SHAREATE

QUALITY WINS RESPECT

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CEMENTED CARBIDE FOR PRECISION STAMPING

精密冲压模具材料

苏州新锐合金工具股份有限公司

SHAREATE TOOLS LTD.

Manufacturing and Testing Equipment
生产及检测设备

公司拥有大量国内外先进的生产制造及检测设备，并独立形成了设计、开发、生产和服务的产品质量保证模式。

The company has a variety of domestic and imported advanced manufacturing and testing equipment and established quality assurance model for design, development, production and service independently.

Company Profile
公司简介

苏州新锐合金工具股份有限公司是一家专注于硬质合金制品与矿用凿岩工具及矿山服务，集研发、制造、销售、服务为一体的国际化制造服务商，在苏州和潜江均有生产基地，下设工程工具事业部、硬质合金事业部、型材事业部、武汉新锐合金工具有限公司等多家分、子公司。公司于2015年12月正式登陆新三板，并首批进入创新层。

公司通过了API及ISO9000质量体系和产品双认证，并先后通过“江苏省企业技术中心”、“江苏省高新技术企业”、“江苏省高效凿岩工具工程技术研究中心”以及“高端超细硬质合金材料工程技术研究中心”、“江苏省两化融合示范企业”等认定，产品获得“江苏省名牌产品”、“江苏省高新技术产品”称号以及“国家标准合格单位、质量跟踪重点保护产品”证书。

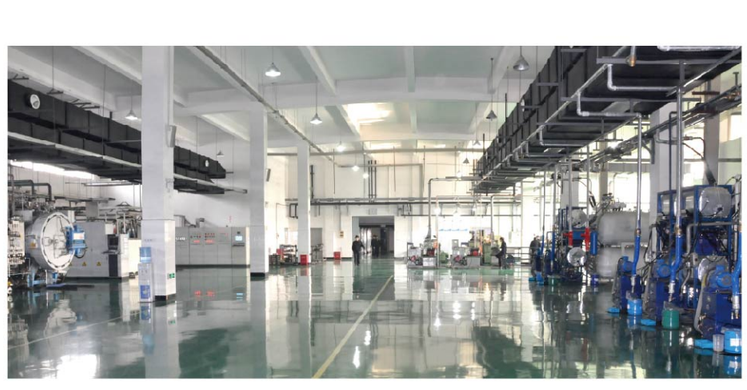
公司主要产品包括：矿用钻头、油用和矿用硬质合金齿、金刚石复合片用基托、硬质合金棒材、石油耐磨零件、金属陶瓷棒材、金属陶瓷刀片、金属陶瓷板料产品等。产品远销澳大利亚、秘鲁、智利、日本、韩国、美国、巴西、俄罗斯、墨西哥等二十多个国家和地区，并且与多家国际知名企业建立了长期稳定的业务关系。

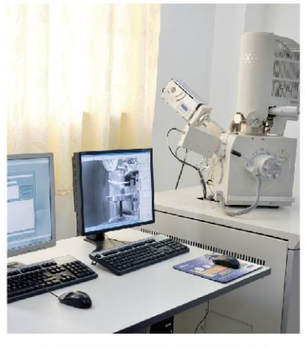
Shareate Tools Ltd. classified as a national high-tech enterprise, is a professional company which integrates the design, development, manufacturing and sales of cemented carbide products and drilling tools. We have two manufacturing bases, which are located at Suzhou and Qianjiang, both with the world-class advanced production and inspection equipment and the state-of-the-art and continuously expanding R&D and manufacture base for Cemented carbide and drilling tools in China. We landed on the new over-the-counter market in December 2015 and entered the innovation layer.

Shareate Tools Ltd. possesses the strength of technical innovation and has formed the systematic proprietary intellectual property rights and technology. We passed ISO quality system certificate and API certificate in 2001 and 2008 respectively and maintain both of the certificates ever since. Currently, we have gained 35 authorized patents,in which 14 innovation patents, and 40 items of proprietary technology. The established Jiangsu Technology Center and Jiangsu Engineering & Technological Research Center will be laying the firm foundation for our continuous innovation.

Our main product covers compacts for oil, buttons for mining, carbide substrate for PDC cutters, Nozzle for oil bit, ultra-fine cemented carbide round rods, powder metallurgy mold, wearing resistant parts and cermets cutting tools, blanks and non-standard parts and so on, which are exported to over 10 foreign countries and regions such as Japan, South Korea, USA, Canada, Australia and Russia where the products are very popular and well evaluated by customers and drilling tools in China.

