高性能工具磨削油

Boss Lubricant GmbH & Co.KG

COMPANY INTRODUCTION

Boss Lubricants GmbH & Co. KG, based in Albstadt, Baden-Württemberg, was founded in 2003. The company develops and manufactures process liquids and special lubricants both for the local market and for globally active major customers. We mainly acquire our business partners in the areas of medical technology, renewables, mechanical engineering and special plant construction. In close collaboration with our customers we jointly develop innovative, specific solution approaches. They often secure for our customers a decisive competitive advantage in non-standardised products.

Our corporate philosophy and the permanent further development of our products require intensive research and development work. As a consequence our company has acquired an enormous depth of knowledge in niche areas. One of our corporate concepts is to make optimum utilisation of the lubricants used combined with the best possible protection and efficiency for humans, machines and the environment, and that can only be achieved by means of innovative products and processes.

We aim to make our customers satisfied all round with our products, our advice and our service and not only to fulfil but to exceed their expectations.

公　司　简　介

Boss Lubricants GmbH & Co. KG, 位于德国巴登-符腾堡州的阿尔布施塔特，创建于2003年。公司为本地市场和全球客户开发和生产金属加工液及特殊润滑剂。我们的客户主要集中在医疗器械，可再生能源，机械工程和特种厂房建设等行业。

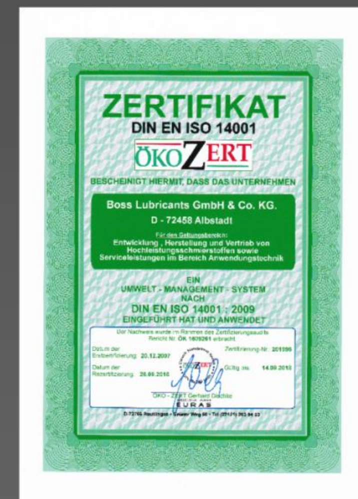
我们与客户密切合作，共同开发创新的，具体的润滑解决方案。而这些方案也常常确保了我们的客户在非标准产品中具有决定性的竞争优势。

为了我们的企业理念和产品的长远发展，深入的研究和开发是必不可少的。因此，我们公司在细分领域获得了深刻的认知。我们的企业理念之一是充分利用所使用的润滑剂，并且保证其对人员、机器和环境提供最佳的保护，同时进一步提升客户的效率，而只有通过不断创新的产品和工艺才能做到这一点。

我们的目标是让我们的产品，我们的建议和我们的服务，不仅仅是满足客户的需求，而是努力超出您的期望。

Certified Quality

The certifications according to ISO 9001 And ISO 14001 for the whole company guarantee a reliable standard concerning the quality of our products and services. All processes have to meet the same strict requirements and undergo regular checks by internal and external institutions with regard to their effectiveness and room for improvement.



Our employees, with their commitment and experience, area key factor in the realisation of our company goals. This, continuous training of our staff according to their specificareas of responsibilities is very important to us. Because reliability, the high quality of our products at all times, as well as your satisfaction are our primary objectives.

质 量 认 证


NSF International

RECOGNIZES

Boss Lubricants GmbH & Co. KG

Germany

AS COMPLYING WITH THE NSF REGISTRATION GUIDELINES FOR PROPRIETARY SUBSTANCES AND NONFOOD COMPOUNDS, PRODUCTS APPEARING IN THE NSF OFFICIAL LISTING ARE AUTHORIZED TO BEAR THE NSF REGISTRATION MARK.

NSF

Reinforced Compounds Program Listed

获得ISO 9001的认证，这是对BOSS公司产品和服务可靠性的完全认可。公司的每一个程序必须完全符合非常严格的要求，而且内部和外部的制度也要受到定期的检查，以确定其效果和可改进的可能性。


ZERTIFIKAT

DIN EN ISO 14001

ÖKOZERT

BESCHEINIGT HIERMIT, DASS DAS UNTERNEHMEN

Boss Lubricants GmbH & Co. KG.

D - 72458 Albstadt

Für den Geltungsbereich:
Entwicklung , Herstellung und Vertrieb von Hochleistungsschmierstoffen sowie Serviceleistungen im Bereich Anwendungstechnik

EIN UMWELT - MANAGEMENT - SYSTEM NACH DIN EN ISO 14001 : 2009 EINGEFÜHRT HAT UND ANWENDET


ZERTIFIKAT

DIN EN ISO 9001

ISOZERT

BESCHEINIGT HIERMIT, DASS DAS UNTERNEHMEN

Boss Lubricants GmbH & Co. KG.

D - 72458 Albstadt

Für den Geltungsbereich:
Entwicklung , Herstellung und Vertrieb von Hochleistungsschmierstoffen sowie Serviceleistungen im Bereich Anwendungstechnik

EIN QUALITÄTS - MANAGEMENT - SYSTEM NACH DIN EN ISO 9001 : 2008 EINGEFÜHRT HAT UND ANWENDET

我们的雇员，以及其所具有的经验和所承担的责任为我们的目标而在努力。而且，对我们每个雇员的定期化专业化培训也是非常重要的。这是因为永远保证我们产品的高品质，和你们的满意是我们的主要的最大的目标。

Research & development

Our own development department with a lab team and the requisite technical equipment are a cornerstone of our research and development work.
Our challenge is to kick-start landmark developments and thereby to give thinking a new perspective.
Our aim is to fulfil and exceed our customers' catalogue of requirements of the product in question. Our customers greatly appreciate the fact that we face up to this challenge.

This applies to the medical technology segment in particular. In medical products the focus is clearly on human compatibility. The products used must not be toxic and are subjected to special tests that are carried out and must beundertaken in compliance with a specific standard:

- Cytotoxicity according to DIN EN ISO 10993-5
- Sensitization and irritation or intercutaneous reactivity according to ISO 10993-10

In keeping with our mission statement we must harmonise in our development processes the requirements of our customers, the statutory provisions and regulations and our corporate philosophy.

研究及开发

我们自己的开发部门拥有一个实验团队和必要的技术设备，这是我们研究和开发工作的基石。

我们挑战的是启动里程碑式的发展，从而给思考提供一个新的视角。

我们的目标是满足和超越顾客现有的产品需求。事实上，我们的顾客对于我们有面对这一挑战的想法很欣赏。

这尤其适用于医疗器械市场。医疗产品所关注的很显然是产品对人体的兼容性，产品不能带有毒性，并且要与特定测试的特定标准所符合。应符合：

•根据DIN EN ISO 10993-5 的细胞毒性测试

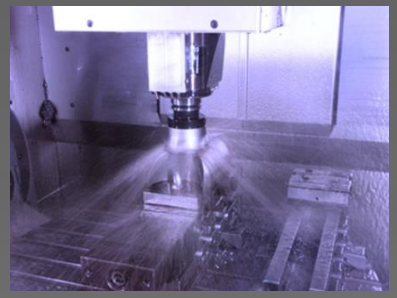
•根据ISO 10993-10 的致敏和刺激或皮内反应实验

为了完成我们的使命，我们必须在发展过程中做到与客户的要求，法律法规的规定和我们自身的企业文化相协调。

Product range 产品目录（部分）

Grinding oil
磨削油

Water-miscible metal processing fluid
水基切削液



Cutting oil
切削油

Lapping oil
研磨油

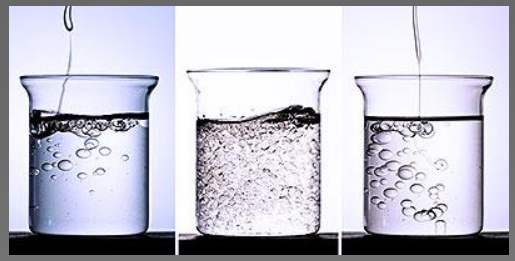
Insulating-Dielectric-EDM oil
电火花油

Minimum quantity lubricant
微量润滑油

High Performance Grinding Oil
高性能磨削油

There are 4 Types of Grinding Oil

磨削油分为四种



- Mineral Oil
  矿物油
- Hydrocrack oil (or semi synthetic)
  氢化裂解油（半合成油）
- GTL oil
  天然气合成油
- Synthetic Oil
  全合成油

Boss Lubricants don`t use pure Mineral oil for the Grinding Process
Boss不用纯矿物油进行磨削加工

