

Bright finish



Especially for the machining of wrought and cast aluminum alloys with a high silicon content, uncoated drills offer a very good machining performance. In order to counter adhesive (formation of built-up edges), these tools are optimally suited to this field of application thanks to a special geometry combined with a high surface quality in the point thinning, flute and clearance areas.

Steam tempered/nitrided surface finish



A steam tempered surface finish provides an improved corrosion protection as well as an improved tribological behavior of the tools thanks to the oxidation of the surface area (approx. 3 to 10 μm). Nitriding the land is recommended for abrasive applications, it increases the hardness of the surface on the land and therefore improves wear resistance of the tool. However, using hard material / soft material coatings often provide better results, this type of surface treatment is becoming increasingly less important.

TiN coating



Max. application temperature: <math><600^\circ\text{C}</math>
 Color: Golden yellow
 Structure: Single-layer
 Hardness: 2300 HV0.05

Introduced by Guhring at the beginning of the 1980's, TiN-coating is applied to HSS and carbide for drilling operations as a cost-efficient general purpose coating.

FIREX®/nano-FIREX® coating



Max. application temperature: <math><800^\circ\text{C}</math>
 Color: Violet
 Structure: Multi-layer
 Hardness: 3300 HV0.05

FIREX® and nano-FIREX® coatings contain aluminum, titanium and nitrogen. These coatings were introduced towards the end of the 1990's and are a further development of the TiN-coating. They excel thanks to increased hardness and good thermochemical resistance, they are suitable for HSS and carbide.

nano-Ra coating



Max. application temperature: < 800°C
 Color: Pale golden
 Structure: Multi-layer
 Hardness: 3300 HV0.05

The TiN/TiAlN multi-layer structure of Raptor is the key component for the good performance when machining steel. Thanks to the additional friction reducing top layer coating, based on zircon, the performance could now be further extended for steels that tend to adhere during machining (i.e. ferritic, austenitic and Duplex steels).

TiAlN coating



Max. application temperature: <800° C
 Color: Violet
 Structure: Single-layer
 Hardness: 3300 HV0.05

The TiAlN coating displays similar characteristics to FIREX and nano-FIREX and with its single-layer structure is mostly applied in the field of micro-precision drills.

nano-A coating



Max. application temperature: <900° C
 Color: Blue violet
 Structure: Multi-layer, nano-structured
 Hardness: 3300 HV0.05

TiAlN based nano-A has proven itself in the machining of stainless steels and is suitable for drilling cast iron, nickel based alloys and cobalt chrome alloys. Thanks to its nano-layered structure the fracture growth is delayed. Furthermore, thanks to its adapted composition it possesses a higher thermochemical resistance than for example TiAlN.

Sirius coating



Max. application temperature: < 900°C
 Color: Pale golden
 Structure: Multi-layer, nano-structured
 Hardness: 3400 HV0.05

Sirius, essentially based on AlTiN is especially suitable for the machining of stainless steels. Thanks to the nano-structured design, it displays good hardness and toughness. The zircon containing top layer coating is to largely eliminate chemical reactions with the material and therefore encourage chip evacuation.

nano-Si coating



Max. application temperature: <math><800^{\circ}\text{C}</math>
 Color: Bronze
 Structure: Multi-layered nano-composite
 Hardness: 5500 HV0.05

The nano-Si coating belongs to the group of Nano-composites. The micro-structure features extremely fine TiAlN nano-crystals bedded into a glass-like, high temperature resistant silicon nitride matrix. This results in a high hardness especially making the nano-Si coating the first choice for hardened steels and cast materials.

Endurum coating



Max. application temperature: <math><800^{\circ}\text{C}</math>
 Color: Copper
 Structure: Multi-layered nano-composite
 Hardness: 4000 HV0.05

Endurum coating, another coating of the Nano-composite family, this was specifically designed for the machining of carbon, free-cutting and manganese alloyed steels.

Zenit coating



Max. application temperature: <math><700^{\circ}\text{C}</math>
 Color: Pale gold
 Structure: Multi-layer, nano-structured
 Hardness: 2500 HV0.05

The nano-structured Zenit coating was specifically optimized for the machining of titanium alloys. The special structure as well as the composition contribute to a significant reduction of tribochemical wear and therefore make it a true specialist. In parallel it also achieves good results when drilling aluminium cast alloys with moderate silicon content.