



博世工具涂层系统

定制化工具涂层解决方案



博世工具涂层系统 – 为更高的需求而设计

等离子涂层的竞争力

博世作为领先的制造解决方案供应商和最终用户,我们的专家致力于开发高端等离子体系统,30年来不断攻克制造行业的技术难关。近几十年来,除了零部件涂层外,高性能工具涂层技术是我们的主要关注点之一。TCS 系列设备可以为延长工具和模具寿命提供一流的涂层解决方案。与汽车产品一样,博世工具涂层系统可在提供高生产力的同时提供可靠的质量,使我们的客户以具有竞争力的价格走在市场前列。

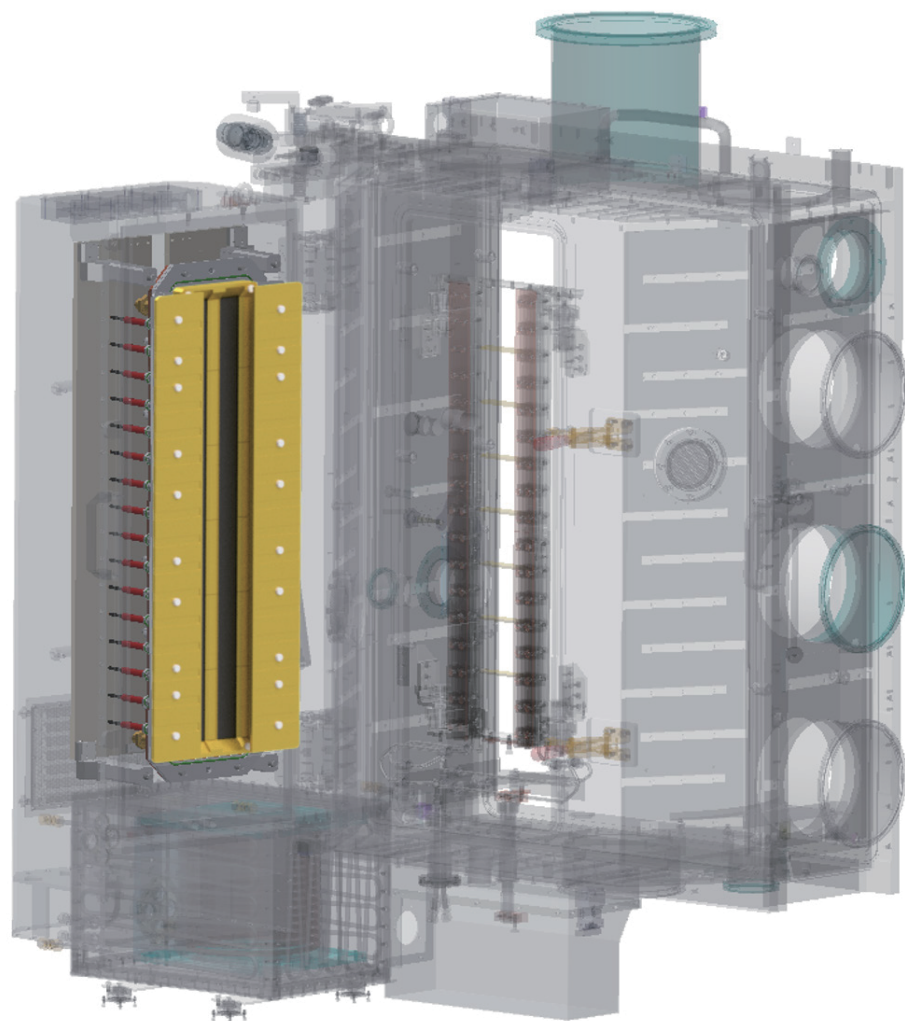
博世的工具涂层系统和广泛的涂层产品组合可以为各类工具进行标准或定制化涂层:

- ▶ 切削(车削、铣削、钻孔、微型工具)
- ▶ 成型(冲压、压铸、注塑)
- ▶ 超声焊接
- ▶ 冲孔

为您的需求而设计

我们的模块化设计允许涂层系统多用途配置,以满足您的特定要求。我们提供标准和定制化的涂层,以确保您快速入门。同时,开放的参数平台,您的努力将成为您独特的竞争力。无论您何时需要,我们的专家都会在设备、涂层技术和研发方面为您提供支持。





博世工具涂层系统 – 智能制造的不同凡响

前沿技术

基于**DC-Arc 和溅射技术**,TCS 涂层系统在工具涂层方面具有经过市场验证的优良性能。

最新研发的**多功能优化涂层体系**,可在满足最小化设备换型损耗并且最大化生产效率的同时满足刀具客户的多样化需求。

对于成型模具,TCS系列涂层设备可配备**等离子氮化模块**,实现等离子氮化加PVD涂层的连续生产,有效节约工艺时间,并且降低设备成本投入。这种双重工艺能进一步提升模具寿命。