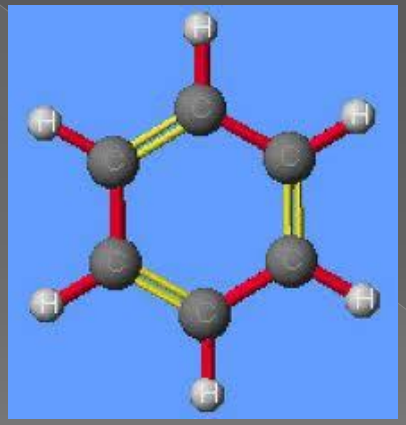
Synthetic Oil Vs Mineral Oil
全合成油VS矿物油

Double Bonded Atoms in Brief

Conglomerate of circular hydrocarbon

Mineral Oil
矿物油

简言之就是双键原子
环形烃类化合物



Elevated Temperature :
Double Bonds want to break and form bonds with other elements

提高温度：
双键中的各个元素会容易断开

Result : not resistant to age

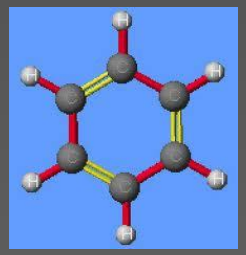
结果 ： 使用不耐久

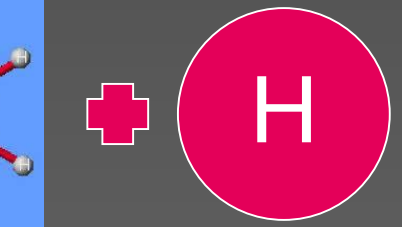
Synthetic Oil Vs Mineral Oil
全合成油VS矿物油

HydroCrack Oil – Refined Mineral oil

Mineral oil is upgraded with hydrocarbon

Mineral oil is heated in an Hydrogen enriched atmosphere which encourages and double bonds to break and form new bonds with the free Hydrogen atoms giving rise to a more stable molecular structure.





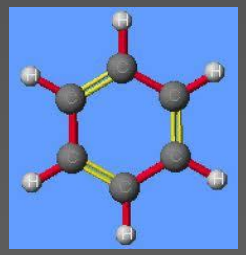
There is however little control of the type of hydrocarbon molecules produced so precisely engineered products are somewhat difficult to produce and impurities along with a % of double bonded molecules will always remain

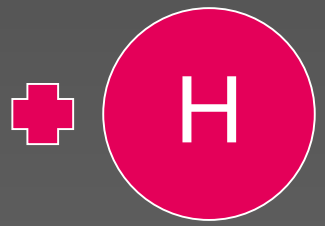
Physical properties

- *Viscosity – Dependant on temperature but more stable*
- *Lubricity – Dependant on temperature but more stable*
- *Longevity – Will begin to break down with the application of heat and pressure, expect to change the oil every 2 years at best*

Synthetic Oil Vs Mineral Oil
全合成油VS矿物油

氢化裂解油——精炼矿物油





矿物油通过加氢处理升级

矿物油通过加热加氢处理，加强了双键原子之间的链接，使得双键的分子结构上升到了更加坚固稳定的水平

但由于碳氢化合物在生产中很难控制生成的分子结构类型，因而即便是精确的加工设计，也会有很多杂质残留，无法保证双键的一一对应。

物理性质

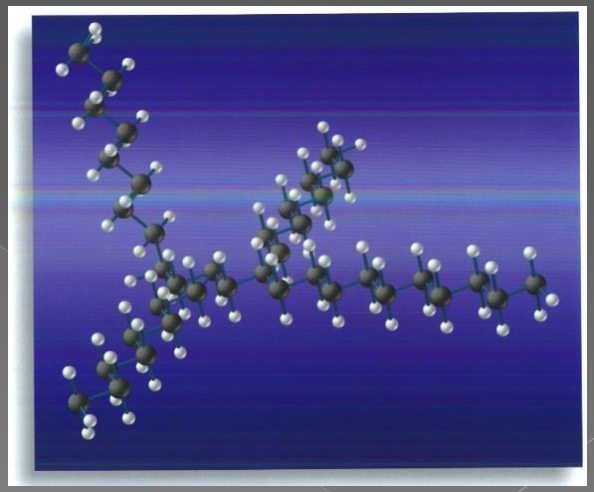
- *粘度 – 由温度决定，但更加稳定*
- *润滑性 – 有温度决定，但更加稳定*
- *使用寿命 – 会随着加工过程中的压力和温度逐渐降低，理想状态是两年更换一次*

Synthetic Oil Vs Mineral Oil
全合成油VS矿物油

Synthetic Oil – Manufactured oils to a specific formula

•Synthetic oils are produced from gases in a very controlled environment to produce very specific Hydrocarbon molecules called *Polyalphaolefins* which are very stable, very pure and have very specific characteristics.

PAO Molecule



• The process is more expensive , both in terms of material cost and manufacturing time.

Physical properties

- *Viscosity – Engineered to be stable*
- *Lubricity – Engineered to be stable*
- *Longevity – Will not break down with the application of heat and pressure, expect the oil to last for many years if filtered correctly.*

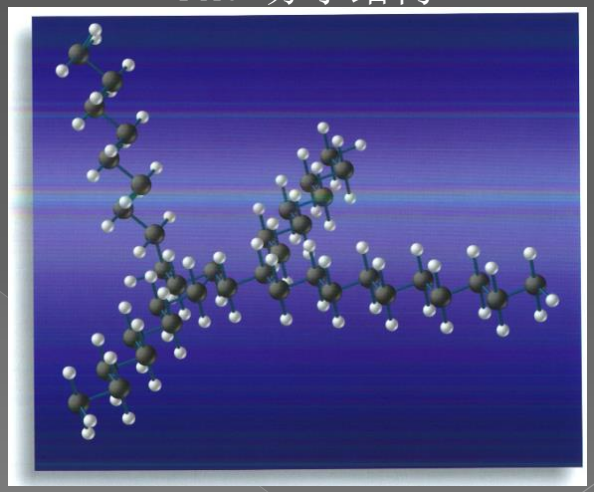
Synthetic Oil Vs Mineral Oil
全合成油VS矿物油

全合成油 - 由特殊方程式加工而成

•全合成油是一种由汽油在一个经过精心控制的环境下加工而成的非常特殊的碳氢分子结构，被称为PAO。其分子结构非常稳定，纯度非常高，并独具特色。

•无论是在加工方式的成本上，还是生产时间上，PAO的加工过程较其他油品更加昂贵。

PAO 分子结构



物理特性

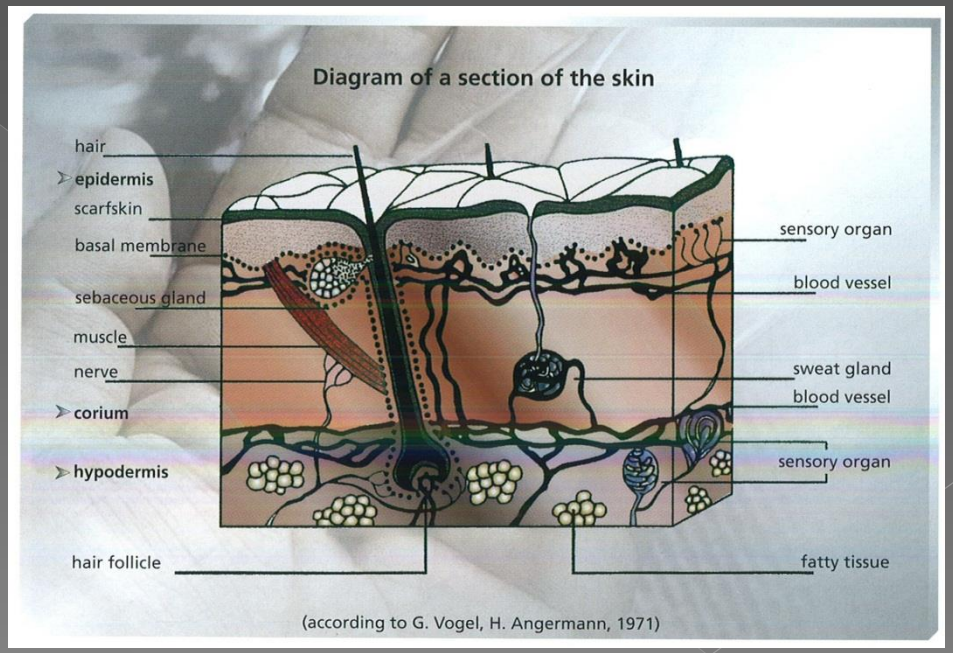
- *粘度 - 被设计为非常稳定*
- *润滑性 - 被设计为非常稳定*
- *使用寿命 - 不会因为加工过程中的压力和温度而改变，在正确添加的情况下可以长久使用而无需更换*

Synthetic Oil Vs Mineral Oil
全合成油VS矿物油

Synthetic Oil – Added Bonus!

