

High Performance Coatings for Drilling Applications

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In addition to standard coatings for drilling applications (TiN, TiAlN, TiCN...) IonBond offers a targeted range of high performance coatings from our Innovative Performance Coating (IPC) portfolio specifically designed for drilling applications.

IPC coatings are designed to offer properties and performance tailored to respond to the needs of specific drilling conditions to provide maximum productivity and optimal machine-tool use.



Deep Drilling with IonBond Maximizer Top

Deep hole drilling applications are typically applications in which the drilling depth is equal to or surpasses 3 times the drill diameter. Deep drilling requires a coating which exhibits a low coefficient of friction (to reduce torque and improve chip evacuation), good toughness and excellent resistance to high temperatures. Maximizer Top has been designed with these properties in mind.



Hard Drilling with IonBond PerformDrill

When drilling hard materials (especially those of exhibiting a hardness of 50 HRC and above), the key properties required in a coating are abrasion resistance, toughness and excellent shear strength. IonBond PerformDrill allows the user to reduce machining costs through faster drilling and less tool changeovers. IonBond perform drill is ideal for drilling die steels and cast irons.



Performance Drilling of Plastics and Light Alloys with IonBond TriboCut

The extreme smoothness of IonBond PerformDrill allows customers to drill gummy materials such as plastics, titanium and light alloys without having to worry about material sticking to the drill surface or blocking chip flow. IonBond TriboCut is also very hard, which makes it suitable for drilling certain abrasive materials as well.

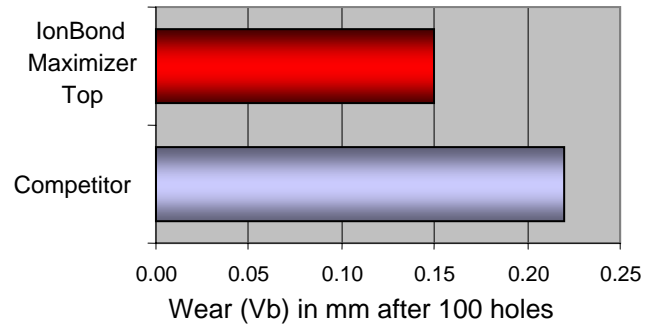
IonBond has over 50 coating centers worldwide. To find the coating center closest to you, please visit www.ionbond.com or write us info@ionbond.com.

Performance Results - Drilling

IonBond Maximizer Top

Tool: Solid carbide drill Ø 8mm
Workpiece: Steel 1100 N/mm2
Cutting Data:
 Depth = 4x diameter (32mm)
 $V_c = 80$ m/min
 $f = 0.15$ mm/revolution
 Water soluble coolant

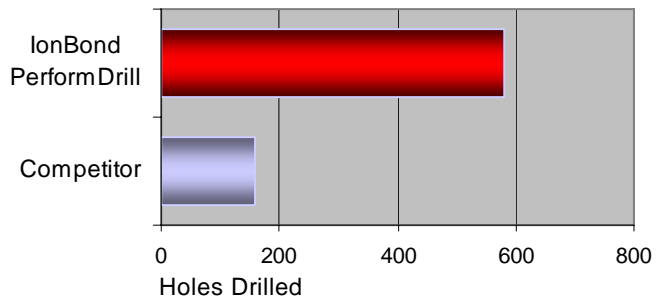
Drilling Hardened Steel



IonBond Perform Drill

Tool: Solid carbide drill Ø 6mm
Workpiece: Cold Work Die Steel (D2, SKD11)
Cutting Data:
 $V_c = 20$ m/min
 $V_f = 64$ mm/min
 (0.06 mm/revolution)
 Water soluble coolant

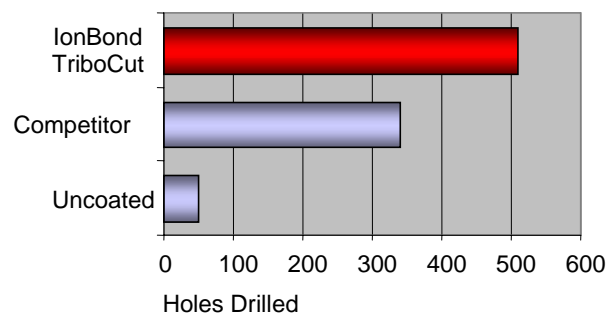
Drilling Cold Work Die Steel



IonBond TriboCut

Tool: Solid carbide drill Ø 3mm
Workpiece: TiAl6V
Cutting Data:
 $V_c = 30$ m/min
 $V_f = 95$ mm/min
 Water soluble coolant

Drilling TiAl6V



| IonBond Coating | Coating Structure | Thickness (microns) | Hardness (HV 0.05) | Oxidation Temp (°C / °F) | Coef. of Friction vs. Steel, dry | Color |
|-----------------------|--------------------|---------------------|--------------------|--------------------------|----------------------------------|-------------|
| IonBond Maximizer Top | AlTiN - multilayer | 3 | 3300 | 900 / 1650 | 0.3 | Gray Purple |
| IonBond PerformDrill | TiSi based | 2 ± 0.6 | 3600 | 1200 / 2190 | 0.3 | Bronze |
| IonBond TriboCut | Me-DLC | 2 to 4 | 2600 | 350 / 660 | 0.02 | Black |

Coating selection is application specific and selection criteria are dependent on process parameters. An IonBond Sales Engineer will help you choose the best coating to suit your needs. IonBond Global Headquarters are located in Olten, Switzerland. www.ionbond.com.