针对特殊应用,**TCS CARBON** 机型可用于制备ta-C 涂层:

- ▶ **用于高效沉积绝缘涂层的脉冲直流电弧源:**允许大规模批量生产可靠的ta-C涂层
- ▶ **HiPIMS 技术:**适用于复杂形状工具的超光滑涂层
- ▶ **基于微波技术的高效等离子体刻蚀:**更高密度的等离子体可保证表面清洁,以提供更强的涂层附着力



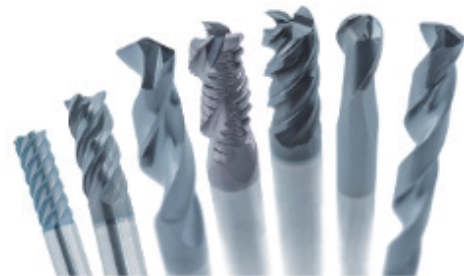
PVD 硬质涂层系统



	TCS Compact	TCS Performance	TCS Plus	TCS Xtra	TCS Carbon
有效涂层体积	Ø 450 x 500 mm	Ø 650 x 500 mm	Ø 650 x 1140 mm	Ø 900 x 1140 mm	Ø 710 x 1000 mm
最大载荷	400 kg	1000 kg	1500 kg	3000 kg	1000 kg
装载量/批次 Ø 10 x 70	576	864	1782	2376	2376
涂层批次时间	3.5 h	4.5 h	6 h	7 h	4 h / ta-C 2 µm
等离子源个数 (高度=500 mm)	2 – 4	4	6	6 – 8	6 – 8
涂层技术					✓ 微波等离子体 / HiPIMS
电弧	✓	✓	✓	✓	✓ 脉冲直流电弧
电弧+溅射混合	✓	✓			
复合(离子氮化 + 硬质涂层)	✓	✓	✓	✓	
溅射	✓	✓			✓



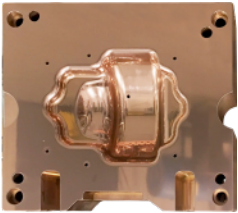
涂层种类及性能 切削



		关键性能	显微硬度 HV0.025	摩擦系数	最高工作温度 °C	外观颜色
TiN	BCT-TiN	韧性 多功能	2300	0.5	600	金
TiCN	BCT-TiCN	高硬度 韧性	3400	0.3	450	银灰
ZrN	BCT-ZrN	低粘附 化学惰性	2400	0.4	600	浅黄
	BCT-ZrCN	高硬度 低粘附 化学惰性	2600	0.4	600	浅棕
CrN	BCT-CrN	韧性 化学惰性	2000	0.4	700	金属银
	BCT-CrCN	韧性 化学惰性 润滑性	2300	0.3	700	银灰
AlTiN	BCT-Nano	抗氧化 红硬性	3200	0.5	900	紫灰
	BCT-AlTiN	低粘附	3200	0.5	800	深灰
	BCT-Silver	超低粘附	3200	0.4	800	银
AlTiN / AlCrN 基	BCT-MP	抗震性 韧性 低热导率	3300	0.5	1000	灰黑
	BCT-AlCro	热稳定 抗冷焊	3300	0.4	1000	亮黑
	BCT-AlCro	热稳定 抗冷焊	3300	0.4	1000	亮黑
AlTiSiN	BCT-Hard	超低热导率 红硬性 抗氧化	3800	0.5	> 1100	棕
	BCT-Drill	超低热导率 红硬性 抗氧化	3800	0.5	> 1100	紫灰
纳米复合 金属掺杂	BCT-SS	热稳定 抗冷焊	3300	0.5	1100	深灰
	BCT-Ti	高韧性 耐热	3500	0.5	1100	棕
非晶碳	BCT-C3	高耐磨性 超低摩擦 化学惰性	> 5500	0.1	500	彩虹-灰



