

求实创新，追求卓越
PRAGMATIC INNOVATION
THE PURSUIT OF EXCELLENCE

品质源于
1956
Since 1956



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汽车发动机加工 专用刀具

SPECIAL MACHINING TOOLS FOR AUTOMOBILE ENGINE



COMPANY PROFILE

公司简介

成都工具研究所有限公司于1999年成为中国机械工业集团有限公司全资子公司，集团2014年世界500强排名278位。我公司前身是成都工具研究所，创建于1956年，是原国家机械工业部直属的我国机械工业唯一的综合性工具科研开发机构，主要从事精密切削刀具，精密测量仪器和表面改性技术三大类机械产品共性技术研究及其高新技术产品的开发与生产，并担负着全国工具行业发展规划、产品标准、产品质量监督检测等行业技术工作，出版有中文核心技术物《工具技术》。

成都工具研究所有限公司是我国工具行业唯一的综合性科技型企业，是国家刀具、量具、量仪产品质量监督检测中心以及中国机械工业金属切削刀具技术协会、中国机床工具工业协会工具分会和中国仪器仪表学会机械测试仪器分会等十多个行来、社会组织的归口挂靠单位。

精益求精
促进机械加工技术进步

Chengdu Tool Research Institute Co.,Ltd(CTRI),was accepted into China National Machinery Industry Corporation (SINOMACH) in1999.SINOMACH ranked 278th on World Top 500 List in 2014.CTRI,founded in 1956 formerly under the direction of China's Machinery Ministry,is the sole comprehensive tool researching and scientific developing institution in China's machinery industry.CTRI is principally engaged in researching,developing,manufacturing and selling tools,measuring instruments and surface modified technique and equipment.Also,CTRI is the bellwether in China's tool industry development,products standards,and products quality control etc.And CTRI publishes Chinese Core Periodicals Tool Engineering.

These following organizations are subordinate to CTRI:National Center of Supervision and Inspection on Cutting Tool Products Quality China Metal Cutting Tool Engineering Association (CMCTEA)Tool Session of China Machine Tool&Tool Builder's Association State Tool Quality Supervision&Inspection Center Branch of China Instrument Society for Mechanical Measuring Instruments.



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行业地位

POSITION IN INDUSTRY

成都工具研究所是我国工具行业科研、技术的领头羊、行业归口所，以下组织挂靠在我所：

- 中国机械工业金属切削刀具技术协会
- 中国集成工具工业协会工具分会
- 中国仪器仪表学会机械量测试仪器学会
- 国机刀具质量监督检测中心
- 机械工业量具量仪产品质量监督监测中心
- 国家进出口商品检验局刀具认可实验室
- 国家进出口商品检验局量具量仪认可实验室
- 科技成果检测鉴定国家级检验机构（刀具）
- 科技成果检测鉴定部级检验机构（量具量仪）
- 全国刀具标准化技术委员会秘书处
- 全国量具量仪标准化技术委员会秘书处
- ISO/TC 29（工具）P成员国内归口单位
- TSO/TC213（产品的几何和几何技术规范及检验）P成员国内归口单位
- CNACL国家认可实验室
- 《工具技术》杂志社
- 国家精密工具产生力促进中心
- 中国机械工业金属切削刀具技术协会
- 中国机械工程学会生产工程分会切削专业委员会
- 四川省机械工程学会机加工专业委员会

人力资源

HUMAN RESOURCES

全所共有职工500余人，其中科技人员320人，有突出贡献的国家级专家3人，享受国家政府津贴26人，省部级专家15人，研究人员高级工程师27人，高级工程师103人，高级会计师、高级经济师10人、中级技术人员140人，硕士研究生14人，大中专生146人，专业涉及机械、金属材料、电子、计算机、机电一体化等专业。

Chengdu Tool Research Institute Co.,Ltd is the bellwether and centralized R&D institution in China's Tool industry. There following organizations are subordinate to CTRI:

- China Metal Cutting Tool Engineering Association (CMCTEA)
- Branch of China Machine Tool & Tool Builder's Association
- China Instrument and Control Society for Mechanical Measuring Instruments
- China National Supervision & Inspection Center for Cutting Tool Quality
- Supervision & Inspection Center for Measuring Instrument in Mechanical Industry
- National Approved Cutter Laboratory of China Import and Export Comedy Inspection Bureau
- National Approved Measuring Instruments Laboratory of China Import and Export Comedy Inspection Bureau
- China National Inspection and Testing Agency of Scientific and Technological Achievements (Cutting Tools)
- China National Cutter Standardization Technical Committee Secretariat
- China National Measuring Instrument Standardization Technical Committee Secretariat
- China Domestic Focal Point of ISO/TC29(Tool) P member
- China Domestic Focal Point of ISO/TC213 (Geometry, Geometry technical criterion and inspection of Products) P member
- China National Accreditation Committee for Laboratory (CNACL) Tool Engineering
- China National Precision Tools Productivity Promotion Center
- China Profession Committee, Production Engineering Branch, China Mechanical Engineering Society
- Machining Profession Committee, Sichuan Mechanical Engineering Society

CTRI presently has around 500 employees, 320 scientific technical personnel, 3 state-level experts with outstanding contribution, 26 recipients of government special allowance, 15 ministerial level experts, 27 professor level senior engineers, 103 senior engineers, 10 senior accountants and senior economists, 140 intermediate technical staff, 14 with master degree, 146 with college diploma and employees are widely involved in machinery, metal materials, electronic, computer specialty.

科研成果

ACHIEVEMENTS IN SCIENTIFIC RESEARCH

自成都工具研究所成立以来，主要取得以下科研成果：

一、国家发明奖三项：

- 齿轮整体误差测量新技术发明二等奖
- 单晶金刚石钎焊工艺及焊料发明二等奖
- 五钻易磨高性能高速钢发明三等奖

二、国家科技进步奖八项

- 量具刀具产品标准的制定和贯彻二等奖
- 中模数硬质合金齿轮滚刀三等奖
- 立方氮化硼聚晶机理及其应用三等奖
- 涂层硬质合金刀片成套技术及装备研究三等奖
- QPQ盐浴复合处理技术及成套设备二等奖
- 机电一体化发展预测与综合分析（合作项目）三等奖
- 材料动态断裂性能研究及其在典型机械零部件上的应用（合作项目）三等奖
- 机械工业共性数据库（合作项目）二等奖

三、省部科技进步奖

121项（略）



Followings are main scientific achievements since the establishment of CTRI:

1.Three National Invention Awards

- Invention of gear's integrated error measuring technology-the second prize
- Invention of brazing process and solder of monocrystal diamond-the second prize
- Invention of high speed steel with non-cobalt and high performance-the third prize

2.Eight National Prizes for Progress in Science and Technology

- The formulation and implementation of measuring instruments and cutting tools standard the second prize
- Middle-Modulus Carbide Gear Hob Cutting Tools- the third prize
- The Mechanism and Application of PCBN-the third Prize
- Research of Complete technology and equipment to coat carbide inserts-the third prize
- Research of QPQ technology and equipment-the second prize
- Forecast and comprehensive analysis of mechanotronics (cooperation project)-the third prize
- Material Dynamic Crackability analysis and application to typical mechanical components (cooperation project)-the third prize
- Machine Industry Common Database (Cooperation Project)-the second prize

3.Provincial and Ministerial Prizes for Progress in Science and Technology

128 items (omitted)

核心竞争力

CORE COMPETITIVENESS

目前成都工具研究所已在刀具材料、精密复杂成型刀具与数控刀具设计及加工技术、刀具表面强化改性技术与装备、大型精密量仪设计制造、激光测量及光电传感器技术以及计算机软件等技术领域，形成了独特整体、核心成套技术优势，初步构成了以硬质合金石油管螺纹梳刀、硬质合金精密异形刀具、超硬刀具、刀具表面强化技术及设备、齿轮测量仪、激光测量仪等六项主导产品，包含30多项核心、高新技术产品的产品技术结构，这些产品和技术大都处于国内领先或国际先进水平。



Chengdu Tool Research Institute has formed complete and unique technical competitive advantages in tool blank, precise and complex profiled cutting tools and CNC tool design and processing technology, cutting tool surface modification and strengthening technology and equipment, large-scale design precision instrument manufacturing, laser and photoelectric sensor technology and computer software technology. It initially formed six leading products including carbide treading tools for oil pipe, carbide precision special-profiled inserts, PCBN/PCD cutting tools, tool surface strengthening technology and equipment, gear measuring instrument, laser measuring instrument. Those products are supported by more than 30 core, high-tech products technology structure and most of these products and technology are leading technologies in the domestic and international advanced level.

