boehlerit

烧结毛胚, 棒料, 和预制半成品

切削和冲压工具專用

As sintered blocks, rods and preforms

for cutting and punching tools

Boehlerit – der Entwicklungspionier im Hartmetall

Hartmetalle und Werkzeuge von Boehlerit setzen Maßstäbe in der Bearbeitung von Metall, Holz, Kunststoff und Verbundwerkstoffen. Die Schneidstoff- und Werkzeugspezialisten aus der Stahlstadt Kapfenberg in der Steiermark lösen durch ihre 'Nähe zum Stahl- labor' anspruchsvollste Bearbeitungsaufgaben in Werkstoffen der Zukunft. Schneidstoffe, Halbzeuge und Präzisionswerkzeuge sowie Werkzeugsysteme zum Fräsen, Drehen, Bohren und Um- formen sorgen weltweit für Prozesssicherheit und Effizienz. Zum umfassenden Produktspektrum von Boehlerit gehören auch hoch spezialisierte Werkzeuge für die Kurbelwellenbearbeitung sowie für die Hüttentechnik zum Drehschälen, zur Rohr- und Blech- bearbeitung sowie der Schwerzerspanung. Eine weitere Stärke von Boehlerit sind Hartmetalle für Konstruktionsteile und für den Verschleißschutz. Auch im Bereich der Beschichtungstechnologie schafft Boehlerit von der weltweit ersten Nano-CVD Anbindungs- schicht bis zur härtesten Diamantschicht globale Alleinstellung. Außerdem ist Boehlerit mit seinem langjährigen Know-How in der Metallurgie, der Beschichtungstechnologie und mit modernster Presstechnik ein kompetenter Entwicklungspartner für Toolmaker. Die Marke Boehlerit wurde 1932 für die Hartmetallfertigung des Stahlherstellers Böhler in Düsseldorf gegründet. 1950 begann
der Aufbau einer zweiten Hartmetallfertigung in Kapfenberg/Österreich, am heutigen Hauptsitz der Boehlerit Gruppe. Zwischenzeitlich hat Boehlerit auch Produktions- und Vertriebsstandorte in Deutschland, Spanien, Türkei, Ungarn, Tschechien, Slowakei, Singapur, China, USA, Polen, Brasilien und Mexiko. Mit weiteren exklusiven Vertriebspartnern und gemeinsam mit der Bilz-Gruppe ist Boehlerit auf fast allen Kontinenten, in über 25 Industrieländern, heimisch.
Seit der Privatisierung im Jahr 1991 gehört Boehlerit zum Leitz Firmenverband in Oberkochen/Deutschland und somit zur heutigen Unternehmensgruppe der Familie Brucklacher (Bilz, Boehlerit und Leitz). 770 erfahrene Mitarbeiter (500 am Standort Kapfenberg) erwirtschaften jährlich einen Umsatz von ca. 100 Mio. Euro. Davon investiert Boehlerit 5% direkt in Forschung und Entwicklung. Mit modernsten Analysemethoden und in enger Zusammenarbeit mit Universitäten und Forschungseinrichtungen werden ständig neue Produkte rund um den Schneid- und Verschleißschutzstoff Hartmetall entwickelt. Das macht die Innovationsfabrik Boehlerit zu einem der international führenden Anbieter kundenspezifischer Lösungen und Dienstleistungen in anspruchsvollen Anwendungsbereichen.