涂层种类及性能 成型模具

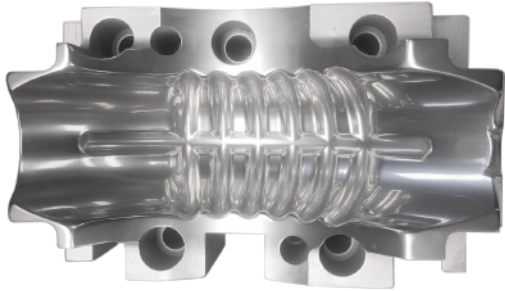


		关键性能	显微硬度 HV0.025	摩擦系数	最高工作温度 °C	外观颜色
TiN	BFT-TiN	韧性 多功能	2300	0.5	600	金
TiCN	BFT-TiCN	高硬度 韧性	3400	0.3	450	银灰
	BFT-SS	高硬度 韧性	3600	0.2	450	银灰粉
CrN	BFT-CrN	韧性 化学惰性	2000	0.4	700	金属银
	BFT-CrCN	韧性 化学惰性 润滑性	2300	0.3	700	银灰
AlTiN / AlCrN 基	BFT-Mono	延展性 均匀磨料磨损	2800	0.5	700	紫灰
	BFT-Silver	超低粘附	3200	0.4	800	银
	BFT-Hot	红硬性 抗氧化 抗粘附	3100	0.5	900	深灰
	BFT-MT	韧性 低摩擦 高抗氧化	3500	0.3	800	玫瑰金
	BFT-MT-HT	高韧性 高抗氧化性 高耐磨损 低摩擦	3500	0.3	800	玫瑰金
	BFT-Ultra	高韧性 高耐磨损 低摩擦 抗冷焊	3600	0.2	450	银粉
	BFT-Nano	抗氧化 化学惰性 耐腐蚀	3300	0.6	950	灰
	BFT-Draw	高耐热 硬度 低应力	2500	0.5	800	金属灰
	BFT-Cast	高耐热 低热导率 抗裂纹扩张	3800	0.5	> 1100	棕
	BFT-AlCro	热稳定 抗冷焊	3300	0.4	1100	亮黑
	BFT-AlCro+	热稳定 抗冷焊	3300	0.4	1100	亮黑
等离子氮化		表面光亮 高硬度 低表面粗糙度	<1400	0.6	580	金属灰
以上所有涂层均可复合工艺 PN+PVD		高温应用 → 提升抗热疲劳性，红硬性 低温应用 → 提升抗机械疲劳，抗压				

PVD涂层应用

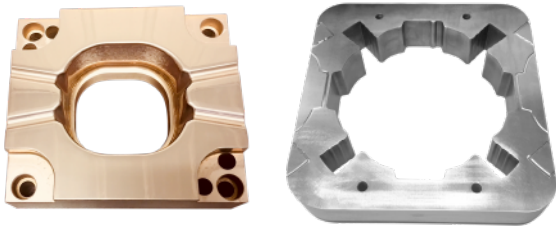
冲压拉伸模具

PVD涂层技术在冲压拉伸模具中的应用通过提高模具的表面硬度从而提升耐磨性,有效减少磨粒磨损。涂层特有的低摩擦系数,可减少粘着磨损和拉毛,从而保证成品的表面质量。PVD涂层结合等离子体氮化,可进一步增强基材强度,减少模具材料的塑性变形,进一步提升模具寿命。



精密冲裁模具

精密冲裁模具用于高精度和复杂形状金属零件的一次成型,PVD涂层常用于精冲模具以满足大规模生产对稳定性的极高需求。超高的涂层硬度可有效减少磨粒磨损,确保模具表面质量,避免产品表面拉毛。涂层特有的低摩擦系数,可减少粘着磨损和拉毛,从而保证成品的表面质量和光滑度。PVD涂层结合适度的等离子体氮化层,可进一步增强基材强度,减少模具材料的塑性变形并且降低崩刃风险,进一步提升模具寿命,带来更高生产效率和成本效益。



压力铸造模具

压铸工作的高温及高压环境,对模具的耐热,及机械性能提出了很高的要求。PVD涂层由于其优异的耐热及抗氧化性能,可抵抗高温熔融金属产生热粘连,热腐蚀。同时低摩擦系数可降低液体态金属黏连,确保熔融金属流动顺畅,从而提高复杂铸件质量。



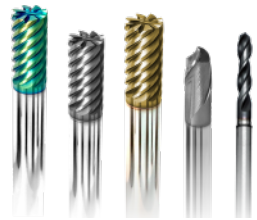
切削刀具

PVD涂层可大幅提高刀具耐磨性,显著改善切削加工效率和质量。随着高速切削和干式切削应用的增多,PVD涂层得益于其超高的热稳定性和红硬性,可在极端切削条件下进一步提升刀具耐磨性。涂层的抗粘附性优异,可减少难加工金属的附着,确保切削过程稳定和一致性。



