oerlikon
balzers

Get the advantage through innovative wear protection

创新耐磨保护提升您的优势

Your guide to more machining productivity and cost efficiency

帮您提高生产和成本效率

Cutting Tools

Get all of the advantages for machining with BALINIT coatings

加工过程中应用BALINIT涂层的优势

High productivity, manufacturing reliability, cost efficiency – the demands made on cutting tools are enormous. That's why you should rely on the innovative BALINIT® wear protection coatings from Oerlikon Balzers, a world-wide technological leader in the field of hard coatings.

高产、加工稳定、高效低成本—这都对切削刀具提出了更多的要求。这也正是您需要欧瑞康巴尔查斯—全球硬涂层领域技术领导者的创新BALINIT® 耐磨涂层的原因。BALINIT®涂层具备多种多样的涂层性能，例如：极高涂层硬度、高耐磨性—并且在铣削、钻削、铰孔、车削和攻丝方面都具备极大的优势。

With BALINIT® you can employ a wide variety of coating properties such as extreme coating hardness and high wear resistance – and benefit from numerous advantages for milling, drilling, reaming, turning and threading.

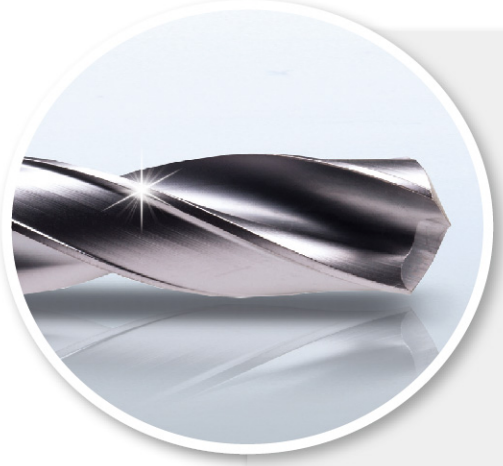
- **Extremely hard coatings** 超高涂层硬度
- **High wear resistance** 高耐磨性
- **Outstanding thermal stability** 卓越的热稳定性
- **Very good oxidation resistance** 良好的抗氧化性
- **Top notch hot hardness** 出众的红硬性

Lower your production costs with BALINIT

通过应用BALINIT涂层，降低生产成本

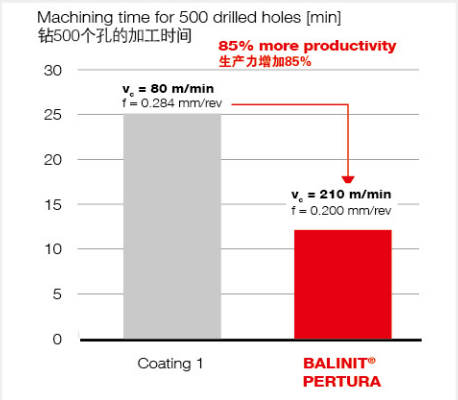
Wear-protection coatings from Oerlikon Balzers offer you enormous savings potentials. The single greatest influencing factor for more cost efficiency and productivity is the machining time: A 20% increase in the cutting parameters reduces production costs by up to 15%. The outstanding properties of Oerlikon Balzers coating solutions provide longer tool service lives at higher cutting speeds at the same time.

欧瑞康巴尔查斯耐磨涂层为您创造巨大的成本节约的可能性。高效、低成本、高产的最重要影响因素就是加工时间：切削参数提升20%，生产成本即可最多减少15%。欧瑞康巴尔查斯涂层解决方案的突出性能就是能够在更高的切削速度同时提供更长的工具使用寿命。