品质源于
1956

质量控制

QUALITY CONTROL

质量认证：ISO9001:2008

质量方针：以技术创新为先导，以质量管理为保证，以持续改进为核心，以顾客满意为目标。

质量目标：

- 贯彻ISO9001:2008标准，通过ISO9001:2008质量管理体系认证，并保持体系有效运行。
- 技术不断创新，每年设计开发新产品或新项目2项以上。
- 以质量管理为保证，加强过程控制，实施持续改进，产品质量精益求精，确保产品出厂合格率达100%。三年内使主导产品合格率提高到95%以上，成品交检批次合格率达到95%。
- 以顾客为关注焦点，增进顾客满意，三年内使顾客满意率达98%以上，顾客投诉解决率达到100%。
- 顾客重大投诉为零，重大质量事故为零，重大设备安全事故为零。

Quality Certification: ISO9001:2008

Quality Policy: To make technical innovation as the guide, the quality management as the guarantee, continuous improvement as the core and take customer satisfaction as the goal.

Quality Objectives:

- in carrying out the standard of ISO9001:2008, through the ISO9001:2008 quality management system certification, and keep the system running effectively.
- technology innovation, design and develop more than 2 new products or new projects each year
- to guarantee the quality management, strengthen the process control, carry out continuous improvement, refine on product quality, ensure 100% products manufactured pass rate. Increase leading products pass rate to 95% in three years and the finished product inspection pass rate to 95%.
- to focus on the customer satisfaction, increase ing the rate over 98% in three years, resolving customer complaints rate over 95%;
- No major customer complaints, no quality accidents, no equipment safety accidents.

企业合作

ENTERPRISE COOPERATION

与联合国合作建立中国量仪基地
与德国KlingeInberg 公司合作，锥齿轮测量技术出口德国
广范与国外公司进行技术交流与合作
与国内大专院校、大型企业进行广范的技术交流与合作
与英国普法永道咨询公司合作，全面提升企业形象和管理能力

Established China Instrument Base Center with the U.N
Exported the bevel gear measuring technology to Germany with KlingeInberg (Germany)
Widely carry out technology exchanges and cooperation with foreign companies
Widely carry out technological exchanges and cooperation with domestic universities and large enterprises of China
Cooperate with consulting company to comprehensively promote CTRI' s image and management ability.

服务管理

SERVICE MANAGEMENT

服务宗旨：全心全意为用户服务
服务承诺：尽可能满足用户的合理需求
服务标准：快速、及时、有效，向用户提供一流产品和一流服务。

Service Rules: full service to customer' s request
Service Commitment: meeting the reasonable users' requirements
Service Standard: effectively and efficiently providing top level products and service



汽车发动机加工 专用刀具

SPECIAL MACHINING TOOLS
FOR AUTOMOBILE ENGINE

CONTENTS 产品目录

汽车发动机加工专用刀具

Special Cutting Tools For Automobile Engines

08 硬质合金刀片 Carbide Insert

25 陶瓷刀片 Ceramic Insert



汽车发动机加工专用硬质合金刀具材料及涂层介绍

Carbide Cutting Tools for Automobile Engine Grade and Coating Introduction

GY70是本公司材质中专门针对铸铁加工的专用硬质合金牌号。该牌号也非常适合于干式切削，在粗加工和精加工汽车曲轴、缸体缸盖、凸轮轴、连杆时表现了优异的性能，比传统的K05~K15材质具有更高的加工效率和稳定性。

GY70 is special carbide grade designed for the machining of cast iron in CTRI. This grade is very suitable for dry cutting, and excellent performance is shown in rough and finish machining of crankshaft, cylinder block and cylinder head, camshaft, connecting rod. Compared to traditional grade of K05~K15, it shows high machining efficiency and higher stability.



