Physical Vapor Deposition (PVD)

Physical Vapor Deposition – also known as PVD Coating – refers to a variety of thin film deposition techniques where solid metal is vaporized in a high vacuum environment and deposited on electrically conductive materials as a pure metal or alloy coating.

As this “line of sight” process transfers the coating material on a single atom or molecule level, it can provide extremely pure and high performance coatings which for many applications are much preferable to electroplating. PVD is used when product requires thin film for a mechanical, an optical, a chemical or an electronic function.

These finishes are also highly resistant to tarnishing, enabling them to be used for a wide range of applications with colors that do not fade. When applied to a base metal, PVD coatings provide hard, wear-resistant surfaces that don’t interact with the materials they cover – dramatically reducing friction and prolonging the life of the part.

This is an environmentally friendly process that can greatly reduce the amount of toxic substances to be disposed of with more conventional types of coating involving fluid precursors and chemical reactions. Techmetals offers roughly 26 different PVD options – perfect for use with medical equipment and firearm production. We offer certifications for Nadcap Chemical Processing, Nadcap Coatings, AS9100D, ISO 9001:2015, ISO 13485:2016, ITAR, and FFL as well as validated processes for the medical industry.
TechCoat 100 (TiN)
TechCoat 100 is a proprietary general purpose coating providing universal improvement for most wear applications. Used within the medical, molding and cutting industries.

TechCoat Med 100 (TiN)
TechCoat Med 100 is a proprietary titanium rich coating providing excellent performance for medical tools and implants. Sample uses include the production of joint components, implants and other medical instruments.

TechCoat DLA 200 (DLC)
TechCoat DLA is a proprietary Diamond Like Alloy coating series utilizing the latest coating technology to provide an extremely effective solution for high wear, high friction and surface roughness problems. Industries utilized include: aerospace, automotive, medical, optics, injection molding, die casting and more.

TechCoat 200 (TiCN)
TechCoat 200 is a proprietary hard purpose coating with a low coefficient of friction. Industries utilize in low-temperature applications for stamping, forming and cutting.

TechCoat 300 (AlTiN)
TechCoat 300 is a proprietary high-temperature, high hardness coating provides increased performance for high-speed machining, stamping and sawing applications.

TechCoat 345 (AlTiN)
TechCoat 345 is a specialty PVD utilized mainly in the Medical industry.

TechCoat 400 (CrN)
TechCoat 400 is a proprietary high performance, hard coating provides increased performance for optimal release characteristics in molding and stamping applications.

TechCoat 500 (ZrN)
TechCoat 500 is a proprietary high performance coating with great lubricity. It provides increased performance within the medical and machining industries.

TechCoat 600 (AlTiCrN)
TechCoat 600 is a proprietary high temperature, high hardness and smooth coating perfect for the machining and forming industries.

PVD Coating Chart

<table>
<thead>
<tr>
<th>Coating Type</th>
<th>Color</th>
<th>Hardness (Hv)</th>
<th>Thickness (µm)</th>
<th>Coefficient of Friction</th>
<th>Max Usage Temp (˚F)</th>
<th>Description</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>TechCoat DLA 200</td>
<td>Charcoal Gray</td>
<td>2500 - 3300</td>
<td>1 - 5</td>
<td>0.10</td>
<td>750˚</td>
<td>Coating with high mechanical hardness and very low coefficient of friction</td>
<td>Aerospace, Medical, Optics, Molding, &amp; Stamping</td>
</tr>
<tr>
<td>TechCoat 100</td>
<td>Gold (TiN)</td>
<td>3100 - 3200</td>
<td>1 - 5</td>
<td>0.55</td>
<td>1100˚</td>
<td>Universal coating for all applications</td>
<td>Medical, Molding and Cutting</td>
</tr>
<tr>
<td>TechCoat 200</td>
<td>Rose (TiCN)</td>
<td>3100 - 3200</td>
<td>1 - 5</td>
<td>0.20</td>
<td>750˚</td>
<td>Coating with high hardness and lower coefficient of friction</td>
<td>Low Temp. Stamping, Forming &amp; Cutting</td>
</tr>
<tr>
<td>TechCoat 300</td>
<td>Charcoal Gray</td>
<td>3100 - 3300</td>
<td>1 - 5</td>
<td>0.70</td>
<td>1600˚</td>
<td>High temperature and high hardness coating that provides increased performance in high speed machining</td>
<td>Machining, Stamping, &amp; Sawing</td>
</tr>
<tr>
<td>TechCoat 400</td>
<td>Silver (CrN)</td>
<td>1800 - 2000</td>
<td>1 - 5</td>
<td>0.30</td>
<td>1300˚</td>
<td>Ductile coating with high release properties</td>
<td>Die Casting, Molding &amp; Stamping</td>
</tr>
<tr>
<td>TechCoat 500</td>
<td>Pale Gold (ZrN)</td>
<td>1900 - 2100</td>
<td>1 - 4</td>
<td>0.40</td>
<td>1050˚</td>
<td>Coating with good lubricity</td>
<td>Medical &amp; Machining</td>
</tr>
<tr>
<td>TechCoat 600</td>
<td>Blue-Gray (AlTiCrN)</td>
<td>3100 - 3300</td>
<td>1 - 4</td>
<td>0.50</td>
<td>1550˚</td>
<td>High temperature, high hardness and smooth coating</td>
<td>Machining &amp; Forming</td>
</tr>
</tbody>
</table>