干带压机 Dry Bag Cold Isostatic Press


生产车间 Production Workshop


扫描电镜/能谱仪 SEM / EDS


热压烧结炉 Hot Pressing Sintering Furnace

总碳仪 Total Carbon Analyzer

Cemented Carbide Material
硬质合金材料

冲压模具用合金牌号 / Cemented Carbide Grade for Stamping Die

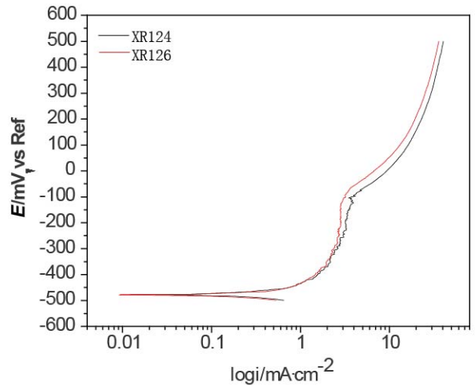
成分与性能表 Composition and Property

牌号 Grade	钴含量 Cobalt content (wt %)	晶粒度 Grain Size (μm)	密度 Density (g/cm³)	硬度 HRA	断裂韧性 KIC (MPa · m^1/2)	抗弯强度 TRS Mpa
耐腐蚀细晶粒/中细晶粒 Corrosion resistant fine/medium grain						
XR126	12	1–2	14.25	90.0	15.8	3900
XR125	12	1–2	14.20	90.0	14.3	3800
XR124	12.5	1.0	14.15	90.0	14.5	3900
耐腐蚀中晶粒 Corrosion resistant medium grain						
XR123	12.5	2–3	14.20	89.3	16.0	3700
XR141	15	2–3	13.95	88.0	17.5	3400
耐腐蚀亚微细晶粒 Corrosion resistant submicron grain						
XR13X	15	0.6–0.8	13.90	90.3	13.7	3800
XR10ST	10	0.6–0.8	14.45	91.5	11.5	3800
耐腐蚀中粗晶粒 Corrosion resistant medium–coarse grain						
XR06C	6	1–5	14.85	90.5	15.3	3000

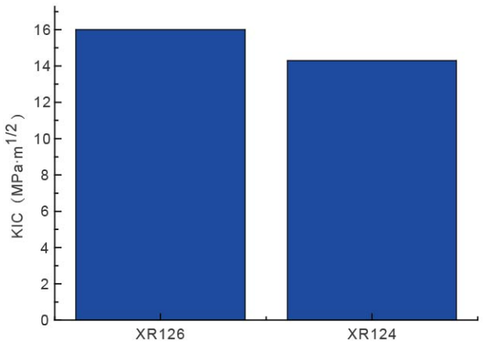
The Latest Corrosion–resistant Cemented Carbide
最新耐腐蚀硬质合金

为了满足高速冲压的发展和不断提高模具使用寿命的需求，苏州新锐不断优化合金成分和工艺，开发了XR126牌号，提升了合金的耐腐蚀性和韧性，从而提高了模具的使用寿命。

In order to meet the development of high-speed stamping and the demands of constantly improving the service life of the mold, Shareate tools continuously optimizes the cemented carbide composition and technological process and develops the new grade of XR126, which improves the corrosion resistance and toughness of the cemented carbide, thus improving the service life of the mold.



动电位腐蚀性测试 Electrodynamic corrosion test



断裂韧性对比 Fracture toughness correlation

XR126与XR124应用案例 / Application Case of XR126 and XR124

◆ 测试条件及要求 Test conditions and requirements

冲压料带 Pressing strip：B35A230
料带抗拉强度 Tensile strength of strip：548（N/mm²）
料带屈服强度 Yield strength of strip：431（N/mm²）
料带硬度 Strip hardness：220HV
冲速 Speed：300次/分钟（300times/min）
产品毛刺要求 Product burr requirement：小于0.05mm（lower than 0.05mm）

◆ 测试结果 Results

XR124三次修模的冲压寿命600万次，XR126三次修模的冲压寿命1200万次。
XR124 has a stamping life of 6 million times after three die repairs, and XR126 has a stamping life of 12 million times after three die repairs.

