

Make Your Tools Last With Titanium Based Coatings

With today's coating technologies, you can make your tools last longer, and run harder than ever before. At Mastercut Tool Corp. we offer a full range of coatings including Titanium Nitride, Titanium Aluminum Nitride, and many more. Look below for more information.

Titanium Nitride (TiN) Coating is bright gold in color with a surface hardness reaching 81Rc and a .4 coefficient of friction. Titanium Nitride (TiN) is the most common PVD hard coating in use today. TiN has an excellent combination of performance properties, attractive appearance, and safety (meets FDA requirements for surgical tools and implants as well as food contact applications). TiN has very good corrosion resistance, heat transmission and excellent wear resistance with a wide range of materials including iron based materials, hardened steels and stainless. Forming operations can expect a decrease in galling and welding of work piece material with a corresponding improvement in surface finish of the formed part. Increased tool life can run 3 to 8 times greater with increased speeds and feeds (finished parts per hour); a serious consideration. Longer tool life or greater speeds and feeds depend on the application, coolant, and other considerations.

Hardness: 2800HV
Coating Thickness: 2-4 Microns
Thermal Stability: 550°C or 1000°F



Titanium Carbonitride (TiCN) Coating is medium gray or bronze in color with hardness reaching 90 Rc and a .3 coefficient of friction. TiCN Coating has up to 750 Degree F thermal stability. TiCN offers improved wear resistance to abrasive, adhesive, or difficult-to-machine materials such as, cast iron, aluminum alloys, tool steels, copper, inconel and titanium alloys. As with TiN, feeds & speeds can be increased and tool life can improve by as much as 800% depending on the application, coolant, and other conditions.

Hardness: 3000HV
Coating Thickness: 2-4 Microns
Thermal Stability: 400°C or 750°F

Titanium Aluminum (TiAlN) Coating is purple/black in color with a surface hardness in the upper 80 Rc range with a coefficient of friction less than Titanium Nitride (TiN). TiAlN coating is a high performance coating which excels at machining of abrasive and difficult-to-machine materials such as cast iron, aluminum alloys, tool steels, and nickel alloys. TiAlN's improved ductility makes it an excellent choice for interrupted cutting operations. Its superior oxidation resistance provides unparalleled performance in high temperature machining. TiAlN does not exhibit edge brittleness and can be used for interrupted cuts without chipping. TiAlN coating should be targeted at applications that generate the highest heat level at the tools cutting edge.

Hardness; 2800 HV.
Coating Thickness; 2-4 Microns.
Thermal Stability; 750°C or 1350°F.

Material to Machine	TiN	TiCN	TiAlN	AlTiN
Aluminum, Low Silicon<10%		●	●	
Aluminum, High Silicon>10%		●	●	
Copper, Copper Alloys	●	●	●	
Ductile, Malleable Cast Iron	●	●	●	●
Carbon Steel, 1000 Series	●	●	●	●
Alloy Steel, 4 to 9000 Series	●	●	●	●
Tool Steel	●	●	●	●
SS Steel, 300 Series	●	●	●	●
SS Steel, 400 Series	●	●	●	●
SS PH Series	●	●	●	●
Titanium, Titanium Alloys	●	●	●	●
Nickel, Nickel Alloys, Cobalt	●	●	●	●
Wood, Paper	●	●	●	
Composites, Plastics	●	●	●	●

Why use a Coating?

- High speed tool's life increases to 3 to 30 times.
- Carbide tools life increased 2 to 5 times . Deposition temperatures as low as 480°-840°F (250°-450°C) protect carbide's binder from deterioration, by comparison with the CVD process applied at more than 1,850°F (1,000°C)
- Isolates the tool from the part, avoids edge buildup and tool cratering.
- Reduced friction against workpiece and chips, reduced spindle torque, less vibration, better finish. Speed and Feed increased from 10 to 50 percent.
- Reduces or eliminates coolant (with specific coatings)
- Repeatable, stable Performance of the coatings between batches.