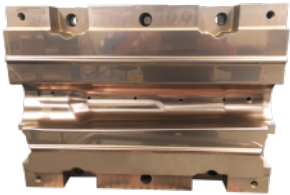
TCS涂层应用选择矩阵

切削刀具



	应用涂层	车削	铣削	钻削	攻丝
硬度<35HRC的钢	多功能	BCT-Nano	BCT-MP	BCT-Nano	BCT-TiN
	最佳选择	BCT-Drill	BCT-SS	BCT-Drill	-----
硬度35-52HRC钢及铸铁	多功能	BCT-SS	BCT-TI	BCT-Nano	-----
	最佳选择	BCT-Drill	BCT-SS	BCT-Drill	BCT-SS
硬度>52HRC的钢	多功能	BCT-Drill	-----	-----	-----
	最佳选择	BCT-Hard	BCT-Hard	BCT-Drill	-----
不锈钢	多功能	BCT-TI	BCT-TI	BCT-Nano	BCT-TiCN
	最佳选择	BCT-SS	BCT-SS	BCT-Drill	-----
钛合金	多功能	BCT-SS	BCT-SS	BCT-Nano	BCT-TiCN
	最佳选择	BCT-TI	BCT-TI	BCT-Drill	BCT-SS
超级合金	多功能	BCT-SS	BCT-SS	BCT-Nano	BCT-SS
	最佳选择	BCT-TI	BCT-TI	BCT-Drill	-----
铝合金（Al<12%）	多功能	BCT-ZrN	BCT-ZrN	BCT-ZrN	BCT-ZrN
	最佳选择	BCT-C3	BCT-C3	BCT-C3	-----
铝合金（Al > 12%）	多功能	-----	-----	-----	-----
	最佳选择	BCT-C3	BCT-C3	BCT-C3	BCT-C3
铜合金	多功能	BCT-CrN	BCT-CrN	BCT-CrN	BCT-CrN
	最佳选择	BCT-MP	BCT-MP	BCT-ZrCN	-----

模具类



		亮点应用
TiN	BFT-TiN	塑料注塑成型、钢的基本冲压和成型应用
TiCN	BFT-TiCN	不锈钢板的成型和冲压；冷锻
	BFT-SS	不锈钢板的成型和冲压；冷锻
CrN	BFT-CrN	塑料注塑成型；有色金属材料（尤其是铜合金和钛合金）的成型和冲压
	BFT-CrCN	塑料注塑成型；有色金属材料（尤其是铜合金和钛合金）的成型和冲压
AlTiN / AlCrN 基	BFT-Mono	钢板成型和冲压；冷锻
	BFT-Silver	铝板成型和冲压；冷锻
	BFT-Hot	钢的热冲压和压力淬火
	BFT-MT	最通用的涂层，用于钢板成型和冲孔；冷锻
	BFT-MT-HT	钢板（特别是高强度、高厚度）的成型和冲压；冷锻
	BFT-Ultra	不锈钢板（特别是高强度、高厚度）的成型和冲压；冷锻
	BFT-Nano	铝压铸，热冲压和钢板淬火
	BFT-Draw	铝压铸，热冲压和钢板淬火
	BFT-Cast	铝压铸
	BFT-AlCro	精冲、热压、铝压铸
	BFT-AlCro+	精冲、热压、铝压铸



涂层系统

从用于快速制样的台式设备到高性能涂层系统,我们提供用于博世全球涂层工厂使用的多尺寸多规格设备。



物联网-自动化与互联产业

量身定制的解决方案,用于工艺流程和检测环节。物联工业的创新概念可以实现智能的涂层工艺流程。



交钥匙解决方案

基于对博世对涂层产品生产的了解,我们为您提供车间布局设计或优化咨询。



服务

通过向遍布全球的博世涂层中心提供支持,我们建立了一支由设备,软件和工艺专家组成的全能团队,为您提供个性化服务和支持。



工艺开发

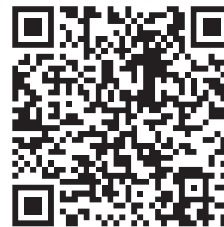
在等离子体涂层方面具有长期经验的开发工程师和物理学家团队非常乐意承接定制开发项目或以我们的专业知识为您的专家团队提供更多元化的支持。



Robert Bosch Manufacturing Solutions GmbH

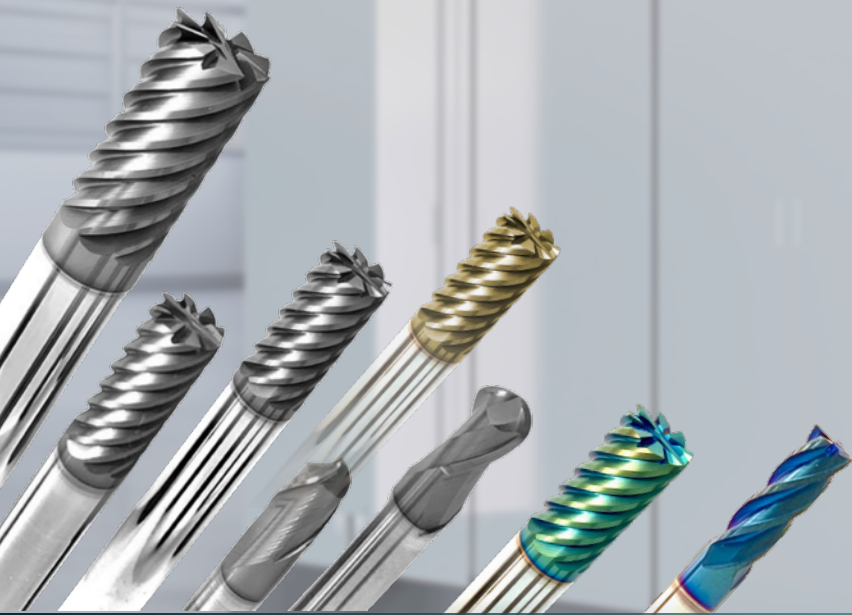
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Occasional differences of the images to the operating manual are possible.
Please refer to the operating manual with regard to the proper use of the system.