Material Description and Application
材料说明与应用

电机级进模具材料 / Motor Progressive Die Material

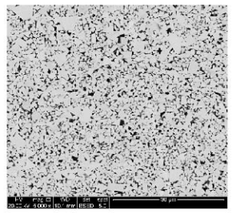
与传统材料相比，微量元素的加入，提升了合金的耐腐蚀，采用混晶结构，从而保证合金的耐磨性兼顾韧性，有效地减少了合金加工或使用过程中裂纹的产生。材料广泛应用于硅钢片的精密冲压。

Compared with traditional materials, the addition of trace elements improves the corrosion resistance of the cemented carbide and adopts the mixed crystal structure, so as to ensure both the wear resistance and toughness of the cemented carbide and effectively reduce the occurrence of cracks in the process of processing or using the cemented carbide. The material is widely used in precision stamping of silicon steel sheet.

XR126

特性 / Features: 中细晶粒结构，12%的耐腐蚀粘结相，良好的韧性、耐磨性和耐腐蚀性；
Medium and fine grain structure, 12% corrosion resistant bonding phase, good toughness, wear resistance and corrosion resistance;

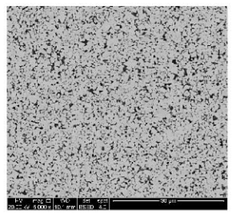
应用 / Application: 适合于电动工具、汽车电机、洗衣机、空调、镇流器、电表等电机铁芯的模具制作。
Suitable for electric tools, motor vehicles, washing machines, air conditioners, ballasts, meters and other motor core mold production.



XR124

特性 / Features: 细晶粒结构，12%的耐腐蚀粘结相，良好的耐磨性；
Fine grain structure, 12% corrosion resistant bonding phase, good wear resistance;

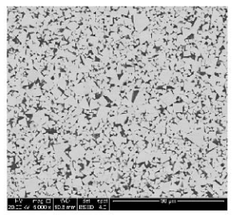
应用 / Application: 适合于电动工具、汽车电机、洗衣机、空调、镇流器、电表等电机铁芯的模具制作。
Suitable for electric tools, motor vehicles, washing machines, air conditioners, ballasts, meters and other motor core mold production.



XR123

特性 / Features: 中颗粒碳化钨，12%的耐腐蚀粘结相，良好的抗击性和耐磨性；
Medium grain tungsten carbide, 12% corrosion-resistant bonding phase, good resistance and wear resistance;

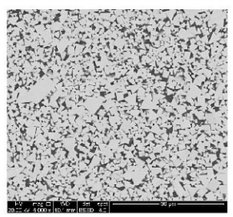
应用 / Application: 适合于电动工具、汽车电机、洗衣机、空调、镇流器、电表等电机铁芯的模具制作。
Suitable for electric tools, motor vehicles, washing machines, air conditioners, ballasts, meters and other motor core mold production.



XR141

特性 / Features: 中颗粒碳化钨，15%的耐腐蚀粘结相，良好的抗击性；
Medium grain tungsten carbide, 15% corrosion-resistant bonding phase, good resistance;

应用 / Application: 适合于电动工具、汽车电机、洗衣机、空调、镇流器、电表等电机铁芯的模具制作。
Suitable for electric tools, motor vehicles, washing machines, air conditioners, ballasts, meters and other motor core mold production.



电子级进模具材料 / Electronic Progressive Die Material

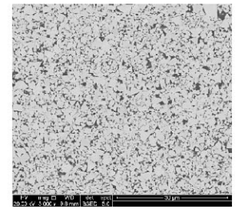
与传统材料相比，一方面提升了合金的耐腐蚀性，另一方面提高刃口的锋利性和耐崩性。材料广泛应用于电子行业连接器、IC引线框架、IC封装模具等，高速冲压不锈钢、铜合金、铝合金等材料。

Compared with traditional materials, on the one hand, the corrosion resistance of the cemented carbide is improved, and on the other hand, the sharpness and collapse resistance of the cutting edge are improved. Materials are widely used in electronic industry connectors, IC lead frame, IC packaging die, high-speed stamping stainless steel, copper alloy, aluminum alloy and other materials.

XR125

特性 / Features: 中细晶粒结构，12%的耐腐蚀粘结相，良好的韧性；
Medium fine grain structure, 12% corrosion resistant bonding phase, good toughness;

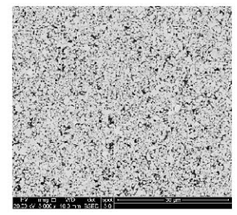
应用 / Application: 通用性强，适合厚度1mm以下不锈钢料带、铜带等材质的高速冲压。
It has strong universality and is suitable for high-speed stamping of stainless steel material belt and copper belt with thickness less than 1mm.