• Synthetic oils are pure by nature of the manufacturing process and therefore contain no aromatics (which are a common cause of skin irritation) making the products very user friendly.

• 全合成油的加工过程是纯天然的，因此不　含有任何的芳香烃类（芳香烃是造成皮肤过敏的罪魁祸首），产品对于使用者没有任何伤害。



• The number one cause of Skin irritation with PAO's is actually the debris contained in the oil rather than the oil itself.

• 使用PAO产品时，如果皮肤仍然有过敏反应，很大可能是由油液中残留的杂质引起的，而非油液本身。

High Performance Grinding Oil
高性能磨削油

ADVANTAGES:

- High oxidation stability
- Very low evaporation
- Excellent cooling performance
- Excellent rinsing capability
- Good corrosion protection
- Outstanding filtering behavior
- Good air separation
- High flash point despite low viscosity
- Does not attack paints and elastomers
- Prevents cobalt leaching
- Reduces grinding wheel wear
- Reduces the material temperature on the work piece surfaces

High Performance Grinding Oil
高性能磨削油

优势：

- 高的氧化稳定性
- 非常低的挥发性
- 抗雾添加剂
- 出色的冷却性
- 优异的清洗能力
- 良好的防腐蚀保护
- 优秀的过滤能力
- 优秀的空气分离能力
- 有效降低工件表面温度
- 在较低的粘度下有较高的闪点
- 防止钴析出
- 减少砂轮损耗

Hydrocrack oil (or semi synthetic)
氢化裂解油（半合成油）

BOSS GRIND HC EPT-SERIES

The products of the Boss Grind HC EPT-Series are manufactured out of high purity hydrocracked oils. These products can be used for complex grinding processes requiring a excellent cooling effect combined with highest precision. The products of the Boss Grind HC EPT-Series are free of chlorine and heavy metals (e.g. lead, zinc, barium

The products of the Boss Grind HC EPT-Series are specially developed for high speed grinding processes. These grinding oils are used for grinding processes of CBN- and corundum wheels, HSS and hard metal, flute grinding with diamond wheels in hard metals

TECHNICAL DATA:

		BOSS GRIND			
		HC 8 EPT	HC 10 EPT	HC 15 EPT	
Viscosity at 40° C	mm²/s	8	10	15	ASTM D 7042
Density at 20° C	g/ml	0,84	0,85	0,86	ASTM D 7042
Flash point	°C	>170	>180	>190	DIN EN ISO 2719
Pour point	°C	-34	-29	-27	DIN ISO 3016
copper corrosion		1a	1a	1a	EN ISO 2160

Hydrocrack oil (or semi synthetic)
氢化裂解油（半合成油）

BOSS GRIND HC EPT系列

Boss Grind HC EPT系列是基于高纯度的氢化裂解油所制成的，该产品可用于那些需求高精度和高冷却性的复杂磨削加工中，该产品也不含氯和铅、锌、钡等重金属。

Boss Grind HC EPT系列适用于高速磨削加工中，可用于CBN和刚玉砂轮磨削，以及高速钢，硬质合金和硬质合金中金刚石砂轮的凹槽磨削。

TECHNICAL DATA:

		BOSS GRIND			
		HC 8 EPT	HC 10 EPT	HC 15 EPT	
Viscosity at 40° C	mm²/s	8	10	15	ASTM D 7042
Density at 20° C	g/ml	0,84	0,85	0,86	ASTM D 7042
Flash point	°C	>170	>180	>190	DIN EN ISO 2719
Pour point	°C	-34	-29	-27	DIN ISO 3016
copper corrosion		1a	1a	1a	EN ISO 2160

Hydrocrack oil (or semi synthetic)
氢化裂解油（半合成油）

BOSS GRIND HM SERIES

These high-performance grinding oils of Boss Grind HM series are low in oil misting and low-evaporating and have been specially developed for machining steel and carbides. The basis are high-quality hydro-crack oils which are almost free from aromatic hydrocarbons and are very ageing resistant. The products are free from chlorine and heavy metals such as lead, zinc and barium, thus preventing the leaching of cobalt.

The oils of the Boss Grind HM series are preferred for high-performance machining such as the grinding of HSS, carbides and other hard metal materials. A high flushing and cooling capacity, as well as free grinding wheels and a low evaporation loss, characterize the performance of these products. These grinding oils are suitable for ceramic, galvanic and synthetic resin bonded CBN grinding wheels, as well as for conventional corundum, sintered corundum and for diamond-coated grinding wheels.

TECHNICAL DATA:

Property	Unit	Boss Grind HM		
		5	8	11
Density (20 °C)	g/ml	0,81	0,83	0,84
Viscosity (40 °C)	mm^2/s	5	8	11
Colour		light yellow	light yellow	light yellow
Flash Point	°C	118	166	173
Copper Corrosion	grade	1a	1a	1a

Hydrocrack oil (or semi synthetic)
氢化裂解油（半合成油）

BOSS GRIND HM 系列

Boss Grind HM系列是拥有高性能的磨削油，具有低油雾低挥发特性，专为加工钢和硬质合金设计，其基础油是高品质的氢化裂解油，几乎不含芳香烃而且非常耐老化。该产品不含氯、铅、锌和钡等重金属，同时可以有效防止钴析出。

Boss Grind HM系列磨削油适合于高性能磨削加工，比如加工高速钢、硬质合金和其他硬质合金材料。该产品具优秀的冲洗性和冷却性，同时拥有低挥发和减少砂轮损耗等特性。该系列磨削油十分适用于陶瓷、电镀、合成树脂结合剂和CBN砂轮，也同样适用于传统刚玉、烧结刚玉和金刚石涂层砂轮。

TECHNICAL DATA:

Property	Unit	Boss Grind HM		
		5	8	11
Density (20 °C)	g/ml	0,81	0,83	0,84
Viscosity (40 °C)	mm^2/s	5	8	11
Colour		light yellow	light yellow	light yellow
Flash Point	°C	118	166	173
Copper Corrosion	grade	1a	1a	1a

GTL oil
天然气合成油

BOSS Grind GT-C Series

The latest generation of high-performance abrasive oils is based on the innovative "gas-to-liquid" (GTL)-Technology. According to this process the oils of the Boss Grind GT-C Series were developed for high-speed grinding. In combination with a specially developed additive package the products are ideally suited for grinding processes in carbide. Within the GTL process, extremely pure, synthetic oils are extracted from natural gas. These base oils are free of mineral oil and contain no heavy metals, no zinc or chlorine compounds, and no organic nitrogen.

The Boss Grind GT-C Series have been specially developed for high-speed grinding processes of carbide. They are excellently suited for flute grinding with diamond wheels in hard metal (for example carbide tools).

TECHNICAL DATA:

	Boss Grind GT- C				
	906	909	911		
Viscosity at 40 °C	6	9	11	mm^2/s	ASTM D 7042
Density at 20 °C	0,81	0,82	0,82	g/cm^3	ASTM D 7042
Flashpoint COC	172	205	215	°C	DIN EN ISO 2719
Pourpoint	<-15	< -39	<- 30	°C	DIN ISO 3016
VOC-content %	0	0	0		

GTL oil
天然气合成油

BOSS Grind GT-C系列

Boss Grind GT-C系列是基于创新的“gas-to-liquid”（GTL）技术的新一代全合成高性能磨削油。特别适用于高速磨削加工，结合特殊开发的添加剂使得该产品非常适用于硬质合金的磨削加工。Boss Grind GT-C系列是通过GTL技术从天然气中提取的全合成油，极为纯净。基于GTL的基础油不含矿物油，不含重金属，不含锌或氯化合物，也不含有机氮。

Boss Grind GT-C系列是专门为高速磨削硬质合金所开发的，非常适用于在硬质合金中用金刚石砂轮进行凹槽磨削（例如：硬质合金刀具）

TECHNICAL DATA:

	Boss Grind GT-C				
	906	909	911		
Viscosity at 40 °C	6	9	11	mm²/s	ASTM D 7042
Density at 20 °C	0,81	0,82	0,82	g/cm³	ASTM D 7042
Flashpoint COC	172	205	215	°C	DIN EN ISO 2719
Pourpoint	<-15	< -39	<- 30	°C	DIN ISO 3016
VOC-content %	0	0	0		

GTL oil
天然气合成油

BOSS Grind GT-SC Series

The latest generation of high-performance abrasive oils is based on the innovative"gas-to-liquid" (GTL)-Technology. According to this process the oils of the Boss Grind GT-SC series were developed for high-speed grinding. In combination with a specially developed additive package the products are ideally suited for grinding processes in carbide, HSS and HSSE materials. Within the GTL process, extremely pure, synthetic oils are extracted from natural gas. These base oils are free of mineral oil and contain no heavy metals, no zinc or chlorine compounds, and no organic nitrogen.