Bosch Tool Coating System

Tailored Tool Coating Solutions



2 Bosch Tool Coating System

Bosch Tool Coating System – Designed for higher requirements

Competence in Plasma Coating

Bosch is a leading manufacturing solution supplier and also the end-user, our experts have dedicated over 30 years to the development of high-end plasma systems to overcome technical challenges in industry. High-performance tool coating technology is one of our main focus points besides component coating in recent decades. Together with our cooperation partner Tronic Concept, we developed our TCS line, which provides the best-in-class solution to improve the lifetime of your tools and molds. High productivity and reliable quality are ensured, so that competitive production price allows our customer staying in the forefront of the market.

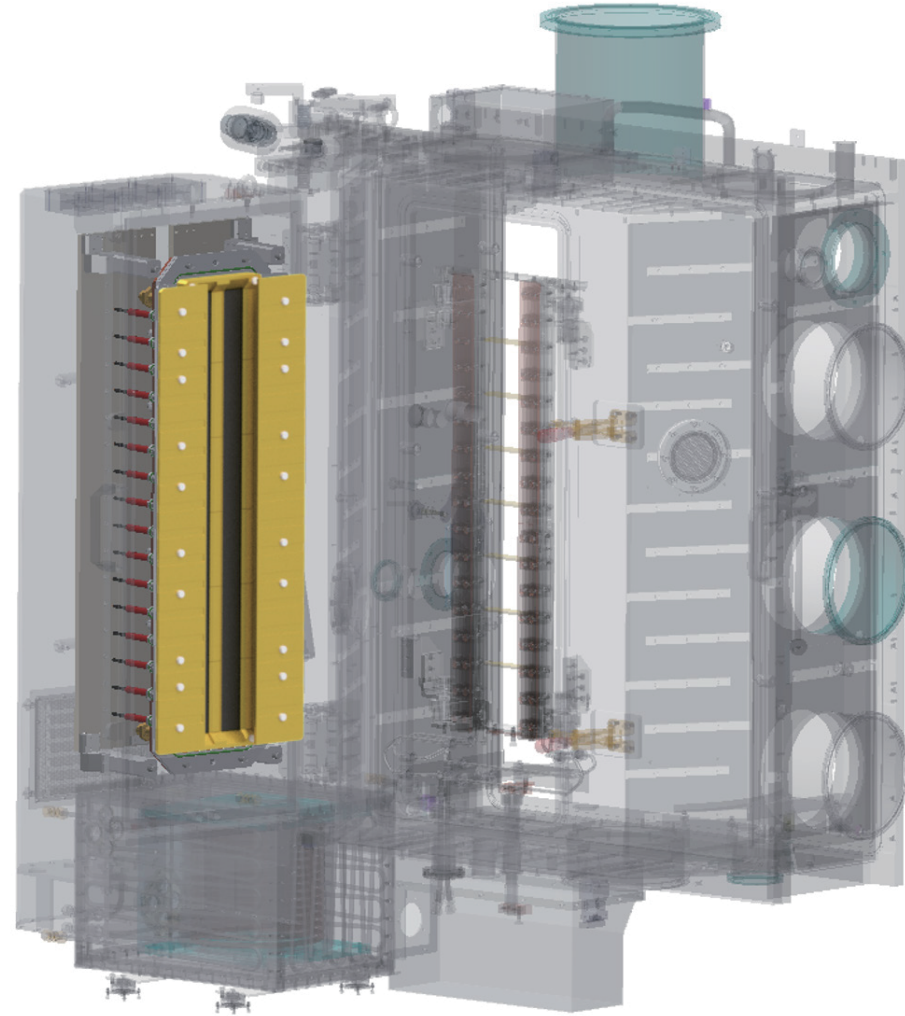
Our tool coating system and the broad coating portfolio allow coating of a wide range of tools for all applications:

- ▶ Cutting (Turning, Milling, Drilling, Microtools)
- ▶ Forming & Molding
- ▶ Bonding
- ▶ Punching

Design for your needs

Modular design of our coating systems allows multi-purpose configurations, in order to meet your specific requirements. Standard coatings and our optimized coatings are provided to guarantee you a quick start. With open recipe platform, your efforts in development will become your unique competitiveness. Whenever you need, our experts will support you in equipment, coating technology and R&D.





