

大寶鈦金科技股份有限公司
TAIHO COATING SERVICE CO., Ltd.



PVD

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公司概要

Company Profile

關於鈦金 About us

設立 Established	2011年7月 July, 2011	董事長 President	石川則男 Ishikawa Norio
資本 Capital	7000萬元 NT. 70 Million	事業內容 Business Profile	切削刀具、模具、 部品表面處理。 Surface treatment for Cutting tools, Punches.
從業人員 Employees	42人 42		

2011年大寶鈦金科技(股)公司由大寶精密工具(股)公司、日本OSG(株)會社、日本OCS(株)會社共同投資成立，移轉OSG(株)製程技術，是一間專業的鍍膜公司。以“客戶至上”及“品質為大寶鈦金的生命”之精神，立志成為業界中一流的公司。透過總公司的技術指導、研發等支援，和客戶一同成長、一起面對日漸嚴峻的經營環境挑戰。在品質、納期、成本及服務上，不斷的砥勵自己進步並期許成為客戶最佳的工作伙伴。同時、我們也期待各位的持續支持、指導，並有機會向各位服務。

董事長 石川則男

TAIHO Coating Service Co.,Ltd. was established in 2011, as a subsidiary of OSG Corporation which fund by OSG Corporation, TOSG Corporation, OSG Coating Service. We have been advancing the coating technology, which had been developed by OSG Corporation. TCS always thinks it as the top priority to meet customer needs and aims to become the top in quality, delivery time, and cost. Under a rapidly changing society, our business environment is getting severer. To enhance our competitiveness under such a circumstance, we constantly develop and improve our original technologies to support our customers for the the top in quality, delivery time, and cost. We look forward to your continued support.

Ishikawa Norio, President

特長 Characteristics

專精於切削刀具類、模具類及零件類之PVD表面處理。

Various coating are available for all kinds of Components、Dies and Cutting tools.

依客戶需求，提供耐高溫、平滑、高硬度之高品質鍍膜。

Customization for High-quality coating in High-temperature, Smooth Surface and Wear resistance.

交貨期快速、品質穩定。

Stable quality and quick, punctual delivery.

PVD設備 PVD Equipment

電子束蒸鍍設備：表面平滑之抗熔着鍍膜。
Electron-beam method : Smooth coating with superior welding resistance.

電弧式蒸鍍設備：耐磨、耐氧化的多元素複合鍍膜。
Arc Ion Plating method : coating by applying a compound substance with excellent wear and oxidation resistance.

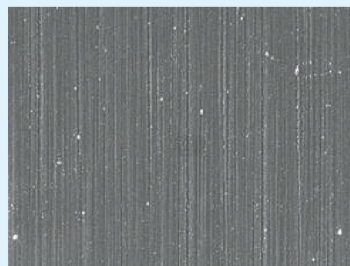
PVD物理氣象沉積 Physical Vapor Deposition

1 電子束蒸鍍法 Electron-beam Method

使用TiN、TiCN，平滑的鍍膜表面並形成優異耐溶著性的光滑鍍膜。
This method creates smooth TiN, and TiCN, coatings with superior welding resistance



鍍膜表面 Surface of Coating



電子束蒸鍍法
Electron-beam Method

平滑鍍膜
smooth Surface

2 電弧式蒸鍍法 Arc Ion Plating Method

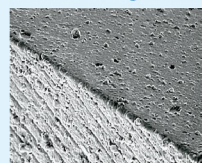
使用多元素系（TiAlN等）形成優異的耐磨耗、耐酸化性的鍍膜。
This method creates coatings with excellent wear and oxidation resistance, by applying a compound substance such as TiAlN



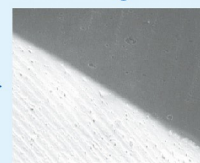
液滴解決方案 Step against droplet

拋光(鍍膜後) Polishing (after coating)