The Boss Grind GT-SC series have been specially developed for high-speed grinding processes of carbide and HSS / HSSE- materials.
They are excellently suited for flute grinding with diamond wheels in hard metal (for example carbide tools), for gear grinding and also for grinding with CBN and corundum wheels in HSS and HSSE materials.

TECHNICAL DATA:

	Boss Grind GT SC					
	908	911	918	922		
Viscosity at 40 °C	8	11	18	22	mm^2/s	ASTM D 7042
Density at 20 °C	0,81	0,82	0,82	0,83	g/cm^3	ASTM D 7042
Flashpoint COC	179	207	230	230	°C	DIN EN ISO 2719
Pourpoint	<-18	<-35	<-35	<-30	°C	DIN ISO 3016
VOC-content %	0	0	0	0		

GTL oil
天然气合成油

BOSS Grind GT-SC系列

Boss Grind GT-SC系列是基于创新的“gas-to-liquid”（GTL）技术的新一代全合成高性能磨削油。特别适用于高速磨削加工，结合特殊开发的添加剂使得该产品非常适用于硬质合金，HSS和HSSE材料的磨削加工。Boss Grind GT-SC 系列是通过GTL技术从天然气中提取的全合成油，极为纯净。基于GTL技术的基础油不含矿物油，不含重金属，不含锌或氯等化合物，也不含有机氮。

Boss Grind GT-SC是专门为高速磨削硬质合金，HSS和HSSE所开发的，非常适用于在硬质合金中用金刚石砂轮进行凹槽磨削（例如：硬质合金刀具），也适用于齿轮磨削和用CBN 和刚玉砂轮对HSS和HSSE材料的磨削。

TECHNICAL DATA:

	Boss Grind GT SC					
	908	911	918	922		
Viscosity at 40 °C	8	11	18	22	mm^2/s	ASTM D 7042
Density at 20 °C	0,81	0,82	0,82	0,83	g/cm^3	ASTM D 7042
Flashpoint COC	179	207	230	230	°C	DIN EN ISO 2719
Pourpoint	<-18	<-35	<-35	<-30	°C	DIN ISO 3016
VOC-content %	0	0	0	0		

Synthetic Oil
全合成油

Boss Grind Syn HM Series

These high-performance grinding oils of Boss Grind Syn HM series are low in oil misting and vaporizing and have been specially developed for machining steel and carbides. The basis is a fully synthetic, aromatic-free base oil (PAO) of the highest quality. The products are free from chlorine and heavy metals such as lead, zinc and barium, thus preventing the leaching of cobalt.

The oils of the Boss Grind Syn HM series are preferred for high-performance machining such as the grinding of HSS, carbides and other hard metal materials. A high washing and cooling capacity, as well as free grinding wheels and a low evaporation loss, characterize the performance of these products. These high-speed grinding oils are suitable for ceramic, galvanic and synthetic resin bonded CBN grinding wheels, as well as for conventional corundum, sintered corundum and for diamond-coated grinding wheels.

TECHNICAL DATA:

Property	Unit	Boss Grind Syn HM		
		5	7,5	10
Density (20 °C)	g/ml	0,80	0,81	0,82
Viscosity (40 °C)	mm²/s	5	7,5	10
Colour		light yellow	light yellow	light yellow
Flash Point	°C	155	165	185
Copper Corrosion	grade	1a	1a	1a

Synthetic Oil
全合成油

Boss Grind Syn HM 系列

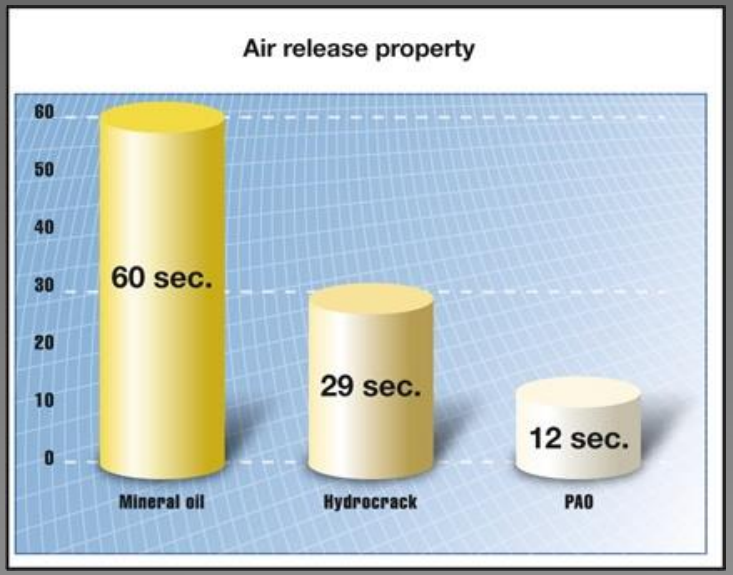
Boss Grind Syn HM系列是具有低油雾低挥发特性的专为加工钢和硬质合金设计的高性能磨削油，其基础油是最高品质的全合成PAO基础油。该产品不含氯、铅、锌和钡等重金属，同时可以有效防止钴析出。

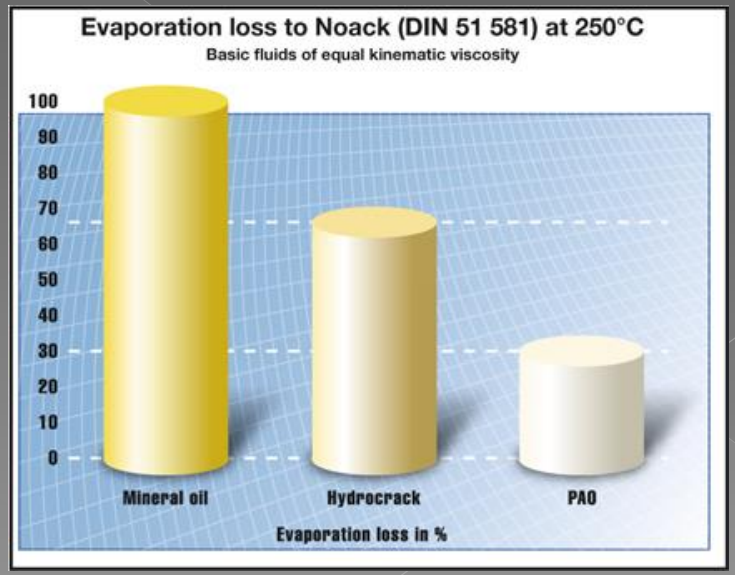
Boss Grind Syn HM系列是高性能机械加工，比如高速钢、硬质合金和其他硬质合金材料磨削加工的首选。该产品具极强的清洗性和冷却性，同时也拥有减少挥发和砂轮损耗等特性，该产品十分适用于陶瓷、电镀、合成树脂结合剂CBN砂轮，以及传统刚玉、烧结刚玉和金刚石涂层砂轮的磨削加工。

TECHNICAL DATA:

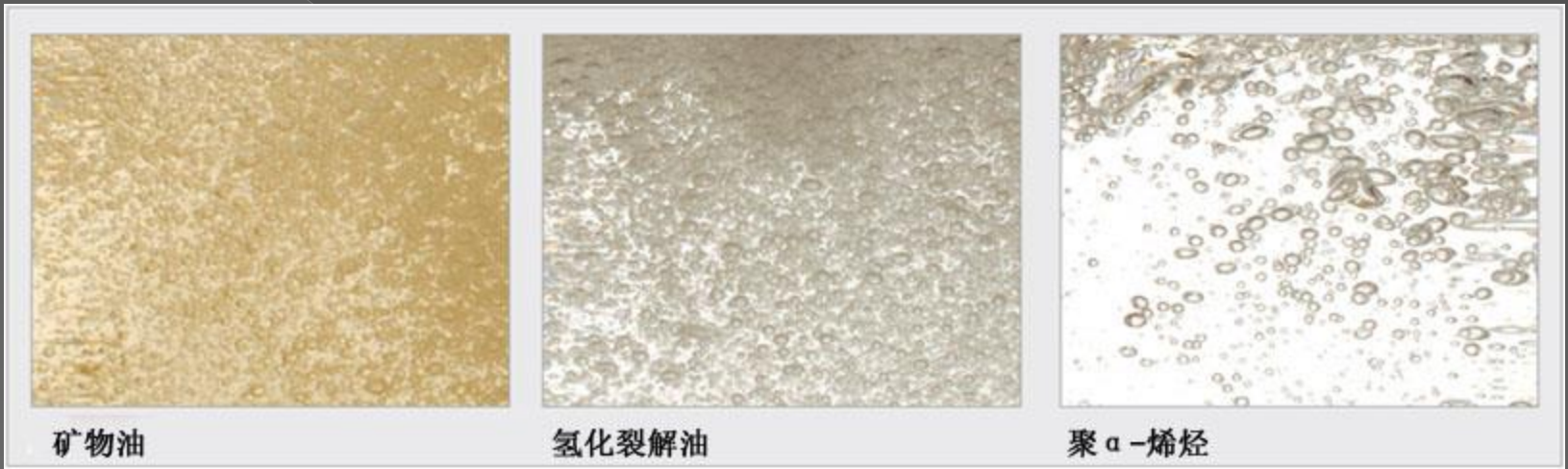
Property	Unit	Boss Grind Syn HM		
		5	7,5	10
Density (20 °C)	g/ml	0,80	0,81	0,82
Viscosity (40 °C)	mm²/s	5	7,5	10
Colour		light yellow	light yellow	light yellow
Flash Point	°C	155	165	185
Copper Corrosion	grade	1a	1a	1a

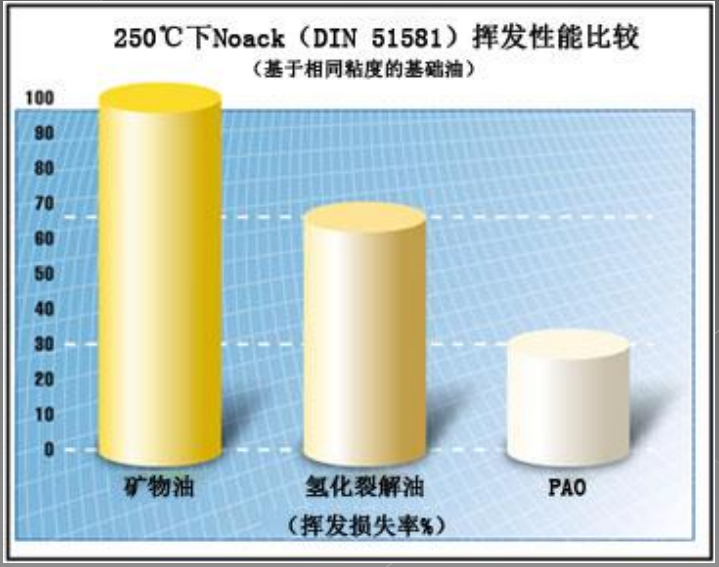
The base oils
基础油





The base oils
基础油





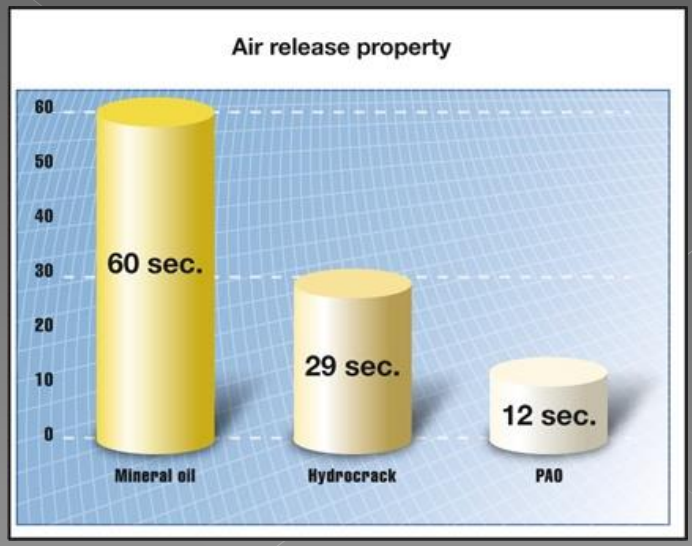
How does grinding oil affect the grinding process ?

磨削油是如何影响加工效率的？

Foaming 发泡性

Heavy foaming 严重的发泡

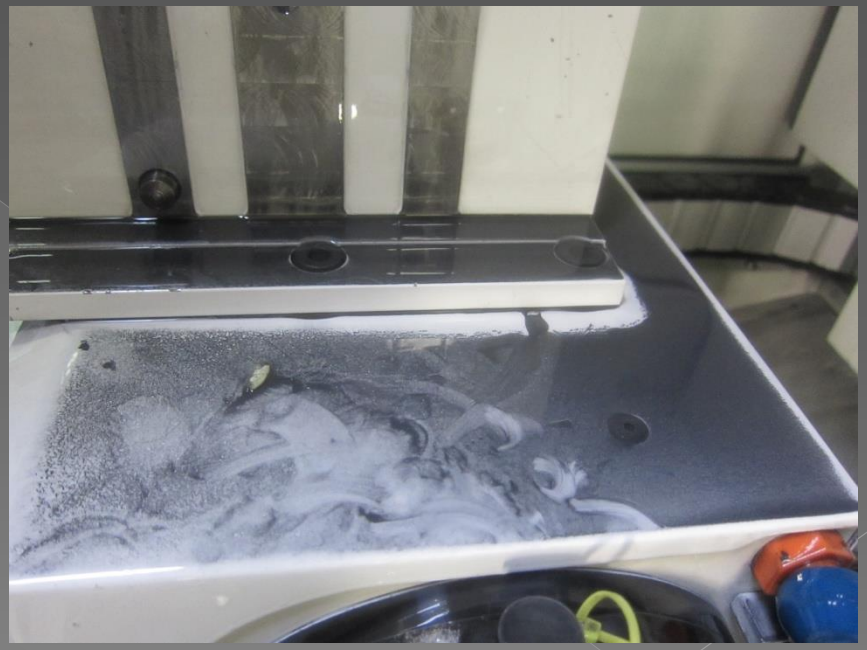
- poor air release properties
- 糟糕的空气释放能力
- bad surface finish
- 表面抛光性差
- short service life of the oil
- 油品使用寿命短
- high temperature
- 加工中油品的温度高
- high maintenance costs
- 维护成本高
- filtration problems
- 过滤问题



Cleaness 清洗性

- bad surface finish
- 机床内部脏乱
- increased grinding wheel wear
- 增加砂轮磨损
- high maintenance costs
- 维护成本高
- filtration problems
- 过滤问题

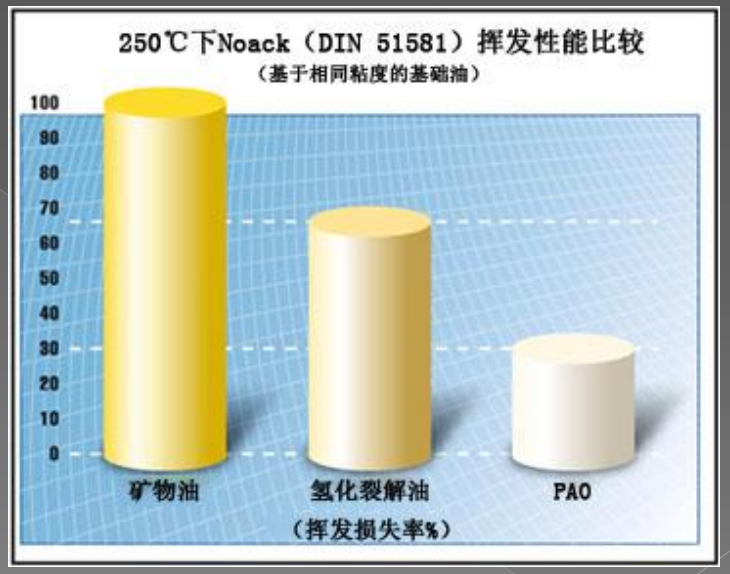
Dirt develoment



Evaporation 挥发性

High oil consumption 高消耗

- waste of resources
- 资源浪费
- higher oil costs
- 成本增加
- higher air pollution around the machines
- 机床周围空气污染严重
- lower health risk
- 对健康造成损害
- more oil mist
- 产生油雾多

