest addition to Ionbond’s line of cutting tool coatings. Its AlCrN structure exhibits reduced flank and cutting edge wear in a wide range of cutting conditions. As the most versatile high-performance coating it closes the gap between Maximizer and Hardcut.

- Medium to high cutting speeds
- Low to medium lubrication
- Wide range of workpiece materials
- Special pre- and posttreatment
- Uniform wear behavior
CVD Coatings and Services

**Bernex™ CVD coatings**

Ionbond has a long tradition as the market leader in providing Bernex™ CVD services and equipment. Bernex™ equipment accounts for about 60% of all globally used CVD installations for tool coating.

Thick and low-stress Bernex™ CVD coatings are typically applied on inserts used for extreme-load machining. Coating services are available from a number of Ionbond coating facilities in Europe, Asia, and North America.

- TiN, TiCN, Al₂O₃
- Heavy roughing
- Uniformity
- High thickness
- Low stress

**Pre- and posttreatments**

Accessing the full benefits of the coating for high-performance applications requires a high degree of surface preparation. A low roughness and tailored cutting edge radii can be controlled by pre- and postcoating treatments.

- Microblasting
- Brushing
- Drag finishing
- Polishing
- Reduced “run-in”
- Decoating

**Quality assured**

Ionbond tool coating centers hold an extensive range of international accreditations, including ISO 9001, ISO 9002, AS 9100, TS 16949, and are approved by numerous major OEMs in the cutting tool industry. On top of the quality system Ionbond has a mindset that focuses on the needs of its customers and constantly works on improving products and processes.

**Reliability and delivery**

- Fast turnaround times
- Pick-up and drop-off service
# Ionbond Cutting Tool Coatings

<table>
<thead>
<tr>
<th>Technology</th>
<th>PVD</th>
<th>PVD</th>
<th>PVD</th>
<th>CVD</th>
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<tbody>
<tr>
<td>Coating</td>
<td>Hardcut TiSiN</td>
<td>Crosscut™ AlCrN</td>
<td>Maximizer AlTiN</td>
<td>Bernex™ 29 Al₂O₃</td>
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<tr>
<td>Cross sections</td>
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<tr>
<td>Service temperature</td>
<td>1100 °C</td>
<td>1050 °C</td>
<td>850 °C</td>
<td>1000 °C</td>
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<tr>
<td>Deposition temperature</td>
<td>450 – 550 °C</td>
<td>450 – 550 °C</td>
<td>450 – 550 °C</td>
<td>1000 °C</td>
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<tr>
<td>Application</td>
<td>Hard machining at high speed</td>
<td>Hard machining at high speed</td>
<td>Hard machining at medium speeds</td>
<td>Roughing cast iron and steel</td>
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<tr>
<td></td>
<td>Dry cutting or low lubrication</td>
<td>Medium- to high-hardness materials</td>
<td>Medium lubrication</td>
<td>High-speed dry machining</td>
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### Cutting speed m/min

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<thead>
<tr>
<th>Cutting speed m/min</th>
<th>40</th>
<th>60</th>
<th>80</th>
<th>100</th>
<th>120</th>
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<th>160</th>
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<th>200</th>
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<tbody>
<tr>
<td>Steel up to 700 N/mm²</td>
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<td>Steels 800 – 1000 N/mm²</td>
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<td>Steels &gt;1400 N/mm²</td>
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<tr>
<td>Tool steels &gt;45 – 55 Hrc</td>
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<tr>
<td>Tool steels &gt;55 – 60 Hrc</td>
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<td>Cast iron</td>
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<td>Martensitic stainless steels</td>
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<td>Titanium up to 900 N/mm²</td>
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<td>Titanium alloys &gt;900 N/mm²</td>
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<td>Nickel alloys &gt;1,200 N/mm²</td>
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For a complete coating listing please see www.ionbond.com
Ionbond is a leader in surface enhancement technology and provides advanced coating solutions featuring a broad range of hard, low friction, wear resistant coatings based on PVD, PACVD and CVD technologies for a wide range of applications. It has a global presence with coating centers in strategic locations across Europe, Asia, and North America and has one of the largest coating networks in the world.

Ionbond is part of the IHI Group, a Japanese industrial group with significant R&D resources that operates through multiple business fields including: Energy and Resources, Social Infrastructure, Industrial Machinery and Aero Engines.

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