Bosch Tool Coating System – the difference in manufacturing

Leading edge technology

The TCS series has a proven performance for all kind of tool coatings based on **DC-Arc and sputtering technology**. The newly optimized **multi-function coating portfolio** meets the diverse needs of tool customers while minimizing changeover losses and maximizing production efficiency.

For forming tools our machines offer the option to perform a **plasma nitriding** prior to the coating process. This Duplex Process further enhances tool lifetime.

For specific applications additionally our **TCS CARBON** machine is available for ta-C coatings:

- ▶ **Pulsed DC-Arc-source for high-rate deposition of insulating coatings** This technology allows reliable production of ta-C coatings in large scale mass production.
- ▶ **HiPIMS** Coatings with low roughness for complex geometries
- ▶ **Efficient plasma etching based on microwave technology** Higher density plasma ensures better surface cleanliness and therefore better coating adhesion.



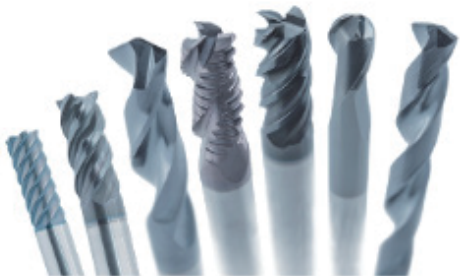
PVD Hard Coating Systems



	TCS Compact	TCS Performance	TCS Plus	TCS Xtra	TCS Carbon
Usefull volume	Ø 450 x 500 mm	Ø 650 x 500 mm	Ø 650 x 1140 mm	Ø 900 x 1140 mm	Ø 710 x 1000 mm
Load	400 kg	1000 kg	1500 kg	3000 kg	1000 kg
QTY / batch End Mills Ø 10 x 70	576	864	1782	2376	2376
Cycle times	3.5 h	4.5 h	6 h	7 h	4 h/ ta-C 2 µm
Number of sources (h=500 mm)	2 – 4	4	6	6 – 8	6 – 8
Technology					✓ Microwave Plasma / HiPIMS
ARC	✓	✓	✓	✓	✓ Pulsed cathodic arc
ARC + Sputter hybrid	✓	✓			
Duplex (PN + Hard coating)	✓	✓	✓	✓	
Sputter	✓	✓			✓



Coating Portfolio and Properties Cutting

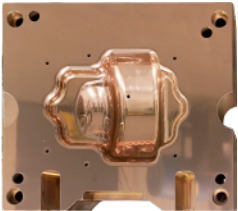


		MAIN PROPERTIES	MICRO HARDNESS HV 0.025	FRICTION	MAX SERVICE TEMP. °C	COLOR
TiN	BCT-TiN	tough & multi purpose	2300	0.5	600	gold
TiCN	BCT-TiCN	very hard & tough	3400	0.3	450	silver-grey
ZrN	BCT-ZrN	low sticking & chemical inert	2400	0.4	600	light yellow
	BCT-ZrCN	incr. hardness, low sticking & inert	2600	0.4	600	light brown
CrN	BCT-CrN	tough & chemical inert	2000	0.4	700	metal silver
	BCT-CrCN	tough & chemical inert, low friction	2300	0.3	700	silver-grey
AlTiN	BCT-Nano	oxidation resistant & hot hardness	3200	0.5	900	violet grey
	BCT-AlTiN	low sticking	3200	0.5	800	dark grey
	BCT-Silver	very low sticking	3200	0.4	800	silver
AlCrN based AlTiCrN	BCT-MP	shock resistant & tough, lower thermal conductivity	3300	0.5	1000	anthracite
	BCT-AlCro	thermal stable, against cold welding	3300	0.4	1000	granite grey
	BCT-AlCro	thermal stable, against cold welding	3300	0.4	1000	granite grey
AlTiSiN	BCT-Hard	lowest thermal conductivity, hot hardness & oxidation resistant	3800	0.5	> 1100	brown
	BCT-Drill	lowest thermal conductivity, hot hardness & oxidation resistant	3800	0.5	> 1100	violet grey
Nanocomposite Micro Alloyed	BCT-SS	thermal stable, against cold welding	3300	0.5	1100	dark grey
	BCT-TI	very tough & heat resistant	3500	0.5	1100	brown
Carbon	BCT-C3	wear resistance, very low sticking, chemical inert	> 5500	0.1	500	rainbow-grey



