

# GUHRING



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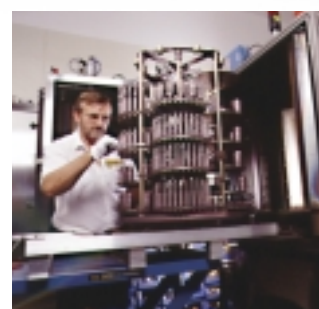


RECONDITIONING & COATING

**GUHRING**

## Reconditioning & Coating Services

- Factory-direct quality, performance and reliability



To ensure that customers enjoy maximum tool life from original grind through multiple regrinds, the **GUHRING RECONDITIONING SERVICE** restores used standard and special tooling to its original factory quality, condition and performance. The service utilizes the same high-precision, modern CNC grinding machines and advanced coating equipment as that used in GUHRING'S main manufacturing plants, ensuring consistent quality and tight tolerances. 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. The service is fast, convenient and cost-effective. The quality is unmatched. Competitor tooling is welcome.

Similarly, **GUHRING COATING SERVICES** strives to maximize cutting tool and wear part performance through the proper application of advanced PVD coatings. As a cutting tool manufacturer, GUHRING offers a level of technical expertise without equal in the industry. GUHRING

*Daily pickup and delivery service available throughout WI, IL, IN & MI*

was the first to introduce TiN coating to cutting tools in 1980 and has remained



a global leader in developing and applying new coating technology. Performance benefits of the latest GUHRING coatings include: significantly increased tool and part life; reduced friction and heat buildup; and high resistance to edge buildup, galling and fissure propagation. GUHRING COATING SERVICES can maximize your tool and wear part productivity and cost effectiveness by matching the following high performance coating with your application:

**Call Guhring today at 1-800-776-6170.**

	TiN Titanium Nitride	TiCN Titanium Carbonitride	TiAlN Titanium Aluminum Nitride	FIREX™ Special TiN-TiAlN Multilayer	AlTiN Aluminum Titanium Nitride	MolyGlide™ MoS <sub>2</sub> -Based
Type	Hard • Wear-resistant	Hard • Wear-resistant	Hard • Wear-resistant	Hard • Wear-resistant	Hard • Wear-resistant	Soft • Lubricating
Identifying Color	Gold	Gray Violet	Black Violet	Red Violet	Dark Gray	Silver
Coating Process	PVD Physical Vapor Deposition	PVD Physical Vapor Deposition	PVD Physical Vapor Deposition	PVD Physical Vapor Deposition	PVD Physical Vapor Deposition	PVD Physical Vapor Deposition
Coating Temperature	930 °F 500 °C	930 °F 500 °C	930 °F 500 °C	930 °F 500 °C	930 °F 500 °C	305 °F 150 °C
Layer Structure	Monolayer	Gradient	Monolayer	Multilayer	Monolayer	Monolayer
Thickness (µm)	1.5-5.0	1.5-5.0	1.5-5.0	1.5-5.0	1.5-5.0	1.0
Nanohardness (Gpa)	24	30	33	30-33	38	n.a.
Friction Coefficient (Fetting)	0.50	0.25	0.50	0.50	0.60	0.10
Thermal Stability	1100 °F 595 °C	840 °F 450 °C	1470 °F 800 °C	1470 °F 800 °C	1650 °F 900 °C	1470 °F 800 °C
Application Data	Broad application Cutting, forming & injection molding	High toughness & shock resistance for punching, stamping milling, hobbing & tapping	High hardness & heat resistance for drilling, turning & dry high speed machining	Broad application High toughness, hardness & heat resistance	Increased Al-content delivers very high heat resistance for hard machining (>40 HRC), high speed machining, & dry high speed machining	Significantly increases tool/wear part lubricity, withstands high temperatures, & can be applied over hard coatings

# GUHRING



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