FX拋光前
Before Polishing










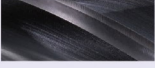

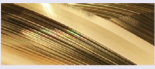
FX拋光後
After Polishing



藉由除去液滴
可使表面平滑
Removing droplet by polishing
can creates smooth surface

使刀刃保持鋒利
Keeping sharp edges

鍍膜種類 Coating Lineup

簡碼 brevity Code	TCS簡稱 Abbreviation	膜種 Coating	膜色 Color	硬度(Hv) Hardness	摩擦係數 Coefficient of Friction	氧化溫度(°C) Oxidation Temperature	面粗度(Ra) Surface Roughness
S	WXS	含SiC耐熱層 SiC based Thermal resistance	 黑灰色 Black Gray	3,500	0.35	1,300	0.10~0.25
※MS	Micro-WXS	含SiC耐熱層 SiC based Thermal resistance	 黑灰色 Black Gray	3,500	0.30	1,300	0.10~0.25
SL	SXL	AlCr系 奈米積層 AlCr based Periodic Nano-layer	 黑灰色 Black Gray	3,200	0.30	1,100	0.10~0.25
GC	HYPRO-GC	TiAlSi系 複合多層 TiAlSi based Multi-layer of composite material	 古銅色 Copper	3,400	0.35	1,100	0.10~0.25
G	G-NEO	AlCr系 複合單層 AlCr based Single layer of composite material	 黑灰色 Black Gray	3,200	0.35	1,100	0.10~0.25
W	WXL	AlCr系 複合單層 AlCr based Single layer of composite material	 黑灰色 Black Gray	3,100	0.33	1,100	0.10~0.25
F	FX	TiAlN系 複合多層 TiAlN based Multi-layer of composite material	 黑紫色 Black Violet	2,800	0.40	850	0.15~0.30
※MF	Micro-FX	TiAlN系 複合多層 TiAlN based Multi-layer of composite material	 黑紫色 Black Violet	2,800	0.40	850	0.15~0.30
V	V	TiCN 複合單層 Single layer of composite material	 鐵灰色 Iron gray	2,700	0.25	400	0.10~0.20
T	TiN	TiN 單層 Single layer	 金色 Gold	2,000	0.25	500	0.15~0.30

※適用於刃徑 $\phi 2 \sim \phi 0.5$ 微小徑刀具 此為特殊爐次，製作時需額外洽談
This Coating applies to high hardness cutting tools, that cutter diameter between $\phi 0.5 \sim \phi 2$.
Because of special coating, please contact with our sales man.