XR13X

特性 / Features: 亚微细晶粒结构，15%的耐腐蚀粘结相，兼顾韧性和耐磨性；
Submicron grain structure, 15% corrosion resistant bonding phase, both toughness and wear resistance;

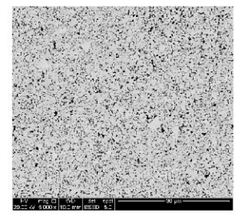
应用 / Application: 通用性强，适合厚度0.5mm以下不锈钢料带、铜带等材质的高速冲压。
High versatility, suitable for high speed stamping of stainless steel strip and copper strip with thickness less than 0.5mm.



XR10ST

特性 / Features: 亚微细晶粒结构，10%的耐腐蚀粘结相，良好的耐磨性；
Submicron grain structure, 10% corrosion-resistant bonding phase, good wear resistance;

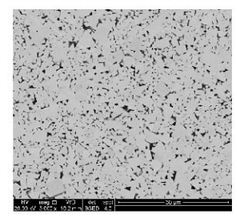
应用 / Application: 适合厚度0.15mm以下不锈钢料带、铜箔、铝箔等材质的高速冲压。
Suitable for high speed stamping of stainless steel strip, copper foil, aluminum foil and other materials with thickness less than 0.15mm.



XR06C

特性 / Features: 中粗晶粒结构，6%的耐腐蚀粘结相，良好的韧性和耐磨性；
Medium coarse grain structure, 6% corrosion resistant bonding phase, good toughness and wear resistance;

应用 / Application: 适合纯铁、纯铜和SPCC等软质金属的高速冲压。
Suitable for high speed stamping of soft metals such as pure iron, pure copper and SPCC.



Specification
硬质合金板料规格

电机级进模具材料规格表 Motor progressive die material specification sheet

长度(mm) Length	宽度(mm) Width	厚度(mm) Height	厚度公差(mm) Height Tolerance
150	150	≤90	0.6±0.1
200	200	≤40	
250	250	≤40	
300	300	≤30	

电子级进模具材料规格表 Electronic progressive die material specification sheet

长度(mm) Length	宽度(mm) Width	厚度(mm) Height	厚度公差(mm) Height Tolerance
105	105	≤60	0.6±0.1
110	110	≤60	
120	120	≤60	

- ◆ 供应态：上下面平磨、HIP及去应力、探伤检测和退磁处理。
- ◆ 产品尺寸公差可根据需求而定，具体咨询技术人员。
- ◆ 交货期：标准规格1～5天，非标规格5-7天。
- ◆ 其它规格板材均可协商提供。

- ◆ Supply: top and bottom grinding, HIP and stress relief, flaw detection and demagnetization.
- ◆ Product dimensional tolerance can be determined according to the requirements, the specific consultation technical personnel.
- ◆ Delivery time: 1-5 days for standard specifications and 5-7 days for non-standard specifications.
- ◆ Plates of other specifications can be provided through negotiation.

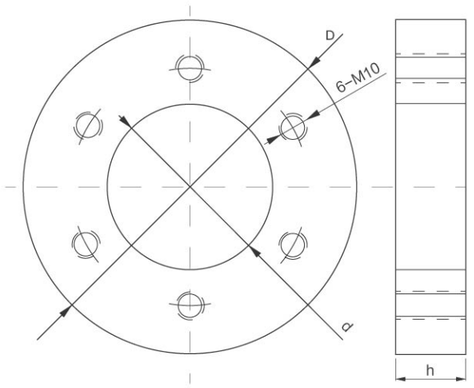
牌号对照表 Brand Grade Comparison

苏州新锐 SHAREATE	森拉天时 CERATIZIT	富士材料 FUJILLOY	共立合金 EVERLOY	山合金 Sanalloy	肯纳金属 Kennametal
XR126	CF-H40S	D40		RD30	
XR125		VD45	KD20		KR466
XR123	H40S	D50	G4	RD40	
XR141	H50S	D60	G5	RD60	
XR13X		F20		RF20	KR887
XR10ST		VF12	KD10	FD15	KR855
XR06C			MC20		

Preforming Products
预成型件

可提供各类圆环和预成型件（通孔、盲孔、台阶孔、螺纹孔等），同时可以进行按图加工。

Can provide all kinds of rings and preformed parts (through hole, blind hole, step hole, thread hole, etc.), and can be processed according to the drawing.



