PVD PROPERTIES AND APPLICATIONS

	CatArc® TiN	CatArc® ZrN	CatArc® TiCN	CatArc® CrN	CatArc® AlTiN	CatArc® Black Cat	Sputtered TiAlN	Sputtered TiB2
Coating Material	Titanium Nitride	Zirconium Nitride	Titanium Carbonitride	Chromium Nitride	Aluminum Titanium Nitride	Aluminum Titanium Chromium Carbonitride	Titanium Aluminum Nitride	Titanium Diboride
Micro Hardness (Vickers)	2800	2450	3200	2250	3400	3500	3600	3000
Coefficient of Friction	.4 – .5	.50	.40	.3 – .5	.40	.40 – .45	.45	.45
Temperature Stability	500 °C (932 °F)	565 °C (1049 °F)	400 °C (752 °F)	700 °C (1292 °F)	900 °C (1652 °F)	926 °C (1700 °F)	800 °C (1472 °F)	850 °C (1562 °F)
Standard Thickness in Microns	1.0 – 2.0	1.0 – 2.0	1.0 – 2.0	1.0 – 2.0	2.0 – 4.0	2.0 – 5.0	2.0 – 5.0	2.0 – 5.0
Application Range in Microns	1.0 – 5.0	1.0 – 5.0	1.0 – 5.0	1.0 – 5.0	2.0 – 4.0	2.0 – 5.0	2.0 – 5.0	2.0 – 5.0
Color	gold	pale gold	dark gray	silver-gray	gray-black	black	gray	bright silver
Description	Low deposition temperature of 400°F makes it ideal for temperature sensitive tool steels. Ideal for most general purpose machining, medical tools, injection molding and moderate forming applications.	Low deposition temperature of 400°F makes it ideal for temperature sensitive substrates. Attractive light gold color and is used in wear-resistant decorative applications and medical tools. Due to its high lubricity, it is a good candidate for machining non-ferrous metals such as titanium, brass, copper and aluminum.	Hard general purpose coating deposited using our patented switched cathodic arc process. TiCN is harder than TiN and is well suited for medium severity cutting applications, primarily interrupted cutting.	Tough lubricious coating deposited using our patented switched cathodic arc process. The very low deposition temperature of 400°F makes it ideal for temperature sensitive materials. CrN is an extremely tough coating and is ideal for metal-forming/stamping and similar applications.	Super-hard coating with high temperature resistance developed specifically for dry machining applications.	Breakthrough PVD coating engineered for today's high velocity projectile delivery systems. It not only has corrosion shield but also thermal stability. Critical protection of high precision, specialty weapons and accessories. Non reflective, optimum wear resistance and lubricity.	Hard and abrasion resistant coating with high temperature resistance developed specifically for high speed and dry machining applications. It is recommended for the machining of work hardening stainless steels, cast iron and hardened die steels up to approximately 60 HRc.	High performance coating developed specifically for high speed machining of aluminum and aluminum alloys. The coating chemistry has a low aluminum affinity, thereby eliminating edge build-up, the primary cause of failure during aluminum machining.

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Innovative Coatings for all applications needing reduced wear, improved lubricity, and corrosion resistance.

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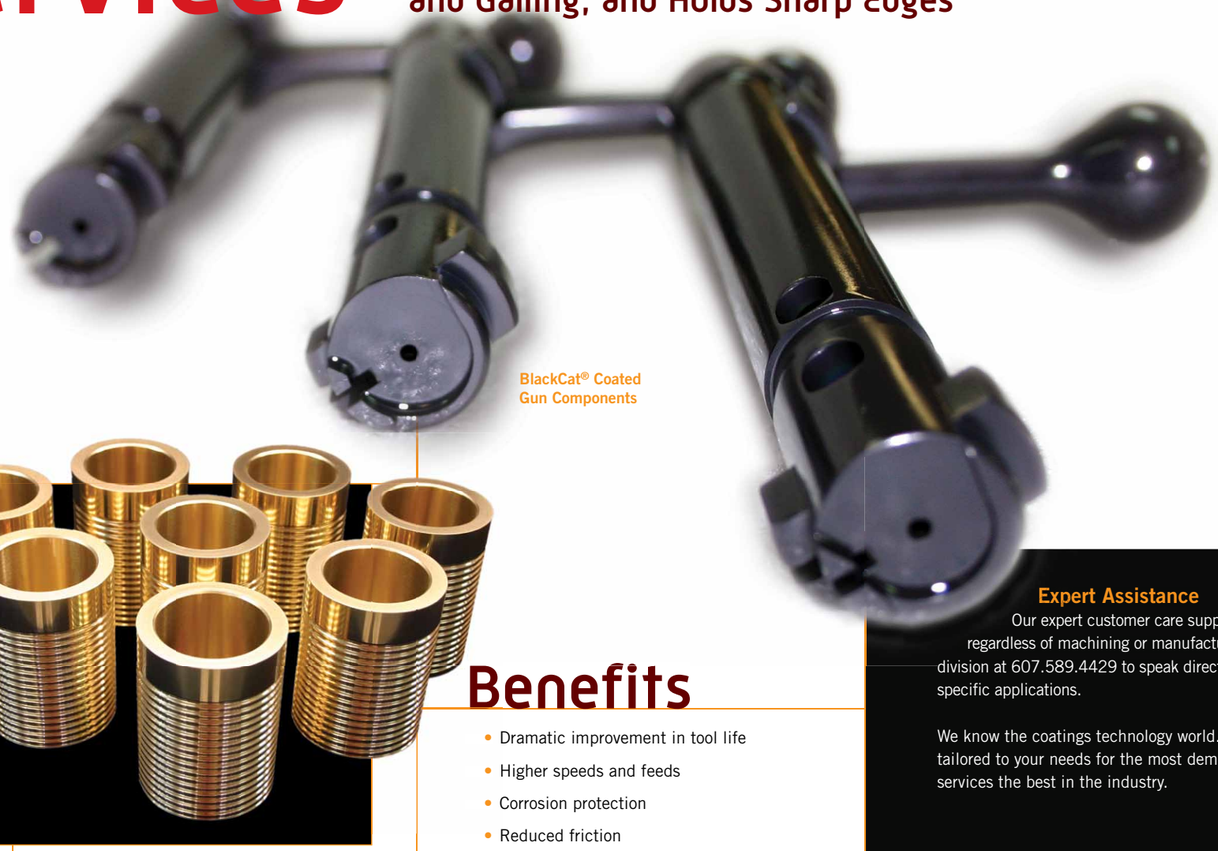