標準膜厚 Coating Thickness	成膜溫度 (°C) Coating Temperature	基材 Substrate	脫膜可否 Coating Removability	通電性 Electrical Conductivity	特徵 Feature	應用例 Application Examples
3	600	鎢鋼 Carbide	×	○	<ul style="list-style-type: none"> · 耐磨性佳 High wear resistance · 耐熱性佳 High heat resistance · 中高硬度乾式加工專用 Be ideally suited for dry cutting with high hardness Steels 	<ul style="list-style-type: none"> · 高硬度切削刀具 High hardness cutting tools
2	600	鎢鋼 Carbide	×	○	<ul style="list-style-type: none"> · 耐磨性佳 High wear resistance · 耐熱性佳 High heat resistance · 中高硬度乾式加工專用 Be ideally suited for dry cutting with high hardness steels 	<ul style="list-style-type: none"> · 微小徑高硬度切削刀具 High hardness cutting tools (Cutter Diameter: $\phi 0.5 \sim \phi 2$)
3	600	鎢鋼 Carbide	×	○	<ul style="list-style-type: none"> · 耐熱裂性 High thermal crack resistance · 耐磨性 High wear resistance · 高韌性 High toughness 	<ul style="list-style-type: none"> · 高效率用切削刀具 Highly-efficient cutting tools · 拉刀、絞刀 Cutting and drawing dies · 鎢鋼沖棒 Tungsten carbide punches
4	500	鎢鋼 Carbide	×	○	<ul style="list-style-type: none"> · 耐磨耗性 High wear resistance · 耐熱裂性 High thermal crack resistance · 中高硬度濕式加工專用 Be ideally suited for wet cutting with high hardness steels 	<ul style="list-style-type: none"> · 高硬度切削刀具 High hardness cutting tools
7	500	鋼、鎢鋼 Steel, Carbide	○(鋼) ×(鎢鋼)	△	<ul style="list-style-type: none"> · 耐熱裂性 High thermal crack resistance · 耐磨耗性 High wear resistance 	<ul style="list-style-type: none"> · 高速乾式切削用HOB Dry and high-speed cutting HOB
3 ※6	500	鋼、鎢鋼 Steel, Carbide	○(鋼) ×(鎢鋼)	○	<ul style="list-style-type: none"> · 耐熱裂性 High thermal crack resistance · 耐磨性 High wear resistance · 高韌性 High toughness 	<ul style="list-style-type: none"> · 高效率用切削刀具 Highly-efficient cutting tools · 高速乾式切削用HOB Dry and high-speed cutting HOB · 拉刀、絞刀 Cutting and drawing dies · 沖棒、整頭模 Forming and punching tools
3	600	鎢鋼 Carbide	○	○	<ul style="list-style-type: none"> · 耐磨耗性 High wear resistance 	<ul style="list-style-type: none"> · 鎢鋼銑刀 Carbide endmill · 鎢鋼HOB Carbide gear HOB cutter
2	600	鎢鋼 Carbide	○	○	<ul style="list-style-type: none"> · 耐磨耗性 High wear resistance 	<ul style="list-style-type: none"> · 微小徑鎢鋼銑刀 Carbide endmill (Cutter Diameter: $\phi 0.5 \sim \phi 2$)
3	500	鋼、鎢鋼 Steel, Carbide	○	○	<ul style="list-style-type: none"> · 配合面磨潤性良好 High sliding wear resistance · 耐熔著 High seizure resistance 	<ul style="list-style-type: none"> · 一般切削刀具 General cutting tools · 沖壓模具 Stamping dies · 滑動件零件 Sliding parts
3 ※5	500	鋼、鎢鋼 Steel, Carbide	○	○	<ul style="list-style-type: none"> · 基本泛用型 Be suited for general cutting 	<ul style="list-style-type: none"> · 一般切削刀具 General cutting tools · 沖壓模具 Stamping dies · 樹脂模具 Resin mold · HOB一般用 General gear HOB cutter

※HOB用膜厚 This thickness is for gear hob cutter.