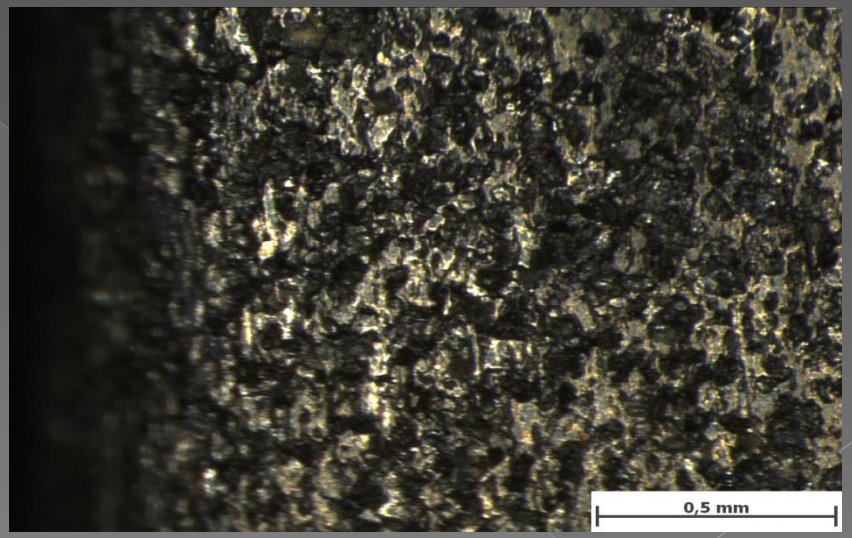


Clean grinding wheels
砂轮的清洁

Clean grinding wheels 砂轮的清洁

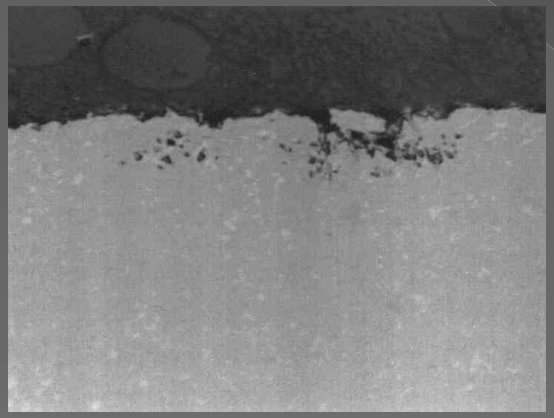
The target is that our grinding fluids are keeping the grinding wheels clean as long as possible. This results in less redressing and less white sticking. The repeatabilty of cutting tools is increased.

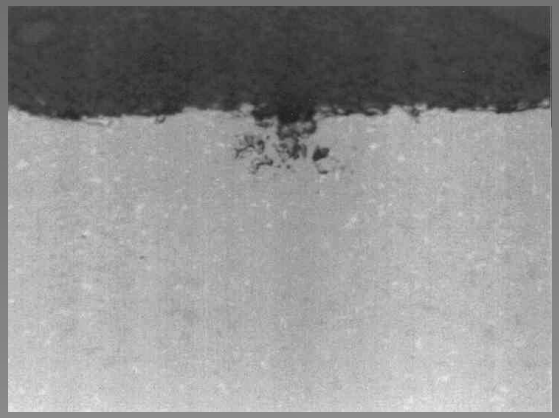
我们的目标是使得磨削液能尽可能的延长砂轮的使用寿命。即减少砂轮的修正和白色附着。刀具的重复使用率增加。



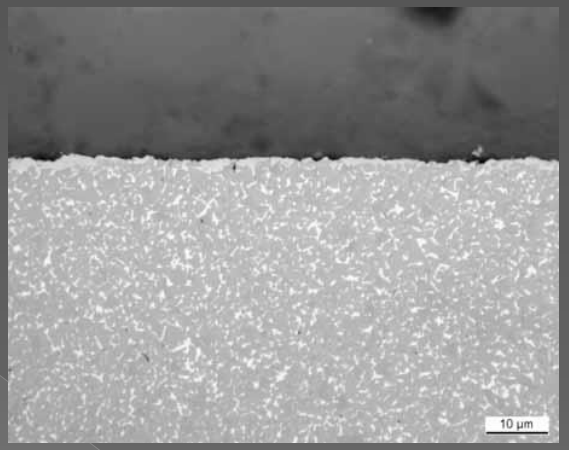
Less cobalt leaching
减少钴的析出

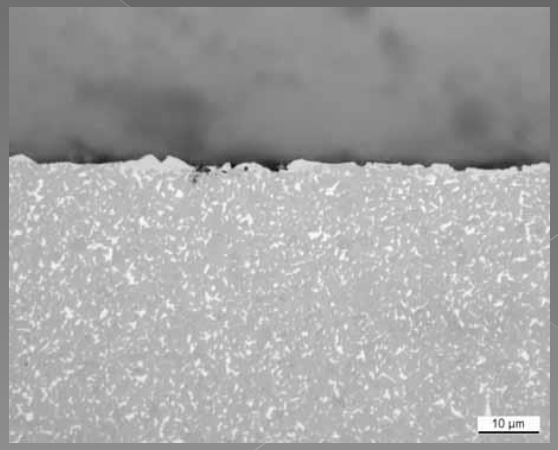
Cobalt leaching on the surface
钴在表面析出



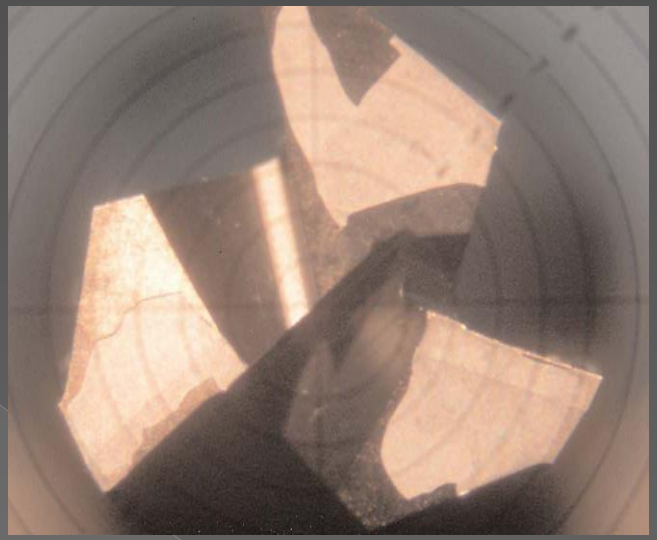


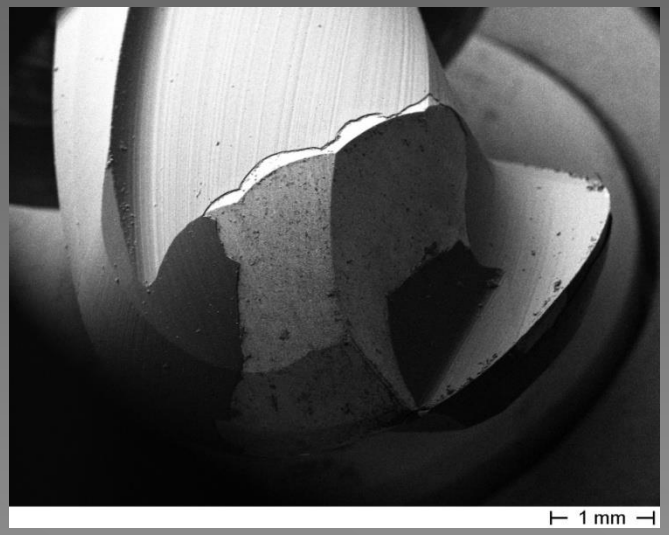
No cobalt leaching on the surface
表面没有钴析出