BlackCat® Coated Gun Components

Innovative Coatings for all your hard coating needs.

At VTI, Physical Vapor Deposition coating services are our passion. Our coating services are designed for the medical, automotive, aerospace, electronics, lighting, decorative/novelty/awards, packaging, sporting goods, appliances, toys, tooling, molds, and dies-- every conceivable place where coatings can be applied, we're creating coatings that meet the needs of all types of industries.

Our proprietary BlackCat™ Gun Coatings were specially designed for the rigors of military combat firearms. We offer PVD coatings with different finishes and colors which impart dramatically improved corrosion resistance coupled with extremely high service temperatures.

Our patented CarArc® and sputtering coating technologies offer a wide range of options in the hard coating category. With CatArc® ceramic coatings, we can dramatically extend tool and appliance life by reducing friction and improving thermal isolation, which is especially important in injection molding applications.

Our high-energy sputtering technology is primarily used in metal cutting tool applications. These smooth, very hard coating compositions include combinations of AlTiN, TiN, TiCN, and TiB2, and show greatly reduced wear, and exhibit outstanding longevity.

Through sputtering, evaporation, or cathodic arc, our coating technology can be applied to a wide range of substrates to solve a multitude of problems related to wear, corrosion, temperature, and friction.

Why VTI?

Service

- Our standard turn-around time is 3-5 business days. We offer expedited next-day service as well as time-critical same-day service for parts that need immediate attention.

Technology

- VTI's patented CatArc® switched-arc coating technology produces denser and smoother coatings than our competition.
- We also offer coatings produced via DC Magnetron Sputtering which have outstanding performance in certain metal cutting/punching/stamping applications.

Quality

- We are ISO 9001:2008 Certified. In addition we have passed numerous audits which allow us to supply the automotive and truck industries in the USA and in Europe, the medical equipment industry, and the aerospace industry.
- We hold a Federal Firearm License and are ITAR Registered so we can support our military and law enforcement communities.

Versatility

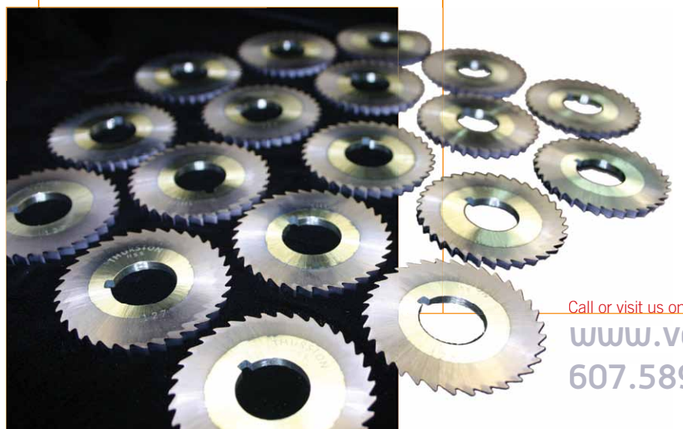
- We develop specialty coatings when needed. Whether it is corrosion protection for firearms, or high heat performance in engine exhaust components, we can tailor coatings to applications.

Reliability

- VTI has been in the PVD Coating Services business since 1986. We have successfully served thousands of customers by coating millions of parts.

TiN Coated Canning Dies

Saw Blades Coated with TiAlN



Benefits

- Dramatic improvement in tool life
- Higher speeds and feeds
- Corrosion protection
- Reduced friction
- High-heat resistance
- Decorative colors
- Minimal dimensional changes
- Low coating temperatures for sensitive parts
- Strip & recoat multiple times

Call or visit us online

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607.589.4429

Unsurpassed Customer Service

Through careful and committed input from our engineering team, VTI coatings services offer superior support and service to all our clients. With hundreds of combined years of engineering and coatings services experience, our support team can manage and track every aspect of your project from initial order intake, to final delivery, even over-seas.

Expert Assistance

Our expert customer care support team will guide your coating selections regardless of machining or manufacturing application. Contact our Coating Services division at 607.589.4429 to speak directly with one of our team members regarding your specific applications.

We know the coatings technology world. No one is better suited than VTI to provide a solution tailored to your needs for the most demanding projects, at a value that makes our coatings services the best in the industry.

Drill Bits Mounted In Planetary Tooling for Uniform TiN Coating