BALINIT® PERTURA on carbide drills

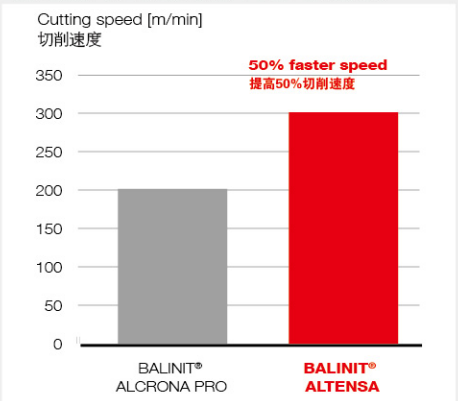
BALINIT®PERTURA 用于硬质合金钻头



Tool 工具	Carbide drill 硬质合金钻头 Ø 8.5 mm
Workpiece 工件	Steel 1.7225 (AISI 4140, SCM440) 900 N/mm²
Cutting data 切削参数	LD = 5xD (throughhole) Internal cooling with emulsion 用乳化液冷却内部 VB = 0.3 mm
Source 来源	Oerlikon Balzers cutting laboratory 欧瑞康巴尔查斯切削实验室

BALINIT® ALTENSA on PM-HSS hobs

BALINIT®ALTENSA用于PM–HSS滚刀



Tool 工具	PM-HSS hob PM–HSS滚刀 (S390)
Workpiece 工件	Gear 齿轮 Steel 1.7131 (AISI 5115)
Cutting data 切削参数	v_c = 200 –> v_c = 300 m_n = 1.62 f_a = 6.0 mm dry 干加工
Source 来源	Oerlikon Balzers Automotive end user 欧瑞康巴尔查斯汽车终端用户

Experience the tailored diversity of applications with BALIQ
BALIQ的客制化、多样化应用

The innovative BALIQ® coating generation based on the S3p technology offers you a wide variety of coating solutions specially adapted to meet the requirements of your application.

创新的基于S3p技术的BALIQ®涂层，为您提供许多涂层解决方案的选择来满足您的应用需求。BALIQ®涂层拥有与BALINIT®涂层同样突出的涂层性

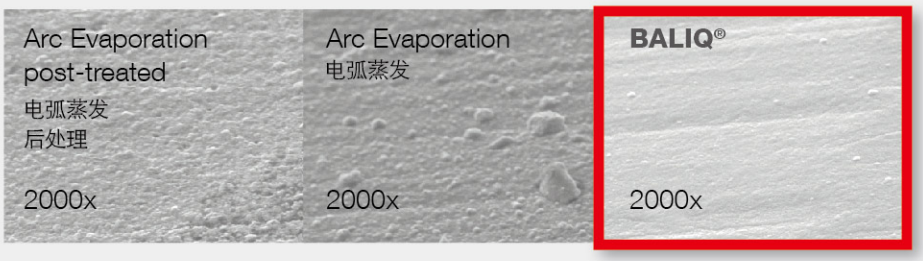
BALIQ® coatings feature the same outstanding properties as BALINIT® coatings – and persuade with further advantages as well:

能一同时还具备如下优势：

Revolutionary smoothness
划时代的光滑表面

BALIQ® enables smooth chip removal and eliminates the need for mechanical post-treatment. Adhesion and build-up edges are avoided even with difficult-to-machine materials.

BALIQ®排屑顺畅、无需机械后处理。甚至在难加工材料上，也避免了粘附和刃口堆积。



Exceptional precision
无限精密

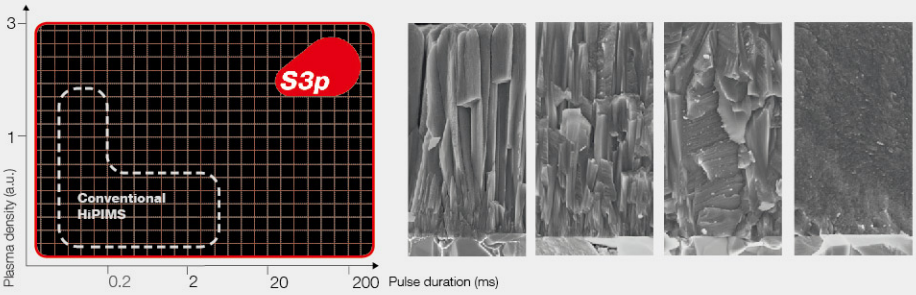
High precision in coating thickness distribution guarantees extremely sharp edges. Outstanding results are achieved especially with tools that have ultra-small diameters.

