TB Coating Technical Data

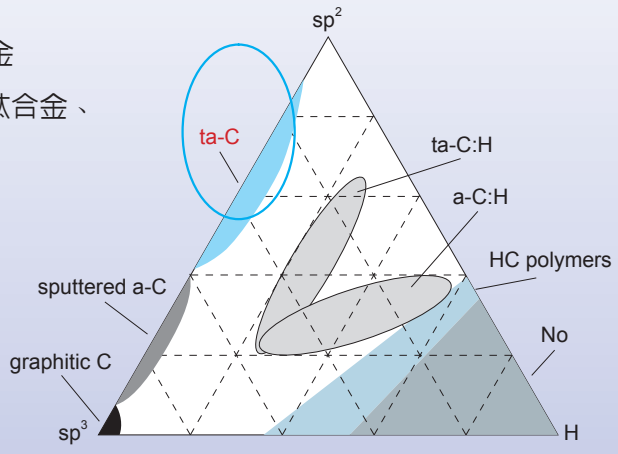
Tetrabond Diamond Coating TB超硬類鑽膜

A different type of DLC 並不是一般的類鑽膜

Super high lubrication & Super low friction coefficient
New PVD Nano Technology
The tool is long life to be surprised because "TB" hardness to near the the nature diamond coating
Swiss & Speed Tiger Technological Cooperation.

超高潤滑性・超低摩擦係數
最新奈米物理氣相沉積科技
超高硬度・超長壽命・惟有CVD鑽石薄膜可相比擬
泛虎與瑞士 Ionbond 技術合作開發

- Nano-composite coating which is improved the lubricative property without making the abrasive property lower by new coating material of nano-crystal.
- Excellent cutting is reached in machining non-ferrous materials, especially in aluminum with over six multiple in machining efficiency. Long tool life and precision machining in PCB boards, Brass, Titanium, Ceramics, Fiberglass etc.
- Dry cutting applicable, because of less cutting heat by improving friction property very much and wet cutting applicable.
- 奈米複合塗層採用奈米晶格靶材，大幅改善潤滑效果，有效的降低摩擦系數並且維持更好的耐摩耗性。
- 出色地應用在非鐵金屬加工，尤其是在鋁合金加工效率在6倍以上，並且在PCB板、銅、鈦合金、陶瓷形成超長刀具壽命和高品質加工。
- 摩擦係數大幅改善，形成較低的切削溫度，所以乾式切削可行，濕式切削亦可行。



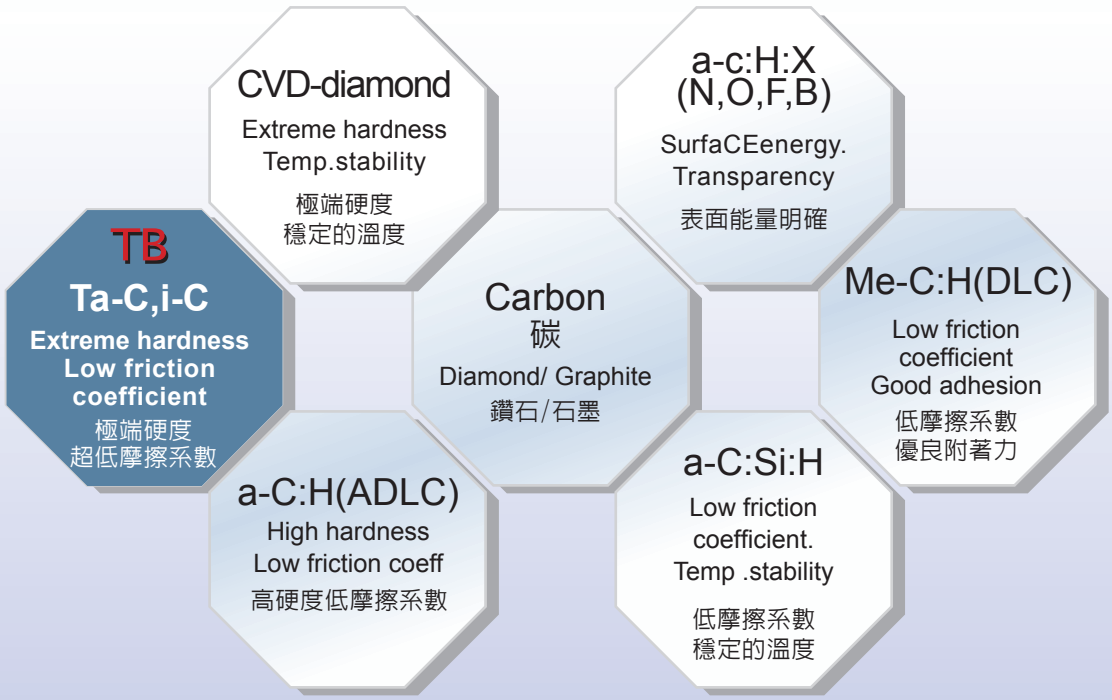
TB Coating

TB超硬類鑽膜 系列

DLC coatings are generally deposited by five methods, each having different properties :
DLC 薄膜有5種不同的沉積方法，而每一個各有不同的特性：

		TB Ta:C	PVD a:CH	PVD Me:CH	CVD	PaCVD
Deposition temp	沈積溫度	under 150 C	under 200 C	under 200 C	over 900 C	under 200 C
Range of substrates	基材限制	Broad	Broad	Broad	Limited	Broad
Oxidation temp	氧化溫度	500-1000 C	350 C	300 C	700 C	300 C
Adhesion	附著力	Very good	Good	Very Good	Excellent	Good
Smoothness	平滑度	Good	Very good	Good	Good	Excellent
Hardness (GPA)	硬度	60-95	25	10~15	40-90	20-40
Coefficient of friction	摩擦係數	<0.1	<0.1	0.15	<0.4	<0.1
Hydrogenated	氫化	No	Yes or No	Yes	No	Yes
Metal content	金屬親和性	No	Yes	Yes	No	No