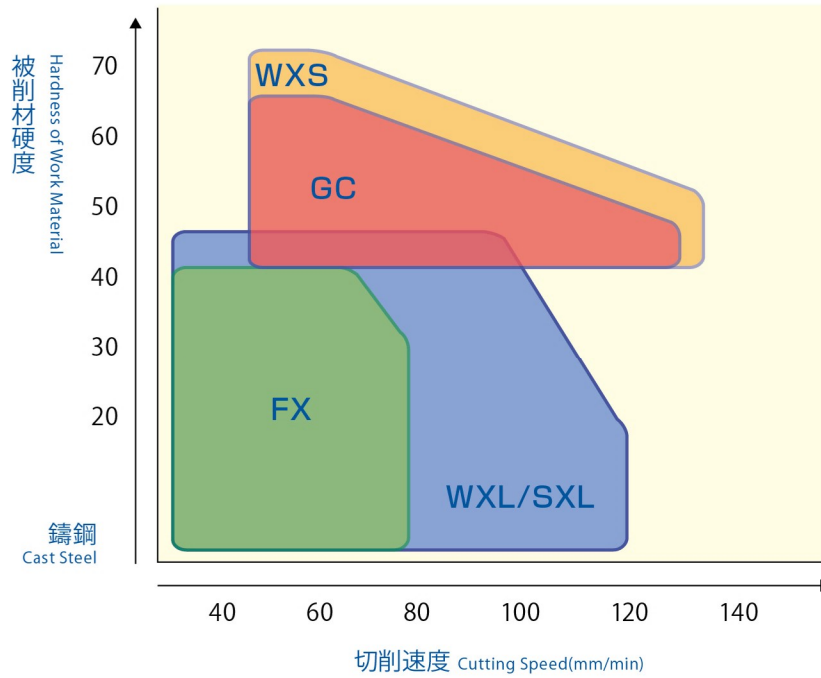
被削材硬度和切削速度

Work Material Hardness and Cutting Speed

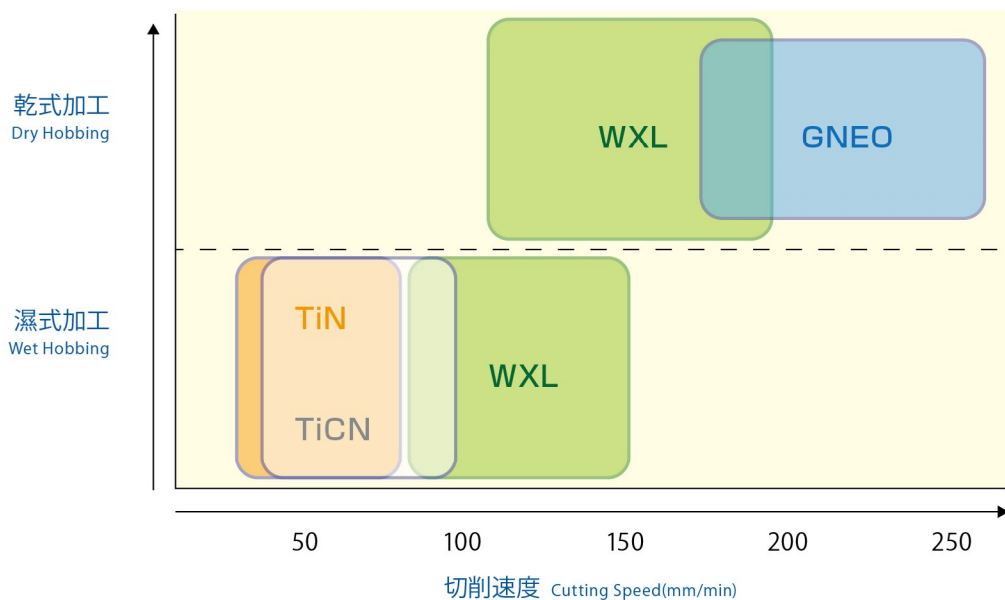
鍍膜別與被削材硬度切削速度關係表

The relationship between coating, material and cutting speed

■ 鎢鋼類刀具適用 Apply to tungsten carbide cutting tools



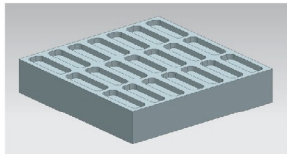
■ 高速度鋼類齒輪加工刀具適用 Apply to high-speed steel gear cutting tools



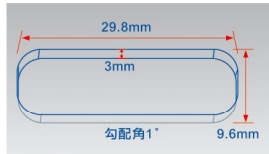
各類鍍膜加工實例 Cutting Data

■ 鎢鋼球銑刀加工實例 (WXS) Ball nose mill at top speeds (WXS)

切削刀具 Tool	R3鎢鋼球刀 $\phi 6$ Carbide Ball nose mill $\phi 6$	切削速度 Speed of Cut	207 m/min
被削材 Milling Material	SKD11 (HRC62)	迴轉速度 Speed	11000 min ⁻¹
加工方式 Milling Method	挖槽加工 Slots milling	進給速度 Feed	2200 mm/min
槽尺寸 Dimension of slots	29.8×9.6×3	切削深度 Depth of Cut	ap=0.1 af=0.12
加工數 Survive	5槽 5 Slots	冷卻方式 Coolant	外部給油 Water-soluble

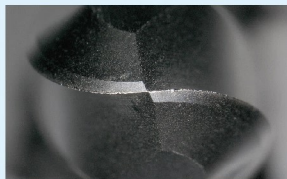


挖槽加工 Slots milling



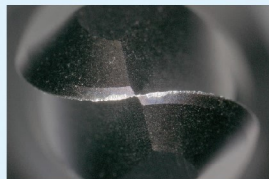
加工槽尺寸 Size of slots

WXS鍍膜(WXS)