Coating Portfolio and Properties

Forming and Molding

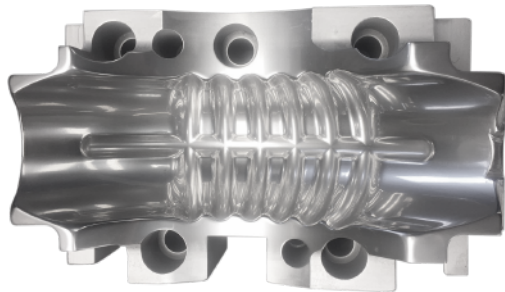


		MAIN PROPERTIES	MICRO HARDNESS HV 0.025	FRICTION COEF	MAX SERVICE TEMP. °C	COLOR
TiN	BFT-TiN	tough & multi purpose	2300	0.5	600	gold
TiCN	BFT-TiCN	very hard & tough	3400	0.3	450	silver-grey
	BFT-SS	very hard & tough	3600	0.2	450	silver-red
CrN	BFT-CrN	tough & chemical inert	2000	0.4	700	metal silver
	BFT-CrCN	tough & chemical inert, low friction	2300	0.3	700	silver-grey
AlTiN / AlCrN based	BFT-Mono	Ductile & uniform abrasive wear	2800	0.5	700	aubergine
	BFT-Silver	very low sticking	3200	0.4	800	silver
	BFT-Hot	hot hardness & oxidation resistance, anti sticking	3100	0.5	900	anthracite
	BFT-MT	tough, low friction & high oxidation resistance	3500	0.3	800	Gold Rose
	BFT-MT-HT	very tough, high wear resistance, low friction & high oxidation resistance	3500	0.3	800	Gold Rose
	BFT-Ultra	very tough, high wear resistance, low friction, against cold welding	3600	0.2	450	silver-red
	BFT-Nano	oxidation resistance, chemical inert, corrosion protection	3300	0.6	950	grey
	BFT-Draw	better heat resistance, hardness, low stress	2500	0.5	800	metal silver
	BFT-Cast	high heat resistance, low thermal conductivity & crack propagation	3800	0.5	> 1100	brown
	BFT-AlCro	thermal stable, against cold welding	3300	0.4	1100	granite grey
	BFT-AlCro+	thermal stable, against cold welding	3300	0.4	1100	granite grey
Plasma Nitriding		brilliance & increased hardness, lower roughness	<1400	0.6	580	metal silver
All coatings optional as DUPLEX COATING		hot appl. → improved thermal fatigue, hot hardness cold appl. → improved mechanical fatigue, compressive resistance				

PVD Coating Application

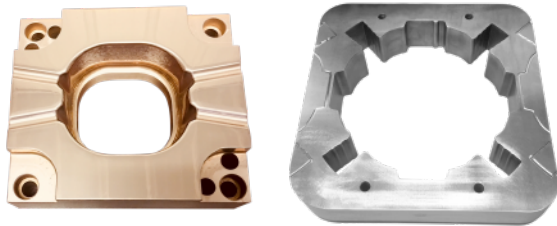
Stamping and Drawing Die

For stamping and drawing molds, the application of PVD coating technology significantly improves the mold's surface hardness, enhancing its wear resistance and effectively reducing abrasive wear. The unique coating provides a low friction coefficient, reducing adhesive wear and streaks, ensuring an impeccable surface quality for the final product. When PVD coating is combined with plasma nitriding, it enhances the base material's strength, reduces plastic deformation of the mold material, and considerably extends the mold's lifespan.



Precision Punching and Cutting Dies

For shaping high-precision and complex metal parts in one-stamp, precision stamping dies are essential. PVD coating is commonly applied to these precision dies to meet the immense stability requirements of large-scale production. The superior hardness of the coating effectively counters abrasive wear, ensuring outstanding mold surface quality and preventing surface streaks on products. The coating's distinct low friction coefficient reduces adhesive wear and streaking, thus ensuring the finished product's surface quality. When enhanced with an appropriate thickness of plasma nitriding layer, the surface solution further strengthens the base material, limits the plastic deformation of the mold material, and reduces the risk of chipping, leading to extended mold longevity, enhanced production efficiency, and increased cost benefits.



Die-casting

In the high-temperature and high-pressure conditions of die casting, there are stringent demands on the heat resistance and mechanical performance of the mold. Owing to its excellent heat resistance and anti-oxidation properties, PVD coating can withstand thermal sticking and corrosion caused by molten metals. Additionally, its low friction coefficient reduces the sticking of liquid metals, ensuring a smooth flow of molten metals, which in turn elevates the quality of intricate casting products.



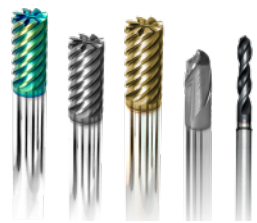
Cutting Tool

PVD coating significantly enhances the wear resistance of cutting tools, leading to noticeable improvements in machining efficiency and quality. With the rise in high-speed cutting and dry cutting applications, PVD coatings, credited for their outstanding thermal stability and hot hardness, offer further wear resistance under extreme cutting conditions. The excellent anti-adhesive properties of the coating reduce the attachment of hard-to-machine metals, ensuring stability and consistency throughout the cutting process.