Boehlerit – Pioneers in Carbide Development

Carbides and tools from Boehlerit are the pace-setters for new standards in the machining of metal, wood, synthetic and composite materials. The cutting materials and tools specialist
from the steel town Kapfenberg in Styria has the answers for the most challenging machining tasks for materials of the future with its direct line to the 'steel lab'. Reliable and efficient processes are ensured worldwide with cutting materials, semi-finished products, precision tools and tooling systems for milling, turning, drilling and forming. The comprehensive Boehlerit product range includes highly specialised tools for crankshaft machining, tube and pipe machining, bar peeling and heavy-duty machining operations in the steel industry. Further Boehlerit strengths include carbides for structural components and for wear-protection. In coating technology, Boehlerit achieved a world first and unique positioning globally with its Nano CVD adhesion layer through
to the hardest diamond coatings. Added to this, Boehlerit is the expert development partner for toolmakers with its unrivalled know-how and many years of mastery in metallurgy, coatings systems and the latest pressing technologies.
The Boehlerit brand was established in 1932 for the carbide production of the Böhler Steelworks in Dusseldorf, Germany. A second carbide production centre was established at Kapfenberg/Austria in 1950, at what is now the world headquarters of the Boehlerit Group. Boehlerit today has production and sales locations in Germany, Spain, Turkey, Hungary, the Czech Republic, Slovakia, Singapore, China, the USA, Poland, Brazil and Mexico. Boehlerit is at home on virtually every continent and in 25 leading industrial nations working hand-in-hand with exclusive sales partners and its partners in the Bilz Group.
Since privatization in 1991, Boehlerit has been a part of the Leitz Corporate Group in Oberkochen/Germany and is thus a part of the group of companies owned by the Brucklacher family (Bilz, Boehlerit and Leitz). The company employs 770 experienced employees (500 in Kapfenberg alone). 5 % of its annual turnover of around 100 million euros is invested directly in research and development every year. Using state-of-the art analytical methods and profiting from its close cooperation with universities and research institutes, Boehlerit generates a constant flow of new products and solutions revolving around carbides and their use for cutting and wear-protection. All of this has made the innovation factory Boehlerit one of the world's leading providers of customised solutions and services for industries with the most demanding applications.

Kapfenberg in Österreich/**Kapfenberg** in Austria **Headquarter**

Technische Änderungen und Druckfehler vorbehalten.
Subject to changes from technical development and printing errors.

我们的強項

多年的经验, 持续的开发和最先进的技术使 Boehlerit 能够完全满足市场和客户需求. 甚至特殊解决方案.
从最小仅仅几克的硬质合金产品到最大超过 100 公斤, 单件或批量生产的硬质合金产品, 从为客户特殊设计的产品到到标准件, Boehlerit 都是理想合作伙伴. 特别是在需要快速交货时.
严格的质量控制确保供应的连续稳定, 不仅尺寸控制, 在冶金质量上也有严格控管, 这对 Boehlerit 尤为重要. 研发投资占年营业额的 5%. 这是公司对客户的最佳承诺.

The base of our strength

Years of experience, continuing development and the most technologically advanced production methods has enabled Boehlerit to react to both market and customer requirements alike. Even special solutions can be accommodated.

From the smallest carbide product weighing only a few grams to the largest with more than 100 kg, individually or mass produced, from special products to customer design to standard parts, Boehlerit is the ideal partner. Especially when speedy delivery is required.

Strict quality control ensures continuity of supply not only dimensional but also metallurgical, this is especially important for Boehlerit. Investment in research and development amounts to some 5% of the annual turnover. This confirms the company's commitment to the industry.

成型模块

这个制程中, 硬质合金颗粒在高冷等净压下密化, 坯料密度均匀分布.
然后将坯料脱蜡并在700°C - 800°C炉中预烧结达到最后制程所需的强度.
胚料预烧结后再使用天然钻石或人工钻石在 CNC 机床上加工成客户要的形状.

Forming

In this manufacturing process the carbide granulate is densified cold isostactically under high pressure, achieving a very even density distribution in the blank. The blanks are then dewaxed and presintered at temperatures of between 700°C - 800°C in order to achieve the strength condition needed for the final processing. The presintered blocks are processed largely on CNC machines using diamond or PCD cutting tools and given the form demanded by the customer.

胚料的机械特性在烧结中出现. 在气态环境和 1350°C 温度下严格控制 - 烧结热等静压HIP 炉中温度为 1500 °C, 压力 100 bar. 钴含量低于 15% 的亚微米级晶粒横向断裂强度显着提高.

The typical mechanical characteristics of this material unfold during the sintering process. This develops under strict control in a gaseous atmosphere and temperatures of around 1350°C - 1500 °C and 100 bar pressure in the sinter-HIP ovens. Submicron grades and grains with a cobalt content of under 15 % benefit from considerable increases in transverse rupture strength.