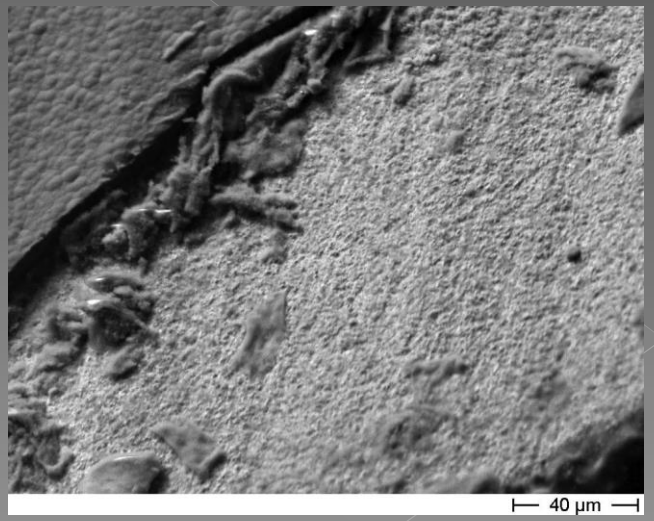




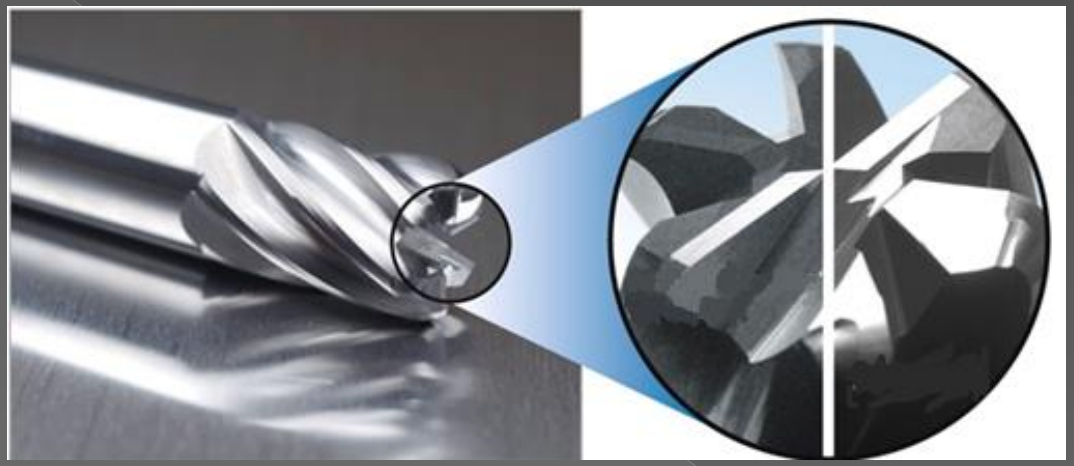
No coating problems
对涂层没有影响

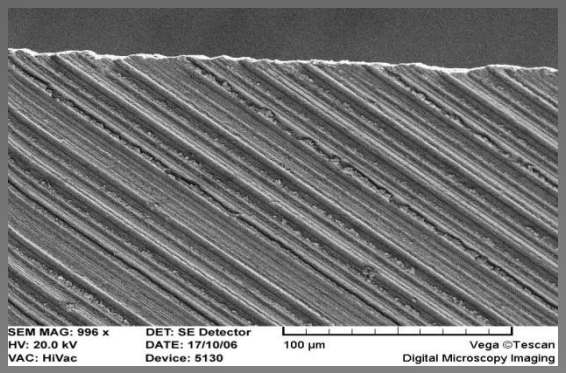




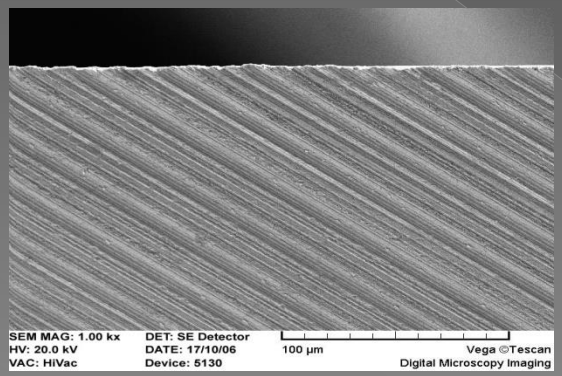


Better surface finish
更好的表面质量

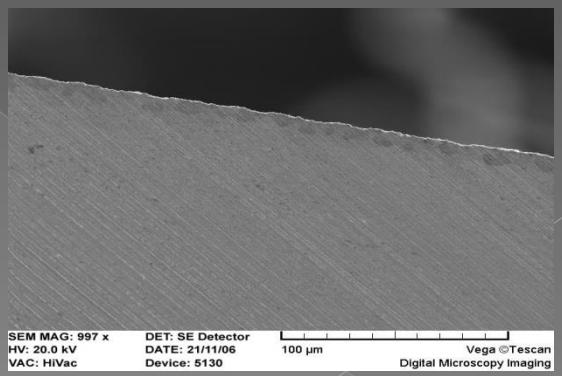




其它磨削油和常规砂轮的磨削效果

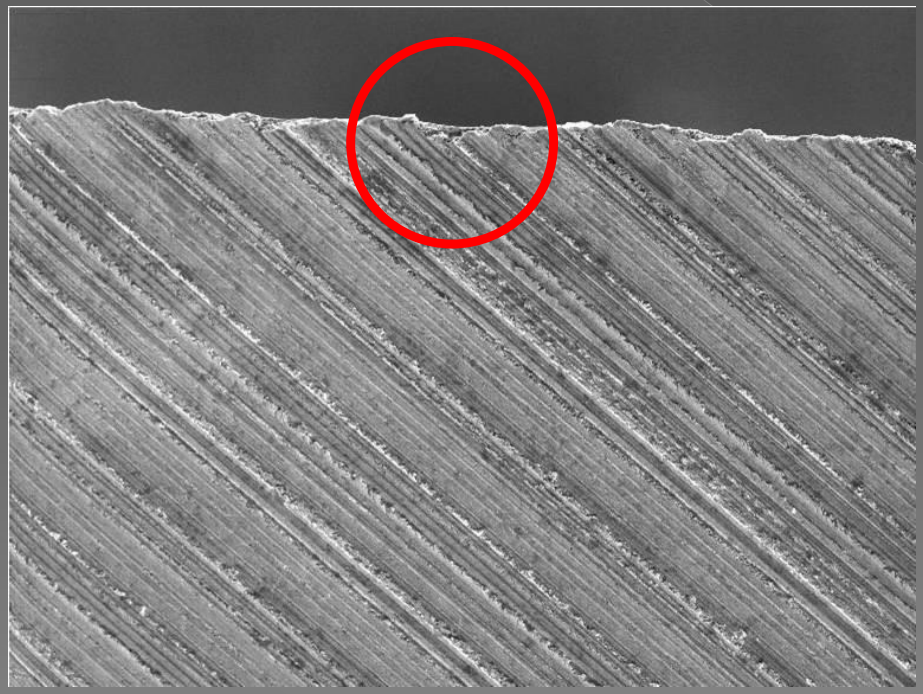


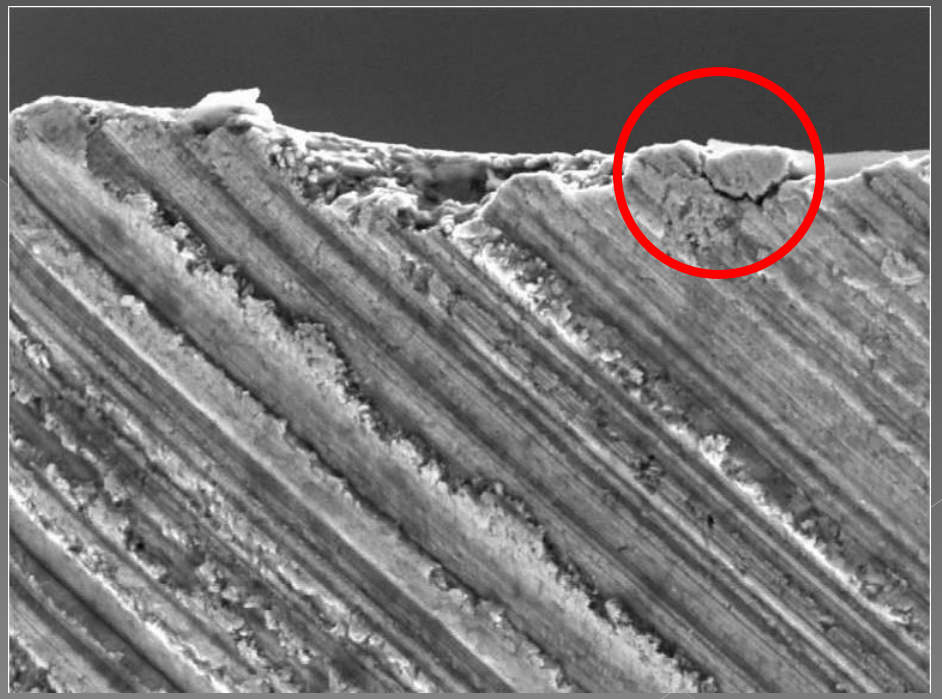
其它磨削油和内冷式砂轮的磨削效果



Boss Grind Syn HM 系列和内冷式砂轮的磨削效果

Less microcracks
减少微小裂隙



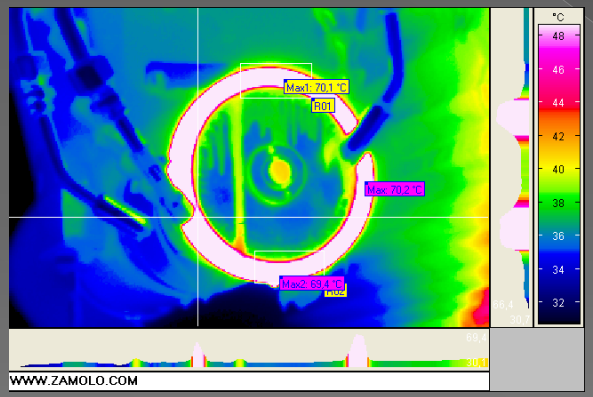


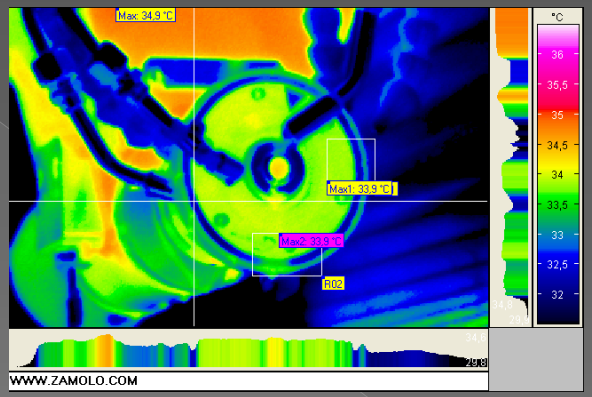
Spindle power / temperature
主轴功率 / 温度

Heat

Heat generated within the grinding process is a good indication of required effort and can have adverse effects on