预成型螺纹孔 Preform Threaded Hole

螺纹孔 Threaded Hole	最大深度 Maximum Depth / mm
M5	25
M6	30
M8	30
M10	30
M12	30

注：若需其他规格螺纹孔或高精度螺纹孔，咨询技术人员。
Note: if need other specification thread hole or high precision thread hole, consult technician.

- ◆ 供应态：上下面平磨、HIP及去应力和退磁处理。
- ◆ 产品尺寸公差可根据需求而定，具体咨询技术人员。
- ◆ 交货期：普通圆环4～7天，预成型件7～15天。
- ◆ 可对不同的落料凹模与凸模预成型件进行生产。
- ◆ 可提供最大外径320mm，高度小于30mm的半精磨圆环。

- ◆ Supply: top and bottom grinding, HIP and destressing and demagnetizing.
- ◆ Product dimensional tolerance can be determined according to the requirements, the specific consultation technical personnel.
- ◆ Delivery time: 4 ~ 7 days for ordinary rings and 7 ~ 15 days for preformed parts.
- ◆ Can produce different blanking die and punch preformed parts.
- ◆ Semi-finished grinding ring with maximum diameter of 320mm and height less than 30mm can be provided.

硬质合金注意事项

运输中的注意事项

- 当硬质合金从高处落向坚硬的地面时，合金容易崩裂，所以当您打开包装时请确认产品没有受到损伤。
- 硬质合金的密度是钢铁零件的两倍左右，在搬运过程及使用时要小心压伤手脚。
- 形状较薄的合金产品（管状、长条状）、有尖角的合金产品，在较小的受力情况下会产生掉边掉角，所以在加工前的固定、拆装、转运时请特别注意不要附加过量载荷。

加工时的注意事项

- **切断、磨削加工**

  硬质合金在冲击和过度的加工负荷下容易裂开或崩角，所以在加工前请确认零件是否牢固的被固定在工作台上，再进行加工。

- **电加工**

  硬质合金在进行电加工时，加工面容易裂开和崩角，所以要按照零件的几何参数和合金材质等级来调整加工程序。

  线切割时有时会产生开裂的现象，所以在加工后要注意检查加工面没有缺陷后再进行下一道工序。

- **焊接加工**

  硬质合金在焊接加工时，合金及焊缝容易产生裂纹，请在加工后确认没有损伤后再进行下一道工序。要严格按照硬质合金的焊接工艺，做好焊前预处理和焊后保温处理，保证合金不受急速加热和冷却，否则容易导致合金裂开。

- **HIT处理品**

  在扩散处理的钢件上进行穿孔、攻丝等作业时，会发生填塞物摇晃或硬质合金部分裂开的现象，请在加工时注意确认没有异常。

The Notes For Cemented Carbide Products

The Notes For Transportation

- When falling to the hard ground from high position, the cemented carbide products could be easily broken. Please check the products whether any damages happen when opening the package.
- Be careful not to get injured to hands or feet when carrying and using the products since the density of cemented carbide is two times higher then steel parts.
- The thin cement carbide products (pipe or stripe shape or with sharp corners) will easily lose the corners or sides. So do not put excessive load when fastening, dismounting and transport before machining.

Notes for machining

- **Cutting and Grinding**

  The cemented carbide could be easily cracking or chipping under the condition of impact effect and excessive machining load. Before starting machining please check whether the parts are fastened to the workbench.Don't strike the cemented carbide with iron hammer due to its non-good impact resistance.

  The general cemented carbide is not easily fixed by magnet. When using the magnet for fastening, please check whether the parts are loose or not. The surfaces machined are very smooth and the corners are very sharp. Be careful for your safety when carrying and using.

- **Electromachining**

  When the cemented carbide is in the process of electromachining, the machining surfaces are easily cracking and chipping corners, the work piece programs need to be adjusted according to the geometric parameter of the parts and the degree of the carbide materials. Wire-electrode cutting sometimes causes the phenomenon of cracking on the machining surfaces. It is necessary to check the machining surfaces to confirm that there is no defect before starting next procedure.

- **Welding**

  When the cemented carbide is in the process of welding procedure, the cemented carbide and welding line easily emerge the cracks. It is necessary to proceed next procedure after checking and confirming that there is no defect. Be strict with the welding technology of cemented carbide and making fore welding pretreatment and post welding heat preservation which will protect the cemented carbide from fast heating and cooling to cause cracking of cemented carbide.

- **HIT Disposed Products**

  When proceeding the process of perforating and tapping on the steel parts with diffusion treatment, it will occur the phonemes of stemming shocking or cemented carbide cracking. Please check carefully when machining.

SHAREATE

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