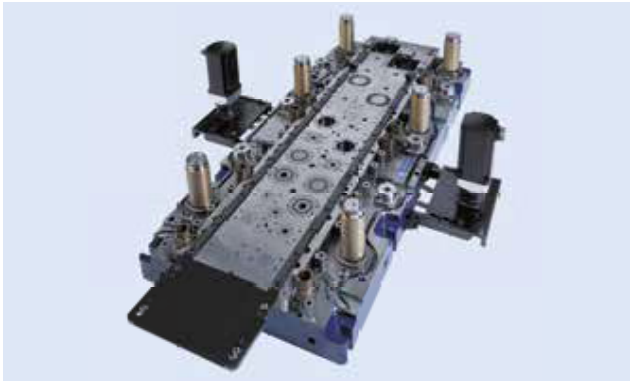
优化寿命的材质选择

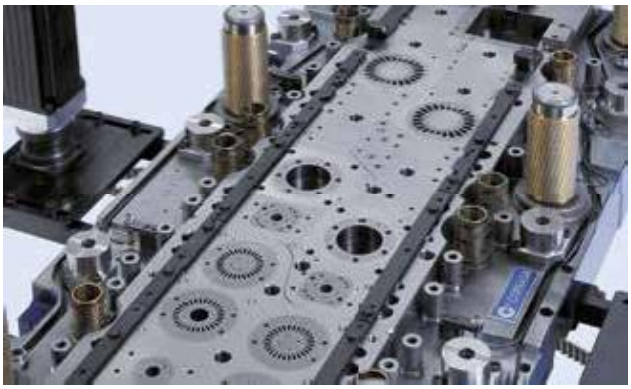
Grade selection for optimum tool life

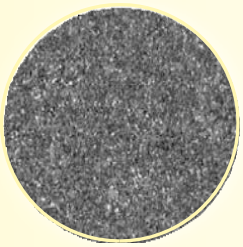
www.boehlerit.com

市场要求日益严格,切削和冲压工具制造中使用的所有材质都必须达到最高质量标准.多年来与客户的密切合作使我们今天能够为每种应用提供合适的硬质合金(见图 5).以下因素在选择最佳硬质合金类型时应被考虑:选择低含钴量的硬质合金,以减少沾黏和刀体磨损.而较粗大的晶粒可以增加碳化物的韧性(抗断裂韧性)并减少刃角崩裂的现象.

The continuously more stringent market requirements demand the highest quality standards from all grades used in cutting and punching tool construction. Years of close cooperation with our customers have put us in a position today to be able to offer the right carbide type for every application (see diagram 5). The following factors should be taken into account when selecting the optimum carbide type for an application: Select a low cobalt content carbide to minimize adherence effects and the resultant body wear and tear. A coarse grain increases carbide toughness (= fracture toughness) and diminishes cutting edge chipping.







亚微米

通常用于有刃尖堆积和容易磨损倾向的耐磨材料

特别适用于半导体行业封装引线框架和电路连接器.有低沾粘特性和较高的刃口稳定性

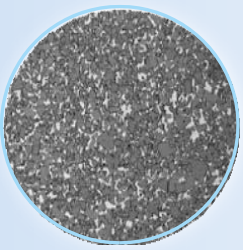
应用领域:薄膜、薄板、缠线

Submicron

Usually used for abrasive materials where there is a tendency for material build up and wear

Especially good for the lead frame and electrical connector industry. Low-sticking tendency and highest edge stability

Application area: films, thin sheet metal, wrap connections



中等颗粒

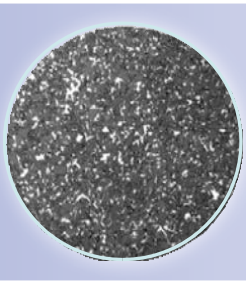
转子/定子,仪电,冲压工具的传统材质.韧性和耐磨性的理想折衷.

应用领域:有色金属,钢材,电工钢板.

