High Performance PVD Tool Coatings
The general-purpose coating for cutting, forming, injection molding as well as tribological applications.

Conventional carbon nitride coating:
- for interrupted cutting
- for milling and tapping
- for stamping, punching and forming

The tough MultiPurpose coating for interrupted cutting, milling, tapping, stamping, forming and hobbing.

Drilling Tool Life Comparison

<table>
<thead>
<tr>
<th>Tool</th>
<th>Tool life [m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>TiN</td>
<td>91.9 ft</td>
</tr>
<tr>
<td>TiCN</td>
<td>88.6 ft</td>
</tr>
<tr>
<td>TiCN-MP</td>
<td>15.1 ft</td>
</tr>
</tbody>
</table>

Work piece: wheel hub, Material: 38MnV35 (heat treatable steel), tensile strength = 116,000 psi, Ext. coolant: emulsion 7% Tools: solid carbide K40UF, d=12.6 mm, v =256 sfm, f = .001 inches/rev.

Reaming Coating Wear Behavior

roughness of the reamed holes; Rₜ [µm]

TiN
v = 43 sfm
f = .005 inches/rev.

TiAlN
v = 56 sfm
f = .006 inches/rev.

Special AlTiN
v = 75 sfm
f = .008 inches/rev.

Tools: d=6.2 mm, Coolant: emulsion 7% Material: D-2 tool steel, DIN 1.2379
Specialty Coatings

**CrN**
- Coating for forming applications:
  - for molds and dies and machine components
  - optimum release for forming tools
  - low deposition temperature possible (approx. 250 °C / 480 °F) - please inquire.

**CBC (DLC)**
- Special gradient coating. Self-lubrication as its own coating or on the top of an appropriate hard coating.
- CBC: carbon-based coating
- DLC: diamond-like carbon

**ZrN**
- Special-purpose monolayer coating. Effectively reduces the built-up edge when machining aluminum and titanium alloys.

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**Dry Deep Drawing**

<table>
<thead>
<tr>
<th>tool life [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>200</td>
</tr>
<tr>
<td>300</td>
</tr>
<tr>
<td>400</td>
</tr>
</tbody>
</table>

- not coated
- dedicated CrN

- Work piece: pure copper; Tool material: tool steel; Coating temp.: approx. 200 °C

**Tapping**

<table>
<thead>
<tr>
<th>tool life: threads [thousands]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>15</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>25</td>
</tr>
</tbody>
</table>

- nitrided
- CBC

- Work piece: 356Al (7% Si) - Tools: M10x1.5 HSS - Coolant: emulsion 8%

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**Swiss-Tek Service**

**Competition**

- Standard TiN
  - For all tools and parts

**Swiss-Tek**

- Special TiN
  - For milling cutters
- Special TiAIN
  - For end mills
- Special TiCN
  - For punches and dies

- With high-volume coating, job coaters apply the same coating to all parts in the batch, regardless of their type or application.
- Swiss-Tek applies dedicated coatings optimized for each application.
- Small batch sizes ensure fast turn-around times!
About Swiss-Tek Coatings, Inc.

Swiss-Tek Coatings was established in 2000 to provide the highest quality PVD coatings for tooling and wear parts. Swiss-Tek utilizes state-of-the-art equipment in all areas of processing, from cleaning to coating and quality assurance. All batches are coated with absolute uniformity, ensuring the repeatability of the coating’s quality and performance.

Coating Requirements

• PVD tool coatings are typically applied between 2-4 microns. This may vary according to tool type.
• PVD coatings are applied at a temperature of 450 °C / 840 °F under a high vacuum.
• All carbides and HSS (M-series and T-series) including powder metal types. Tool, die, and mold steels may be coated if they have been properly tempered prior to coating. Other materials are possible, please inquire.

Map

I-94 Westbound:
Exit #301A - Moorland Rd South
I-94 Eastbound:
Exit #301A-B - Moorland Rd

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