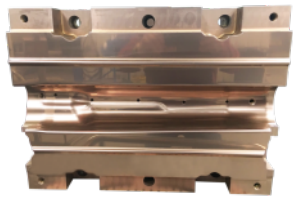
TCS Tool Coating Selection Matrix

Cutting Tools



	CHOICE	TURNING	MILLING	DRILLING	TAPPING
Steel<35HRC	Multipurpose	BCT-Nano	BCT-MP	BCT-Nano	BCT-TiN
	Best Choice	BCT-Drill	BCT-SS	BCT-Drill	-----
Steel 35-52 HRC cast iron	Multipurpose	BCT-SS	BCT-TI	BCT-Nano	-----
	Best Choice	BCT-Drill	BCT-SS	BCT-Drill	BCT-SS
Steel > 52 HRC	Multipurpose	BCT-Drill	-----	-----	-----
	Multipurpose	BCT-Hard	BCT-Hard	BCT-Drill	-----
Stainless Steel	Multipurpose	BCT-TI	BCT-TI	BCT-Nano	BCT-TiCN
	Multipurpose	BCT-SS	BCT-SS	BCT-Drill	-----
Titanium	Multipurpose	BCT-SS	BCT-SS	BCT-Nano	BCT-TiCN
	Multipurpose	BCT-TI	BCT-TI	BCT-Drill	BCT-SS
Super Alloys	Multipurpose	BCT-SS	BCT-SS	BCT-Nano	BCT-SS
	Multipurpose	BCT-TI	BCT-TI	BCT-Drill	-----
Aluminium < 12%	Multipurpose	BCT-ZrN	BCT-ZrN	BCT-ZrN	BCT-ZrN
	Multipurpose	BCT-C3	BCT-C3	BCT-C3	-----
Aluminium > 12%	Multipurpose	-----	-----	-----	-----
	Multipurpose	BCT-C3	BCT-C3	BCT-C3	BCT-C3
Brass	Multipurpose	BCT-CrN	BCT-CrN	BCT-CrN	BCT-CrN
	Multipurpose	BCT-MP	BCT-MP	BCT-ZrCN	-----

Molds and Dies



		HIGHLIGHTED APPLICATION
TiN	BFT-TiN	Plastic injection molding, basic punching and forming applications of steel
TiCN	BFT-TiCN	Forming and punching of stainless steel sheets; cold forging
	BFT-SS	Forming and punching of stainless steel sheets; cold forging
CrN	BFT-CrN	platic injection molding, forming and punching of non-ferrous materials (especially copper- and Ti-alloys)
	BFT-CrCN	platic injection molding, forming and punching of non-ferrous materials (especially copper- and Ti-alloys)
AlTiN / AlCrN based	BFT-Mono	Forming and punching of steel sheets; cold forging
	BFT-Silver	Forming and punching of aluminum sheets
	BFT-Hot	Hot stamping and press hardening of steel
	BFT-MT	Most versatile coating for forming and punching of steel sheets; cold forging
	BFT-MT-HT	Forming and punching of steel sheets (especiallay high strength steel, high thickness); cold forging
	BFT-Ultra	Forming and punching of stainless steel sheets (especially high strength steel, high thickness); cold forging
	BFT-Nano	Aluminum die casting, hot stamping and press hardening of steel
	BFT-Draw	Aluminum die casting, hot stamping and press hardening of steel
	BFT-Cast	Aluminum die casting
	BFT-AlCro	Fine blanking, hot pressing, aluminum die casting
	BFT-AlCro+	Fine blanking, hot pressing, aluminum die casting



Coating equipment

From a desktop system for fast sampling up to large batch coating systems we offer a wide spectrum of machines, which is also used worldwide in production plants of the Bosch group.



IOT – automation and connected industry

Tailored solutions for handling and testing steps. Innovative concepts for connected industry allow a fully connected process flow.



Turn Key Solutions

Based on know how from our own production we support the setup of your production location or provide consulting for optimization.



Services

By providing support to our Bosch coating centers throughout the world we built a competent team of machine, software and process experts, our team is available to provide individual support for your needs.



Process development

Our team of development engineers and physicists with long term experience in plasma coating is ready to take over targeted development projects or support your own experts with our know-how.



Robert Bosch Manufacturing Solutions GmbH

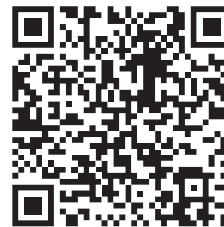
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