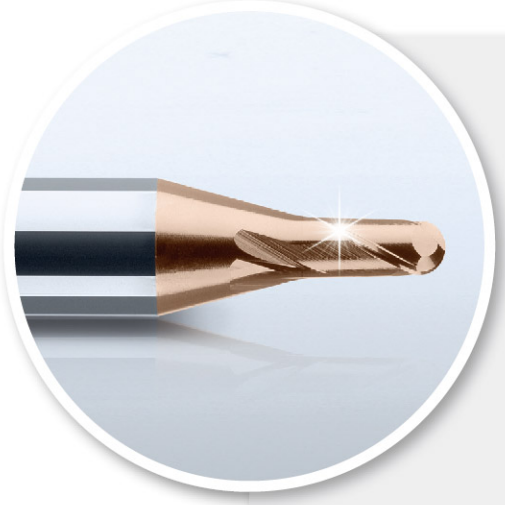
涂层厚度的高精度保证了锐利的切削刃。此突出的结果特别应用于微径工具。

Maximum scalability
最大的可调节性

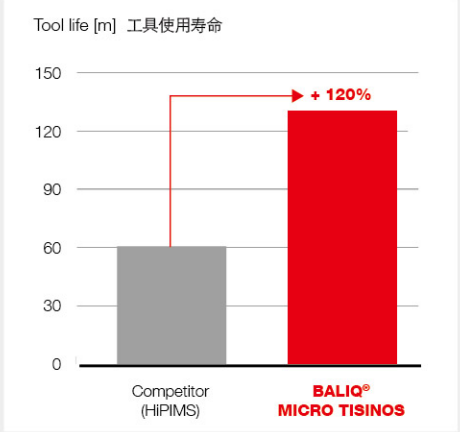
Customised coatings are possible thanks to the precise and independent scalability of pulse duration and shape as well as current density. The limits of conventional HiPIMS are overcome with the unique process window as well as significantly higher deposition rates and process stability.

由于脉冲时长，波形电流密度的精度以及独立调节性，我们可以定制涂层。传统HiPIMS的限制将被独特的工艺窗口、更高的沉积速率和工艺稳定性所打破。





BALIQ® MICRO TISINOS for high hardened steel
BALIQ®MICRO TISINOS用于淬火钢



Tool 工具	Ballnose end mill 球头铣刀 Ø 2.0 mm
Workpiece 工件	Steel 1.2379 (AISI D2, SKD11) HRC 62
Cutting data 切削参数	v_c = 130 m/min f_t = 0.04 mm a_e = 0.1 mm a_p = 0.1 mm Dry cutting 干式切削
Source 来源	Oerlikon Balzers cutting laboratory 欧瑞康巴尔查斯切削实验室

Rely on our top notch services in everything having to do with coatings

在所有与涂层有关的领域，信赖我们的高水平服务

Holistically innovative: Our coating services

In over 100 coating centres worldwide, cutting tools are being run through automated and standardized production sequences to yield the best in reproducible quality. Our Pick-Up Service collects the tools for coating and brings them back again after processing. And if you need them very fast, of course we also offer express service.

全面创新：我们的涂层中心

在我们全球超过100家的涂层中心中，切削刀具在自动化、标准化生产加工，能最大程度保持质量稳定。我们的取送货服务负责取需涂层的工具并在加工后送回。如果您急需使用您的工具，我们可以提供快递服务。

Hard, but successful: The quality analysis

Oerlikon Balzers uses the latest methodologies such as metallography, layer analysis and the measurement of surfaces and cutting edges. This ensures compliance with the high quality standards for coating surfaces, substrates and cutting edges.