precision, component quality and grinding oil longevity. Mineral oil in particular has a tendency to breakdown with the application of heat into harmful acids and other impurities

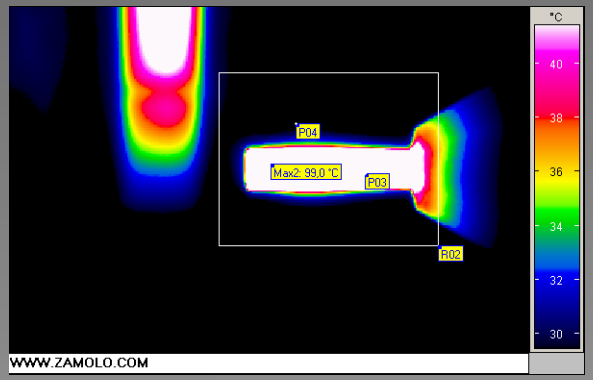
Max 77 Deg

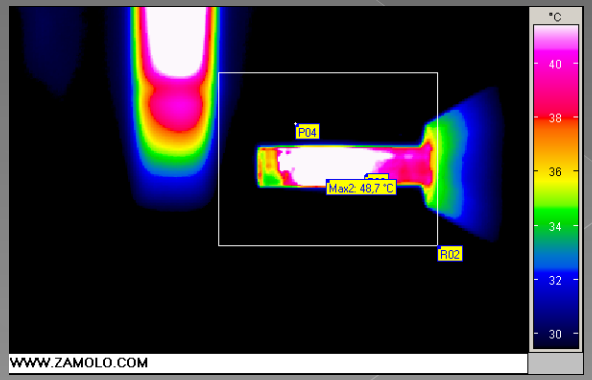




Max 33 Deg

Max 99 Deg





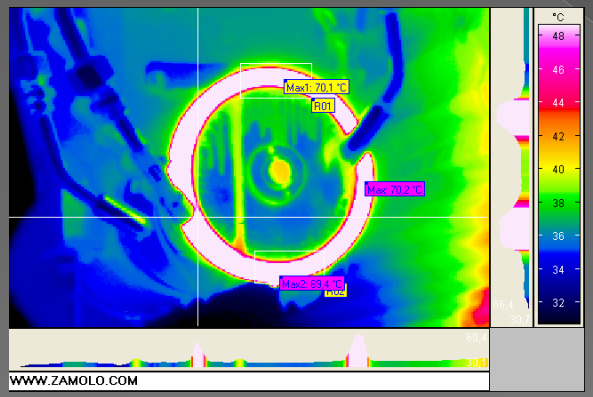
Max 48 Deg

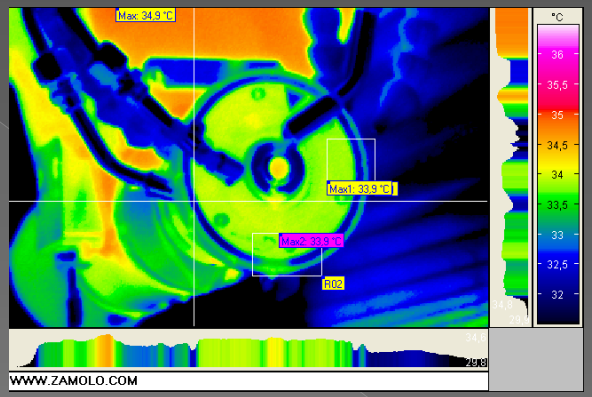
Spindle power / temperature
主轴功率 / 温度

温度

在磨削过程中温度是一个需要考量的问题，温度会对零件的精度，质量和磨削油的寿命产生不利的影响。特别是矿物油在加热后会有分解倾向并产生影响人体的酸和其他杂质。

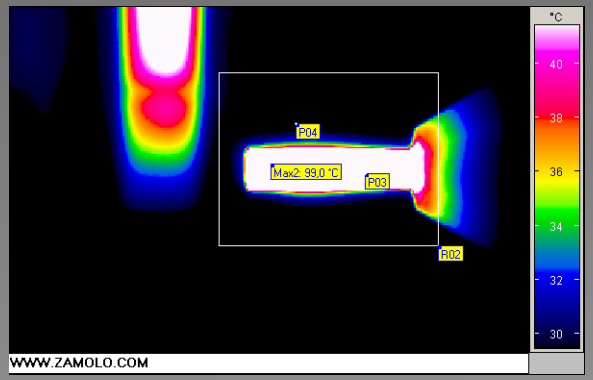
Max 77 Deg

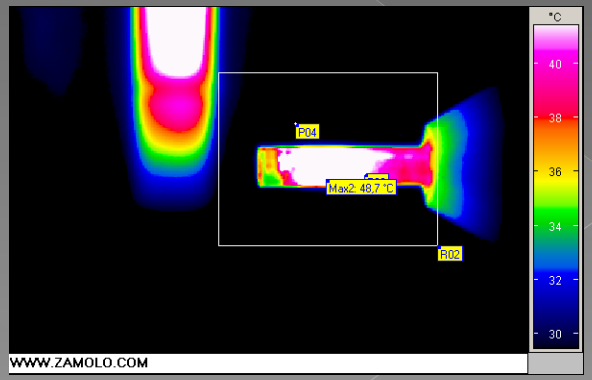




Max 33 Deg

Max 99 Deg





Max 48 Deg

BOSS

LUBRICANTS

Thank you for your attention !

感谢您的耐心聆听！