



#### **BETA TiN**

The gold *Titanium Nitride* has had much success in a wide application of machining and tooling. It is an excellent, all-around, cost effective and improved to even a higher level of performance than other coatings. BETA coated parts can last up to five times longer than tools uncoated, and improves the wear resistance of the tool and allows for higher operating speeds. The new generation of BETA offers new solutions for new applications.



#### **ALPHA TiCN**

The blue-gray *Titanium Carbon Nitride* is a new functional hard coating that achieves superior results when machining tool steels and steels over 40 HRC. It offers an optimal combination in its layering structure of hardness, toughness and anti-friction characteristics. ALPHA recommended for high-shock resistance such as tapping, interrupted cuts in drilling, milling, and heavy-duty forming operations, such as punching stamping and broaching.



#### **ZETA ZrN**

The white gold *Zirconium Nitride* is recommended as an alternative to titanium nitride when extra lubricity is needed. It is an excellent functional coating for drilling, forming, punching and machining aluminum, Brass and copper. Like the other coatings, ZETA improves the wear resistance of the tools or wear parts. Also used for many decorative applications.



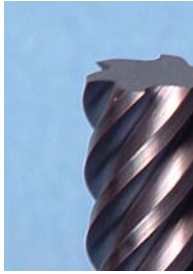
#### **GAMMA Ti<sub>2</sub>N**

The advantage of this silver *Titanium Nitride* based coating is the improvement of the tribologic behavior of the coated tool in front of "cold welding" well known in the cutting and forming of stainless steels as well as a similar problems with milling, drilling, turning other alloys over 40 HRC such as Inconel. GAMMA offers a fracture toughness which means extended lifetime for the tools.



#### **DELTA CrN**

The Silver-Gray *Chromium Nitride* is characterized by a favorable combination of resistance to corrosion and oxidation. DELTA CrN exhibits much higher hardness and coating adhesion than chromium coating or platings; corrosion resistance is at least as good as with hard chromium for a given thickness.



### UNIVERSAL *TiAlN*

UNIVERSAL, a violet *Titanium Aluminum Nitride* is recommended when extra hardness and heat resistance are required, as when machining abrasive materials such as cast iron, titanium and high silicon-content aluminum alloys. During cutting, an oxide layer forms over the TiAlN coat, providing extremely high heat resistance. The UNIVERSAL coating makes machining at higher speeds possible and smaller amounts of coolant needed.



### UNIVERSAL 4x *TiAlCN*

UNIVERSAL 4x, a new generation of hard tool coating for premium roughing and finishing endmills. This *Titanium Aluminum Carbon Nitride* is a high performance coating that combines the properties of TiN (lubricity, universal applications), TiCN (wear and abrasion resistance, superior fracture toughness and shock resistance) and TiAlN (super high hardness and impact resistance, excellent adhesion for heavy chip loads, reduced friction and superior wear protection, temperature and oxidation stability).



### UNIMAX *AlTiN*

UNIMAX is a powerful coating available for high speed, high velocity machining of today's hard to machine materials. This specially designed *Aluminum Titanium Nitride* coating has the ultimate resistance to heat and premature wear when machining at high speeds and feeds. This gray-back coating features a unique microstructure that allows freer cutting and better chip evacuation in dry machining applications.



### UNICHROME *AlCrN*

UNICHROME is newest high-performance coating added to our Universal Series. Once again pushing the envelope for high a high level of oxidation resistance and hot hardness. This special combination of elements give this coating excellent adhesion properties which lead to high wear resistance under severe machining conditions. Recommended for steel in the 40 to 50 HRC range and has proved itself in a wide range of applications.



### SIGMA *DLC*

SIGMA DLC (Diamond-Like Carbon) is a form of amorphous carbon materials that display unique properties of diamond. It is used to prevent wear due to its tribological properties. Making it suitable for use in applications that experience extreme contact pressure, both rolling and sliding contact. DLC is often used to prevent wear on razor blades and metal cutting tools. DLC is used in bearings, cams and shafts. The coating reduces wear during the "break-n" period, where drive train components may be starved for lubrication.