困难，但是成功：质量分析

欧瑞康巴尔查斯使用最新的方法，例如金相分析、膜层分析、表面及切削刃的测量。这些质量分析的方法能够保证涂层表面、基体和切削刃的高质量标准。

Efficient and clean: Handling and cleaning

We develop individualized, product-specific fixture systems for multifunctional use in the overall value chain. Our multi-stage ultrasonic cleaning line delivers surface preparation that is ideal for PVD enabling perfect coating results.

高效和清洁：处理和清洗

我们开发了特定的、针对具体产品的装夹系统，可用于整个价值链上的多种功能需求。我们的多级超声波清洗线为PVD涂层完美涂层结果提供理想的表面准备。

Consistently trendsetting: Research and development

Oerlikon Balzers stands for new development and refinement of groundbreaking coating solutions tailored to current market needs and individual customer requirements. All coatings are tested thoroughly in our in-house cutting laboratory in which individual test series can also be carried out.

持续创新：研究和发展

欧瑞康巴尔查斯代表了全新的发展，针对目前市场需求和独特客户需要的开创性涂层解决方案的精炼。所有涂层均经过厂内切削实验室测试，同时也能进行独立序列测试。

Even more economical: Reconditioning

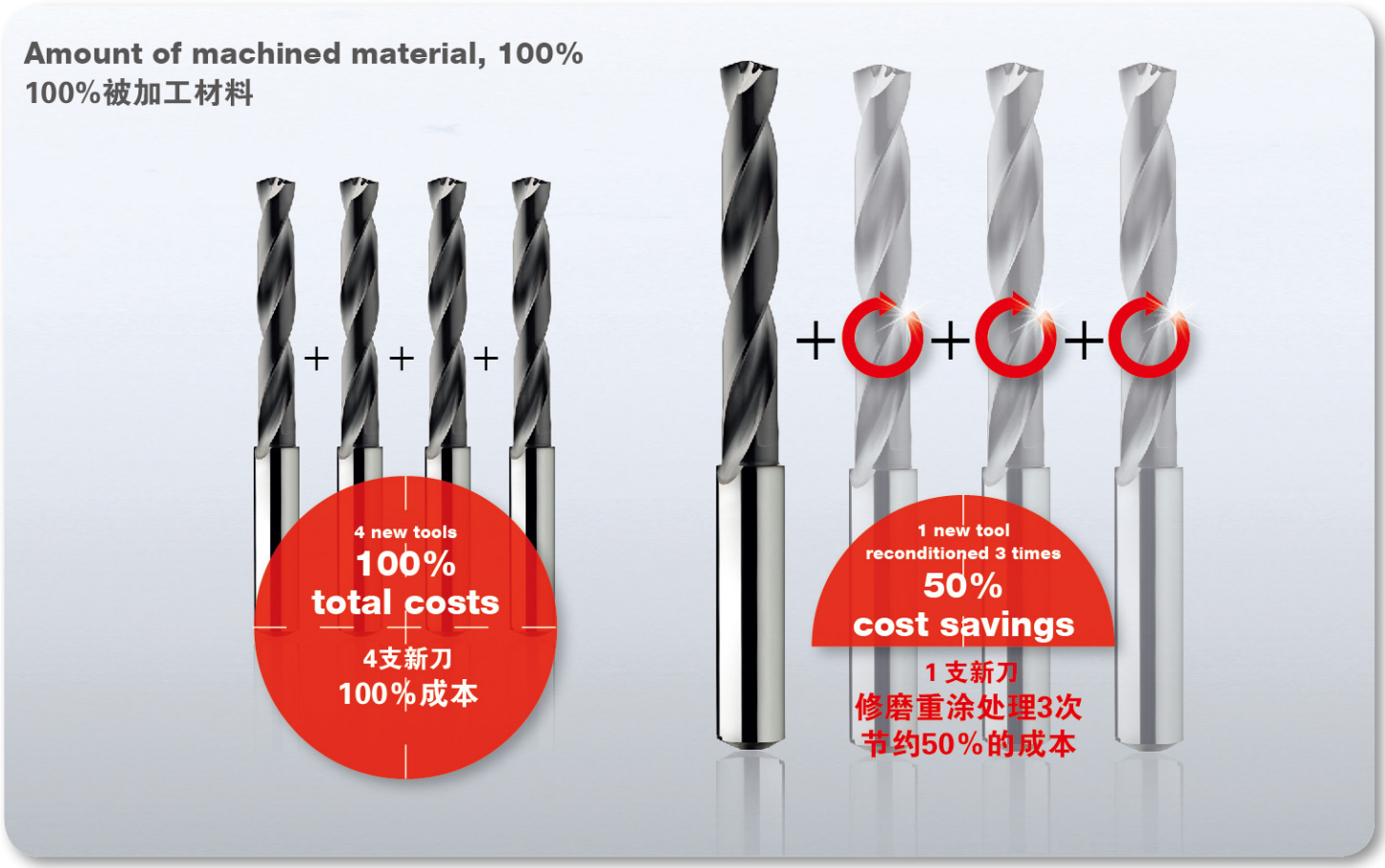
Cutting tools can be reground and recoated in selected coating centres. Even with only 3 reconditionings, you save more than 50% as compared to the purchase of a new coated tool while simultaneously benefiting from the same high performance.

