

Coating

Often times, there is a need for a thin film coating on cutting tools due to the heat generated from the machining operation, as well as the wear caused by abrasion, and the potential for chip adhesion. The proper coating (applied correctly) increases surface hardness while lowering the friction coefficient and thermal conductivity. It also provides a chemically inert surface. Fortunately, Guhring's Coating Division has more than enough knowledge and experience to create coatings that will maximize tool and wear part productivity, which in turn provides cost effectiveness to our customers. Over the years, we have seen significant increases in tool life and part quality. We've also seen reduced friction and heat buildup, high resistance to edge buildup, as well as galling and fissure propagation - all thanks to our coating development and application processes. Not convinced? Contact your Guhring representative today and learn about our free coating trial policy!

Extending Your Investment



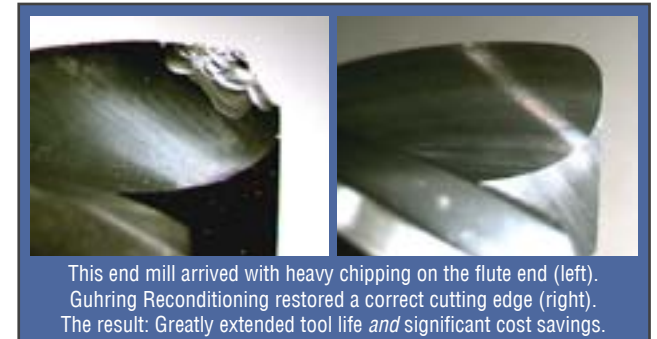
	Type	Identifying Color	Coating Process	Coating Temperature	Layer Structure	Thickness (µm)	Nano-hardness (HV 0.05)	Friction Coefficient (fetting)	Thermal Stability
TiN Titanium Nitride	Hard • Wear-resistant	Gold	PVD Physical Vapor Deposition	930° F 500° C	Monolayer	1.5 - 4.0	2400	0.50	1100° F 595° C
TiCN Titanium Carbonitride	Hard • Wear-resistant	Gray Violet	PVD Physical Vapor Deposition	930° F 500° C	Gradient	1.5 - 5.0	3000	0.25	840° F 450° C
TiAlN Titanium Aluminum Nitride	Hard • Wear-resistant	Black Violet	PVD Physical Vapor Deposition	930° F 500° C	Monolayer	1.5 - 4.0	3300	0.50	1470° F 800° C
FIREX® Special TiN-TiAlN	Hard • Wear-resistant	Red Violet	PVD Physical Vapor Deposition	930° F 500° C	Multilayer	1.5 - 5.0	3000-3300	0.50	1470° F 800° C
nano-FIREX® Special TiN-TiAlN	Hard • Wear-resistant	Red Violet	PVD Physical Vapor Deposition	930° F 500° C	Multilayer	1.5 - 4.0	3000-3300	0.50	1470° F 800° C
Super-A™ Aluminum Titanium Nitride	Hard • Wear-resistant	Dark Gray	PVD Physical Vapor Deposition	930° F 500° C	Monolayer	1.5 - 4.0	3800	0.60	1650° F 900° C
nano-A™ Aluminum Titanium Nitride	Hard • Wear-resistant	Dark Gray	PVD Physical Vapor Deposition	930° F 500° C	Monolayer	1.5 - 4.0	3800	0.60	1650° F 900° C
Moly-Glide® MoS ₂ -Based	Soft • Lubricating	Silver	PVD Physical Vapor Deposition	305° F 150° C	Monolayer	1.0	n.a.	0.10	1470° F 800° C
nano-Si®	Hard • Wear-resistant	Bronze	PVD Physical Vapor Deposition	930° F 500° C	Multilayer	1.5 - 5.0	5500	0.55	1470° F 800° C

Reconditioning

Guhring can restore worn standard, special carbide and PCD drills, step drills, reamers, and end mills to their original factory quality, condition and performance. We also recoat in the same facility that we recondition, allowing for quicker turn-around and excellent quality control. High precision remanufacturing delivers longer reground tool life and often more regrinds per tool, resulting in significant cost savings in terms of both tooling and machining expenses.

Utilizing the same high-precision CNC grinding machines that are used in Guhring's manufacturing plants, our Reconditioning Division is well-equipped to restore standard and special carbide and PCD tooling to its original factory condition.

Guhring is able to provide factory reconditioning for our own drills, step drills, end mills, and reamers – and we can provide the same high-quality service for other manufacturers' tooling as well. We even offer van pickup and delivery service in select areas.



This end mill arrived with heavy chipping on the flute end (left). Guhring Reconditioning restored a correct cutting edge (right). The result: Greatly extended tool life and significant cost savings.

Guhring Coating and Reconditioning Facilities:

Brookfield, WI

Huntington Beach, CA

New Hudson, MI

Bloomfield, CT

Visit <http://www.guhring.com/PS/Reconditioning.htm> for more information!