5槽加工後刀具刃口磨耗照片

TiAlSi系(TiAlSi)



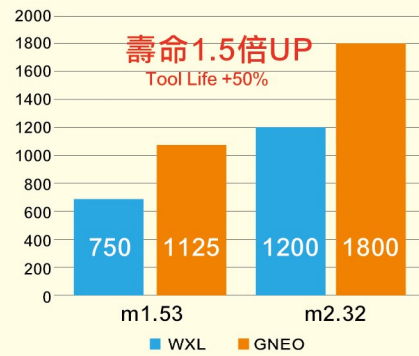
The wear after milling 5 slots

■ 乾式滾齒刀加工實例 (GNEO) Dry hobbing gear at top speeds (GNEO)

切削刀具 Tool	粉末高速鋼齒切加工刀具 Gear hob cutter (ASP)
刀具尺寸 Dimension of tool	$\phi 80 \times 180$ m1.53 ~ m2.32
加工條件 Cutting Data	660 rpm 165m/min

轉速 Speed = 660 rpm
V=165m/min
乾切 Dry Hobbing

HOB加工測試
Hobbing Performance
(加工數量比較 Tool Life)



被削材適用表 Work Material and Coating

工具 材質	TCS 名稱 Material Coating of TCS tools	碳鋼 Mild Steels		調質鋼 Hardened Steels				不鏽鋼 Stainless Steels		鑄鐵 Cast Iron		鈦合金 耐熱合金 Titanium Alloys Heat Resistant Alloys		鋁合金 銅合金 Aluminium Alloys Copper Alloys	
		合金鋼 Alloy Steels		~ 40HRC		~ 50HRC		~ 65HRC		~ 35HRC		~ 350HB			
		乾式Dry	濕式Wet	乾式Dry	濕式Wet	乾式Dry	濕式Wet	乾式Dry	濕式Wet	乾式Dry	濕式Wet	乾式Dry	濕式Wet	乾式Dry	濕式Wet
WC	WXS	◎	○	◎	○	◎					○	○		○	○
	GC	○	◎	○	◎		○				○	○		○	○
	SXL	◎	◎	○	◎			○	◎	◎	◎	◎		◎	◎
	FX	◎	○	◎	○	○			○	○	◎	◎		◎	◎
HSSE CPM	GNEO	◎	◎	○	◎				○	◎	◎	◎		◎	
	WXL	◎	◎	○	◎				○	◎	◎	◎		◎	
	*V	○	○							○	○	○		○	
HOB WC	TiN	○	○							○	○	○			
	FX	◎	◎						○	○	○	○			
	WXL	◎	◎						○	◎	◎	◎		◎	
	TiN	○	○							○	○	○			

※“*”表示超硬合金與高速度工具鋼皆可使用

PS.: “*”this symbol means this coating is suited for both of all cutting tools.