Medium grain

The traditional grades for Rotor/Stator and “E & I” cutting and punching tools. Ideal compromise of toughness and wear resistance

Application area: non-ferrous metals, steel, electric steel sheet



耐腐蚀材質

用于WEDM 加工或水介质中,由于润滑剂而产生腐蚀问题的地方

应用领域:通用

Corrosion resistant grades

For use when processing by WEDM in water dielectric or where there is a corrosion problem due to tool lubrication

Application area: universal

用于切削和冲压工具的硬质合金材质
Carbide grades for cutting and punching tools

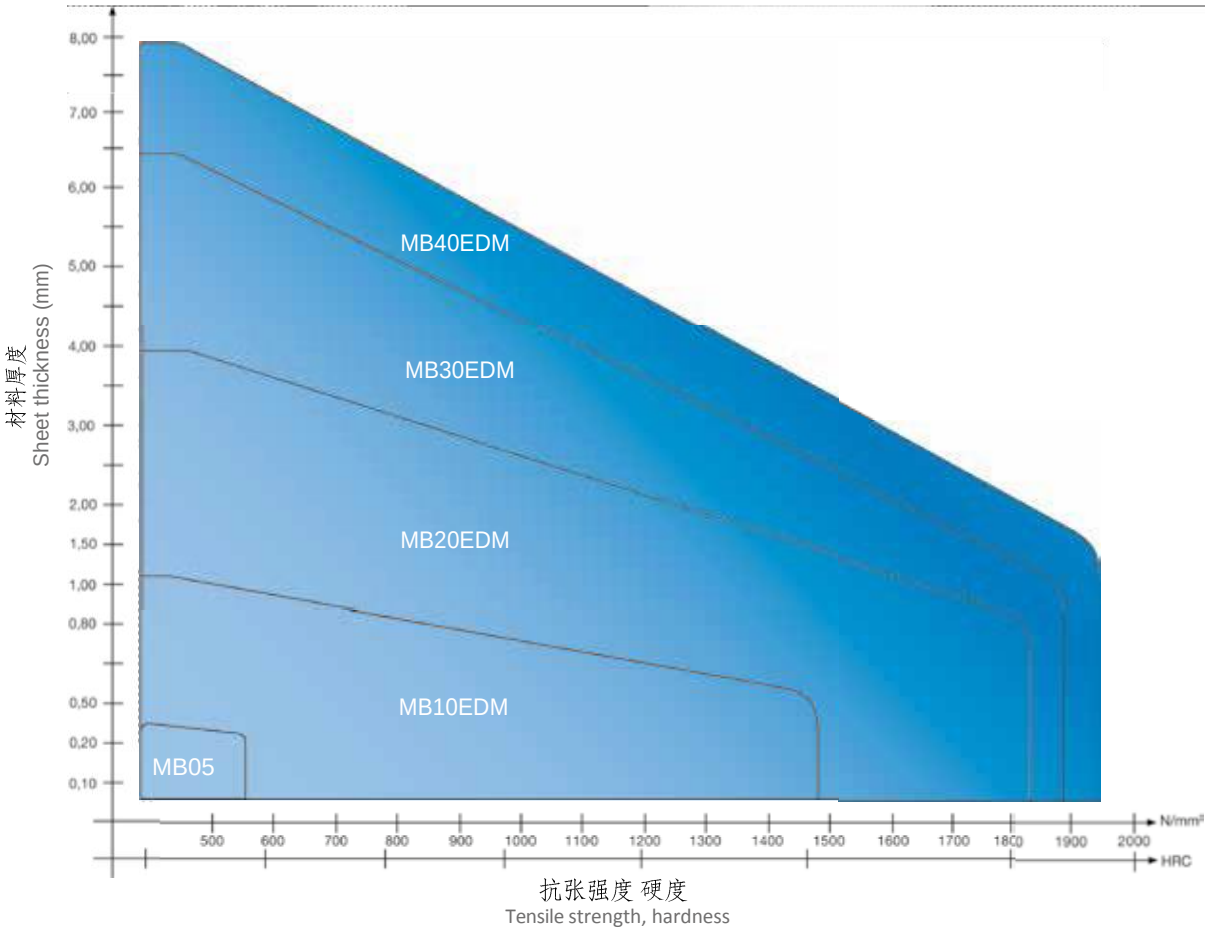
材质 Grade	粒 度 Grain size	硬度 Hv30 Hardness HV30	抗折裂韧度 (K_{IC}) Fracture toughness (K_{IC})	碳化钨 % Tungsten %	钴 % Cobalt %	其他碳化物 Mixed carbides	特殊黏着元素 % Special Binder %
HB20F	亚微米 Submicron	1750	9,5	92,5	7,5		
HB30F	亚微米Submicron	1650	10,4	90,0	10		
HB40F	亚微米 Submicron	1525	10,9	88,0	12		
HB50F	亚微米 Submicron	1475	11,3	85,0	15		
GB10	中等粒度 Medium	1500	9,6	93,25	6,5	0,25	
GB15	中等粒度 Medium	1350	13,7	89,55	10	0,45	
GB20	中等粒度Medium	1275	15,5	87,55	12	0,45	
GB30	中等/粗粒度 Medium/Coarse	1100	21,0	84,55	15	0,45	
MB05	亚微米 Submicron	1950	8,4	94,2			5,8
MB10EDM	亚微米 Submicron	1600	10,7	89,0			11,0
MB20EDM	中等粒度 Medium	1350	13,8	87,0			13,0
NEW MB30EDM	中等粒度 Medium	1250	18,4	83,6			16,4
MB40EDM	中等粒度 Medium	1070	< 20,0	78,75			21,25