更经济：修磨重涂服务

切削工具可以在所选涂层中心进行修磨重涂。仅需通过3次修磨重涂加工，您可以相较于重新涂层工具节约50%生产成本，并得到高性能表现。

Reduce your tool costs with reconditioning

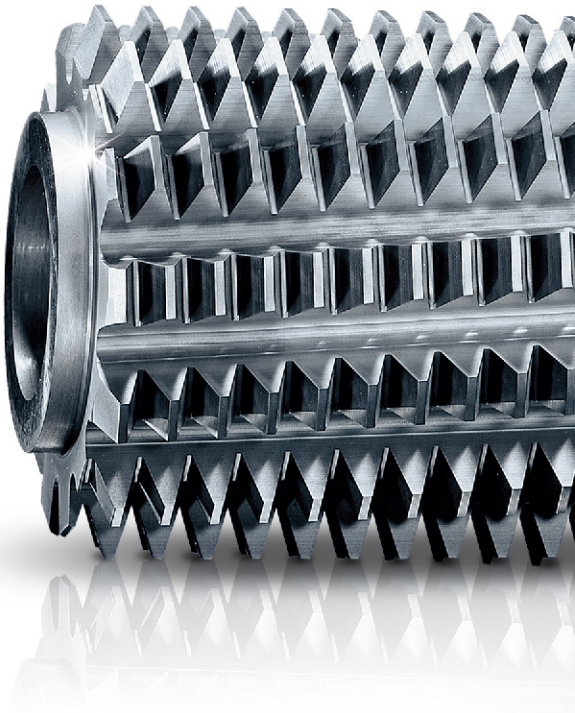
通过修磨重涂处理，降低工具成本



Coating recommendations for gear cutting and broaching
针对齿轮切削和拉削应用的涂层推荐

	GEAR CUTTING 齿轮切削			BROACHING 拉削
Material 材料	**Hobs 滚刀 HSS/Carbide 高速钢/硬质合金**	**Shaper cutters 插齿刀**	**Stick blades 刀条**	**HSS / Carbide 高速钢/硬质合金**
Unalloyed steel 非合金钢	AT / AP	AT / AP	AT / AP	AP
Steel < 1000 N/mm$_2$ 钢	AT / AP	AT / AP	AT / AP	AP
Steel > 1000 N/mm$_2$ 钢	AT / AP	AT / AP	AT / AP	AP
Steel 45 - 56 HRC 钢	AT / AP	AT / AP	AT / AP	AP
Steel 56 - 70 HRC 钢	AT / AP	AT / AP	AT / AP	AP
Stainless steel 不锈钢				AP
Cast iron (GG, GGG) 铸铁	AT / AP	AT / AP	AT / AP	AP
Al cast and wrought alloys 铝压铸和可锻合金				HC / AP
Nickel alloys 镍合金				AP
Titanium and titanium alloys 钛和钛合金				AP
Brass, copper, bronze 铜				HC / AP