鍍膜產品種類

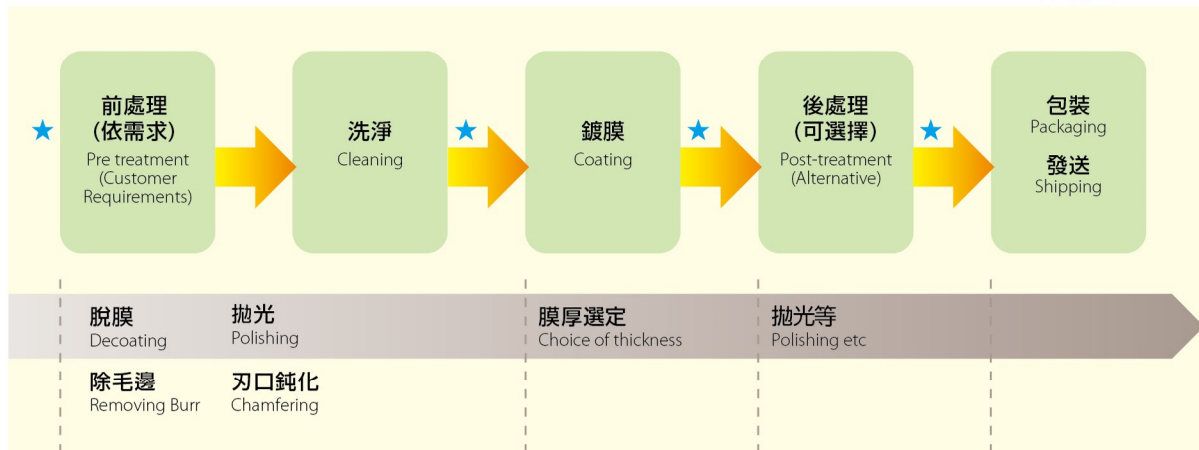
Job Coatings

種類 Types	應用產品 Tools	可鍍膜尺寸 Dimension of services
沖模類 Punching and Forming tools	沖棒 Punch	外徑 ϕ 45mm以下, 長度300mm以下 $D \leq \phi 45 \text{ mm}$, Length $\leq 300 \text{ mm}$
	整頭模 Forming tools	外徑 ϕ 80mm以下, 厚度80mm以下 $D \leq \phi 80 \text{ mm}$, Thickness $\leq 80 \text{ mm}$
	模仁 Cavity	
齒輪加工刀具類 Gear cutting tools	滾齒刀 Hob	外徑 ϕ 160mm以下, 長度220mm以下 $D \leq \phi 160 \text{ mm}$, Length $\leq 220 \text{ mm}$
	插齒刀 Pinion cutter	外徑 ϕ 160mm以下, 厚度70mm以下 $D \leq \phi 160 \text{ mm}$, Thickness $\leq 70 \text{ mm}$
		外徑 ϕ 45mm以下, 長度220mm以下 $D \leq \phi 45$, Length $\leq 220 \text{ mm}$
	傘齒輪刀 Skiving cutter	全尺寸 All Diameter of tools
	標準齒輪 Standard gears	外徑 ϕ 160mm以下, 厚度100mm以下 $D \leq \phi 160 \text{ mm}$, Thickness $\leq 100 \text{ mm}$
切削工具 Cutting Tools	螺絲攻 Tap	外徑 ϕ 45mm以下, 長度300mm以下 $D \leq \phi 45 \text{ mm}$, Length $\leq 300 \text{ mm}$
	鑽頭 Drill	
	銑刀 Endmill	
	銜刀 Reamer	
	鋸片 Wood blades	外徑 ϕ 160mm以下 $D \leq \phi 160 \text{ mm}$

※特殊形狀及尺寸者，歡迎來電洽詢。Please feel free to contact us if you need any further information.

鍍膜流程 Manufacturing Process

★ 檢查 inspection





大寶鈦金科技股份有限公司 TAIHO COATING SERVICE CO., Ltd.

⚠ 鍍膜製品注意事項 Coating considerations

- 可以鍍膜的材料 Material on the coating
高速工具鋼、回火溫度高於500度以上之鋼種、不鏽鋼、碳化鎢。
High Speed Steel Tool, Tempering of steels above 500 degree, Stainless Steel Tungsten Carbide.
 - 工件表面無其它表面處理(如鍍硬鉻、氧化處理等)。
Products without any other kinds of surface treatment (Ex. Hard Chromium Coating, Oxidation Treatment).
 - 工件表面生鏽、油污及黏著劑請去除。
Confirm rust, greasiness, glue removed from products before arriving for coating.
 - 有中心孔、通氣孔之製品，請將孔內髒汙清潔乾淨，以免影響鍍膜品質。
For high-quality coating, exactly remove greasiness in that products with punched hole blow hole.
 - 運送時包裝要注意碰傷。
Packing carefully to avoid bruising in transit.
 - 碳化鎢之工件無法脫膜重鍍。
Unable to remove coatings on the based material of products of Tungsten Carbide.
- 製品經常進行研究、改良，本目錄中的工具樣式如有更改，恕不另行通知。
Tool specifications are subject to change without notice.
- 本目錄內容請勿任意轉載及複製。



台灣本社



台中營業所



日本本社

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