应用范围
Fields of application

HB20F	用于有色金属和印刷电路板的亚微米级材质
	Submicron grade for non-ferrous metals and printed circuit boards.
HB30F	用于有色金属和高硅合金钢的亚微米级. 极致的刃角稳定性, 低沾粘特质.
	Submicron grade for non-ferrous metals and high-silicon steel. Ultimate edge stability, low adhesive bonding tendency.
HB40F	亚微米级, 适用于 HB30F 类似应用, 但具有更高韧性.
	Submicron grade for similar applications as HB30F, but with greater toughness.
HB50F	泛用级的切削亚微米级材质, 是首选细晶粒材质.
	Submicron grade with a wide range of cutting applications whenever fine-grain structure is preferred.
GB10	中等粒度: 高耐磨性的材质. 适用于印刷电路板和有色金属.
	Medium-grain: a grade with high wear resistance. Suitable for printed circuit boards and non-ferrous metals.
GB15	中等粒度: 与 GB10 类似, 但具有更高韧性.
	Medium-grain: similar applications as GB10, but with greater toughness.
GB20	中等粒度: 切削工具的通用材质, 最佳折衷的强度和韧性.
	Medium-grain: a universal grain for cutting tools. Optimum compromise of strength and toughness.
GB30	中/粗粒度: 非常适用于大横截面钢材的冲压和弯曲工艺.
	Medium/Coarse grain: highly suitable for punching and bending processes of larger cross-sections in the steel range.
MB05	适用于极薄有色金属的耐腐蚀材质.
	Corrosion-resistant grade for very thin non-ferrous metals.
MB10EDM	用于薄板, 复杂形状, 和具有残屑堆积倾向材料的耐腐蚀材质.
	Corrosion-resistant grade for thin sheet metal, complex geometries and materials with a tendency of deposit build-up.
MB20EDM	用于切削刀具的耐腐蚀通用材质.
	Corrosion-resistant universal grade for cutting tools.
NEW MB30EDM	用于较大横截面冲压和弯曲工艺的耐腐蚀材质.
	Corrosion-resistant grade for punching and bending processes of larger cross-sections.
MB40EDM	耐腐蚀材质, 适用于较大横截面的高韧性冲压和弯曲工艺.
	Corrosion-resistant grade for high-tough punching and bending processes of larger cross-sections.

推荐材质

Grade recommendation



耐腐蚀硬质合金

Corrosion resistant carbide

耐腐蚀硬质合金

过去, 腐蚀一直是使用碳化物最大问题之一, 不仅是线材腐蚀过程中电介质的腐蚀, 还有冲压过程中各种润滑剂对模具的影响. 作为一家专业供应大厂, 我们一直致力于该领域的进步，因此与 Montanuniversität Leoben公司 合作开发了完美的解决方案. 感谢特殊耐腐蚀辅助金属，将特殊烧结技术和碳化钨连结起来, 在整个 pH 范围内有效地消除了加工环境中的腐蚀. 这意味着我们的碳化物的物理和化学性质在不同 pH 值下得到了显着改善.