AP = BALINIT® ALCRONA PRO
AT = BALINIT® ALTENSA
HC = BALINIT® HARD CARBON



Coating recommendations for turning and milling
车削和铣削应用的涂层推荐

	TURNING 车削		MILLING 铣削			
Material 材料	**Inserts 硬质合 Carbide 金刀片**	**Finishing inserts 精加工硬质 Carbide 合金刀片**	**End mills 高速钢 HSS 铣刀**	**Carbide 硬质合金铣刀**	**Micro end mills 微径铣刀**	**Inserts Carbide 硬质合金刀片**
Unalloyed steel 非合金钢	LM	ALT / LM	AP	AP	MALC	LM / AP
Steel < 1000 N/mm² 钢	LM	ALT / LM	AP	AP	MALC	LM / AP
Steel > 1000 N/mm² 钢	LM	ALT / LM	AP / LM	AP / LM	MALC	LM / AN
Steel 45 - 56 HRC 钢	LM	ALT / LM	LM / AN / AP	LM / AN / AP	MTIS / MALC	LM / AN
Steel 56 - 72 HRC 钢	AD	TIS / ALT / LM		TIS / AD / LM	MTIS	TIS / AD / LM
Stainless steel 不锈钢	LM	ALT / LM	AN / LM	AN / LM	MTIS / MALC	AN / LM
Cast iron (GG, GGG) 铸铁	LM	ALT / LM	AN / LM / AP	AN / LM / AP	MALC	LM
Wrought Al / Cast Al (6 - 12% Si) 铝锻和铝压铸	HC	HC	HC	HC	HC	HC
Al alloys > 12% Si 铝合金	DIA N / HC	DIA N / HC	HC	DIA N / HC	DIA N / HC	DIA N / HC
Nickel alloys 镍合金	LM	TIS / ALT / LM	LM / TIS / AN	LM / TIS / AN	MTIS	LM / AN
Titanium, titanium alloys 钛和钛合金	LM	TIS / ALT / LM	TIS / ALT / LM	TIS / ALT / LM	MTIS / MALC	TIS / AN / LM
Brass, copper, bronze 铜	HC	HC	HC	HC	HC	HC
Graphite 石墨	DIA M	DIA M		DIA M / HC	DIA M / HC	DIA M / HC
Composite materials (CFRP/GFRP) 复合材料	DIA N	DIA N		DIA N / HC	DIA N / HC	DIA N / HC

Recommended coatings for drilling, reaming and threading
钻削、铰孔、攻丝应用的涂层推荐

DRILLING / REAMING 钻削/铰孔				THREADING 攻丝		
Drills 高速钢钻头 HSS	Carbide 硬质合金钻头	Micro drills 微型钻头	Reamers 铰刀	Taps 丝锥	Thread formers 螺纹成型刀	Thread mills 螺纹铣刀
AP / LM	PT / LM / AP	MALC	ALC / PT / AP	ALC / B	ALC / A	ALC / AP
AP / LM	PT / LM / AP	MALC	ALC / PT / AP	ALC / B	ALC / A	ALC / AP
AP / LM	PT / LM / AP	MALC	ALC / PT / AP	ALC / B	ALC / A	ALC / AP
LM / AP	PT / LM / AP	MTIS / MALC	ALC / PT / LM	ALC / B	ALC / A	ALC / LM
	AD / PT / LM	MTIS	TIS / PT			TIS / AD / LM
AP / LM	PT / LM / AP	MTIS / MALC	ALC / PT / AP	ALC / B	ALC / A	ALC / LM
AP / LM	PT / LM / AP	MALC	ALC / PT / AP	ALC / B	ALC / A	ALC / AP
HC	HC	HC	HC	HC / B	HC / A	HC / B
HC	HC / DIA N	HC / DIA N	HC / DIA N	HC / DIA N	HC / DIA N	HC / DIA N
	PT / LM	MTIS	TIS / LM	ALC / B	ALC / A	TIS / LM
	PT / LM / AP	MTIS / MALC	TIS / LM	ALC / B	ALC / A	TIS / LM
HC	HC	HC	HC	HC	HC	HC / B
	DIA M	DIA M / HC				
	DIA N / HC	DIA N / HC				