All DLC coatings are not equal：especially on Hardness and Oxidation
各種類鑽膜都有不同的特性，尤其是硬度和氧化溫度

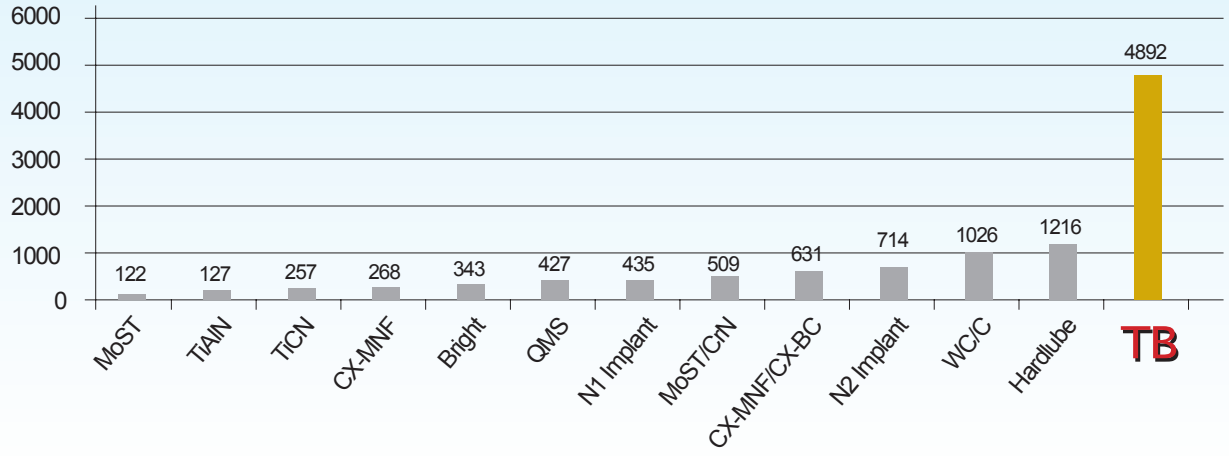


TB Coating Technical Data

Performance and cost savings - Dry Drilling
節省成本和高性能－乾式鑽孔

TB exhibits
outstanding performance
in machining aluminum!*
TB塗層在加工鋁件有著優異的表現

Dry Drilling in A-319 Aluminum - pilot holes with cold-air 3500 rpm
and 15 ipm / D13227A drills - Average number of holes.
鋁合金（A-319）乾式鑽孔－氣冷－3500rpm－15ipm/D13227A－平均鑽孔數



TetraBond Performance
TB 類鑽石完美的表現在非鐵材質的加工

TETRABOND is an excellent choice for machining non-ferrous materials such as:
TB 類鑽石薄膜非常出色的表現在機器加工非鐵金屬材質上

- High silicon content aluminum alloys 高矽鋁合金
- Aluminum magnesium matrix materials 鋁合金
- Titanium 6Al4V 鈦金屬
- Epoxy resins 環氧樹脂
- Fiberglass and composites 玻璃纖維和合成
- Plastic 塑膠
- Graphite 石墨
- Brass and bronze 黃銅和青銅
- Ceramics... 陶瓷

TB Coating

TB超硬類鑽膜 系列

TETRABOND Advantages.
TB 薄膜的優勢

- No substrate preparation required 不必特別選擇基材
- Suitable for HSS and carbide cutter 適合高速鋼和碳化鎢工具
- Able to strip and recoat without damaging the substrate 沒有任何有害物質，非常環保，且容易再塗層
- Thin coating maintains sharp edges 非常薄的膜厚可以保持工具銳利

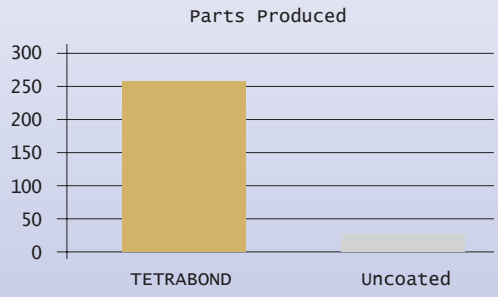
TETRABOND reduces manufacturing cost through:
TB類鑽石薄膜可以大幅降低製造業成本

Higher Speeds & Feeds 高轉速和高進給	→	Improve productivity 增加生產效率
Reduced Tool Inventory 減少庫存工具	→	Tool cost savings 降低工具成本
Longer Tool Life 較長的工具壽命	→	Reduced downtime 減少停機時間
Improved Part Quality 精良的工件品質	→	Less scrap 較少的毛邊

Performance and cost savings Rough turning Titanium 6AL 4V
性能和節省成本：鈦合金 6AL 4V的車削

Insert WNMG 431 T-F IC20 Work material：Titanium 6AL 4V
刀片WNHG431 T-F IC20、被切削材質：Titanium 6AL 4V

- Speed：800 rpm → 轉速：800 rpm
- Feed：0.011 fpr → 進給：0.011 fpr
- Depth of cut：0.080 inches → 深度：0.080 英吋



TETRABOND coated tools achieved over eight multiple tool life over uncoated tools
相較其它無鍍層的刀具，TB塗層刀具效能多了8倍