Corrosion resistant carbide

In the past, corrosion has been one of the biggest problems associated with the use of carbides, not just corrosion in the dielectric during wire eroding, but also the impact of various lubricants on the stamp and the die during punching. As a company, we are constantly striving for progress in this area and have therefore teamed up with Montanuniversität Leoben to develop the perfect solution. Thanks to a corrosion-resistant auxiliary metal that holds together the tungsten carbides in conjunction with a special sintering technology, corrosion is effectively eliminated from the processing environment throughout the entire pH range. This also means that the physical and chemical properties of our carbides are significantly improved for the different pH values.

MB30EDM 和 MB40EDM: 坚韧又耐腐蚀的材质

MB30EDM and MB40EDM: Tough and corrosion resistant

位于Kapfenberg的Boehlerit硬质合金刀具专家, 推出了MB30EDM 和MB40EDM两种用于切削和冲压模具的新材质。由于它们完美的韧性和耐腐蚀性，这两种新材质完美地补充了现有材质 MB05, MB10EDM, 和MB20EDM. Boehlerit 现在产品组合中共有五个耐腐蚀材质, 涵盖了刀具制造商需要的大多数要求, 并使精密冲压成型可以现实.

With the new material grades MB30EDM and MB40EDM, Kapfenberg- based carbide and tool specialist Boehlerit is launching two new grades for cutting and punching tools. Thanks to their toughness and corrosion resistance, these two new grades perfectly complement the existing grades MB05, MB10EDM and MB20EDM. Boehlerit now has a total of five corrosion-resistant grades in its product portfolio, covering most application requirements that arise with tool manufacturers and making even fine punching and forming a reality.

研磨料和烧结半成品的公差

Grinding allowances and sinter tolerances for as-sintered blocks

半成品未严魔棒料无论有无冷却孔. 所有 Boehlerit 硬质合金棒料都是由热等静压方式烧结,因此体质规则毫无气孔. 有关毛胚棒料的库存情况, 请参访我们网站主页. 如果您对此产品有其他疑问, 请联系我们众多经验丰富的技术销售人员, 他们将很乐意提供完整的支持服务.

As sintered blocks are produced with or without wire start holes and according to customer drawings. All Boehlerit tungsten carbide products which are used in this field are sinter-hipped whereby a regular and pore-free structure is obtained. For an overview of the stock program "Standard as sintered blocks and rods" please visit our homepage. Should you have further questions regarding this product range, please contact one of our many experienced technical sales personnel, who will be pleased to offer a complete support service.

烧结螺纹

Preformed Thread as sintered

GB30 HB40F HB50F HB30HM MB30EDM	GB20 MB10EDM MB20EDM MB05	GB10 GB15 HB10F HB20F HB30F	最大内部螺纹长度	
最大螺纹深度 threading depth max. = 3.0 x Ø				
	M4*	M4*	M4	12,0
	M5*	M5*	M5	15,0
M6	M6	M6	M6	20,0
M8	M8	M8	M8	30,0
M10	M10	M10	M10	30,0
M12	M12	M12	M12	30,0
	M16	M16	M16	40,0

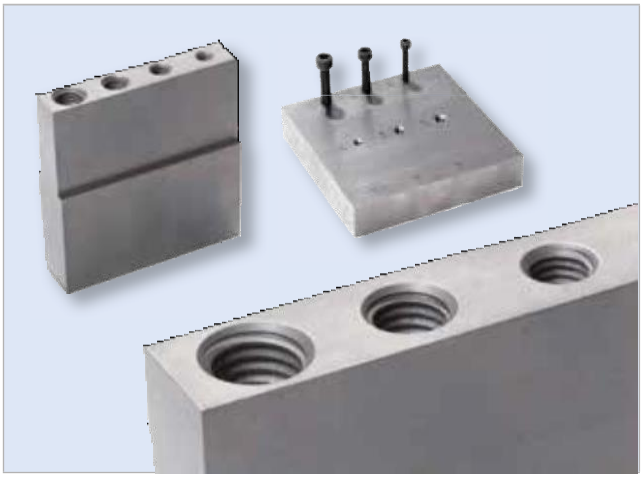
*通孔

* only through-threads or through-bores

單獨測試 Separate test

超出范围的硬质合金材质和螺纹尺寸

Carbide grades and thread dimensions which fall out of the matrix



Boehlerit是您切削和冲压工具的合作伙伴

Boehlerit, your partner for cutting and punchingtools!

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