A = BALINIT® A
AP = BALINIT® ALCRONA PRO
AD = BALINIT® ALDURA
AN = BALINIT® ALNOVA
AT = BALINIT® ALTENSA
B = BALINIT® B

DIA M = BALINIT® DIAMOND MICRO
DIA N = BALINIT® DIAMOND NANO
HC = BALINIT® HARD CARBON
LM = BALINIT® LATUMA
PT = BALINIT® PERTURA

ALC = BALIQ® ALCRONOS
ALT = BALIQ® ALTINOS
MALC = BALIQ® MICRO ALCRONOS
MTIS = BALIQ® MICRO TISINOS
TIS = BALIQ® TISINOS

Rely on outstanding coating properties for wear protection
可信赖的杰出涂层性能提供耐磨保护

BALINIT®	Coating material Coating structure 涂层材料和结构	Coating hardness H_{IT}(GPa) 涂层硬度	Intrinsic stress (GPa) 内在压力	Available coating thicknesses (µm) 涂层厚度	Maximum service temperature (°C) 最高应用温度	Suitable substrates 适合基材	Coating colour 涂层颜色
A	TiN Monolayer	30 +/-3	-2 +/-1	application-related 根据应用	600	HSS, PM-HSS, Carbide 高速钢、粉末冶金高速钢、硬质合金	golden yellow 金黄色
ALCRONA PRO	AlCrN-based Monolayer	36 +/-3	-3 +/-1		1,100	HSS, PM-HSS, Carbide 高速钢、粉末冶金高速钢、硬质合金	light grey 浅灰色
ALdu RA	AlCrN-based Multilayer	34 +/-3	-3 +/-1		>1,100	Carbide 硬质合金	blue grey 蓝灰色
ALNOVA	AlCrN-based Multilayer	38 +/-3	-3 +/-1		>1,100	HSS, PM-HSS, Carbide 高速钢、粉末冶金高速钢、硬质合金	light grey 浅灰色
ALTENSA	AlCrN-based Multilayer	40 +/-3	-2 +/-1		>1,100	HSS, PM-HSS, Carbide 高速钢、粉末冶金高速钢、硬质合金	light grey 浅灰色
B	TiCN Multilayer	37 +/-3	-3 +/-1		400	HSS, PM-HSS, Carbide 高速钢、粉末冶金高速钢、硬质合金	blue grey 蓝灰色
dIAMONd MICRO	C (sp3) microcystalline	80 - 100	–		600	Carbide 硬质合金	grey 灰色
dIAMONd NANO	C (sp3) nanocystalline	80 - 100	–		600	Carbide 硬质合金	grey 灰色
HARd CARBON	Carbon-based Monolayer	50 +/-5	-5		500	HSS, PM-HSS, Carbide 高速钢、粉末冶金高速钢、硬质合金	black 黑色
LATuMA	AlTiN-based Monolayer	35 +/-3	-3 +/-1		1,000	HSS, PM-HSS, Carbide 高速钢、粉末冶金高速钢、硬质合金	grey 灰色
PERTuRA	AlTiN-based Nanolayer	35 +/- 3	-4 +/-1		1,000	Carbide 硬质合金	aubergine grey 紫灰色

Benefit from the BALINIT and BALIQ wear-resistance coatings for machining
Get in touch with us!

想尝试BALINIT和BALIQ耐磨涂层，
立刻与我们联系！

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