新型厚膜汽车专用涂层硬质合金

Newly High Build Coated Carbide for Automobile

GY70更有本公司特别设计的与之配套的新一代含Si、含Cr、含Al等的PVD涂层。该种涂层在干式车拉切削和铣削铸铁的加工中具有极高的抗月牙洼磨损和抗后刀面磨损性能，使刀具的耐用度和稳定性得到极大的提高。

GY70 is better supported by the new generation PVD coating contented with Si, Cr and Al PVD etc. The coating shows excellent crater wear resistance in turning and milling of cast iron. Thus, durability and stability of the tools will be greatly improved.



具有高耐磨性、抗氧化性的TiAl纳米物理涂层

TiAlN nano PVD coating with high resistance and high oxidation resistance

切削参数推荐

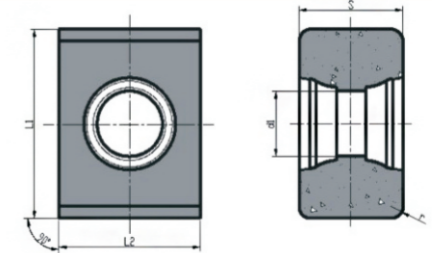
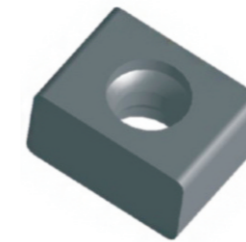
THE RECOMMENDED CUTTING PARAMETERS

工件材料 Component	铸铁、球墨铸铁，轴颈直径 $\phi 55\text{mm}$ ，布氏硬度：HB220~290 Cast iron, ductile cast iron, $\phi 55\text{mm}$, Hardness: HB220~290
切深Cutting depth (mm)	(单边)(single edge) 2~4
切削速度Cutting Speed (m/min)	150~220
进给速度Feed Speed (m/min)	0.2~1.0

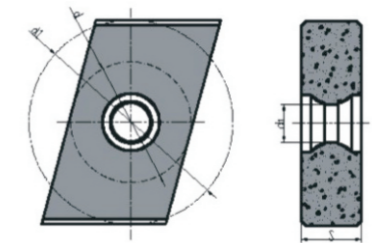
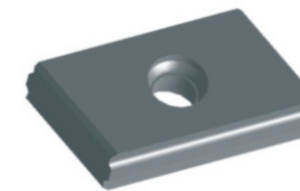
硬质合金刀片

Carbide Insert

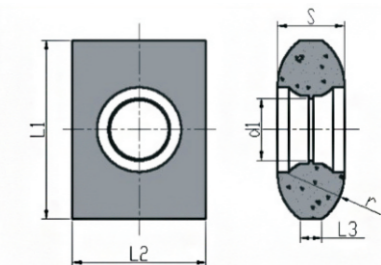
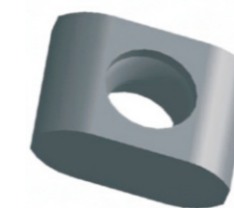
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21-000113-101-1	12.7	9.525	7	4.4	0.8	●	○



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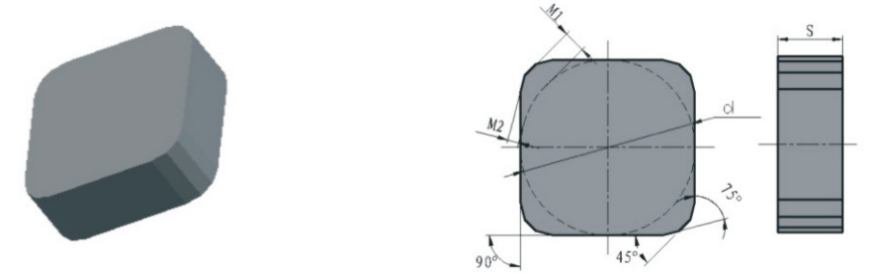
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●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade

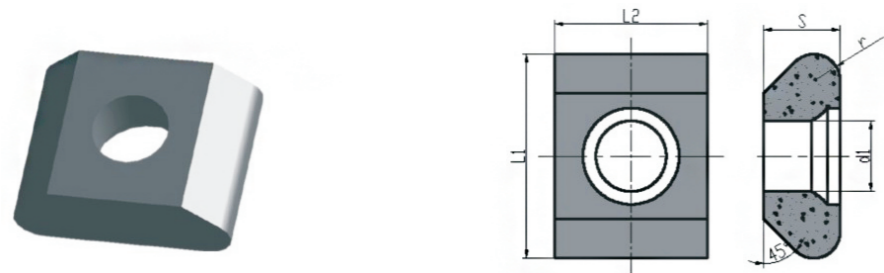


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●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade



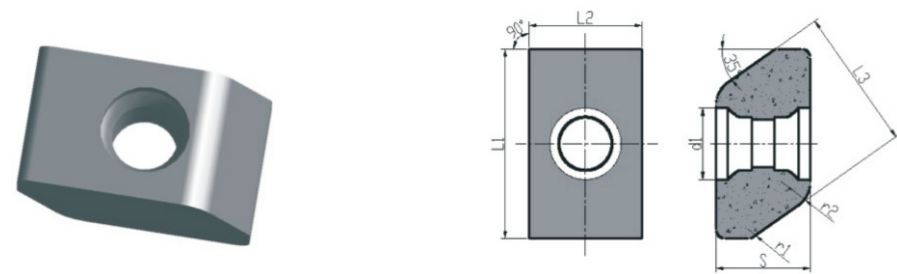
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SNCN1204ENN	12.7	4.76	1.598	0.82	●	○



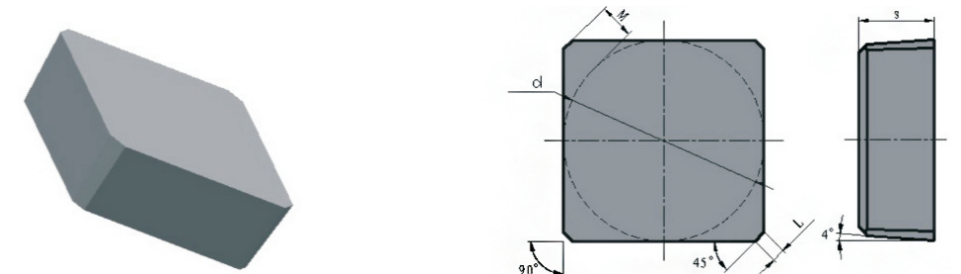
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21-002050-100-1	12.7	9.525	4.76	4.4	4	●	○



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LEN3253GY83C28	15.875	9.525	4.76	4.3	0.4	●	○

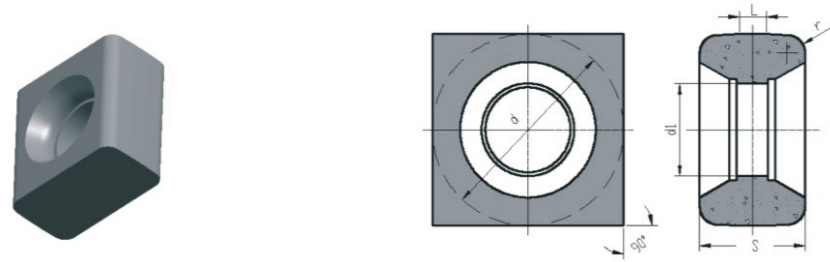


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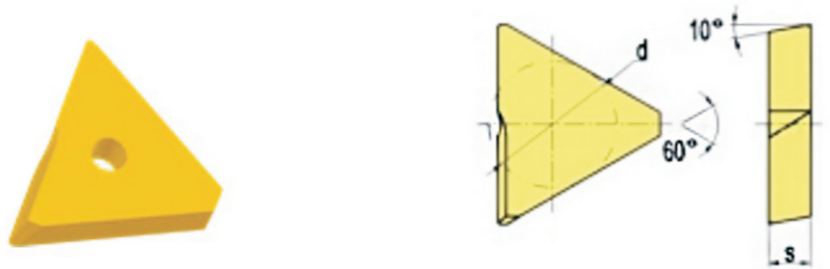


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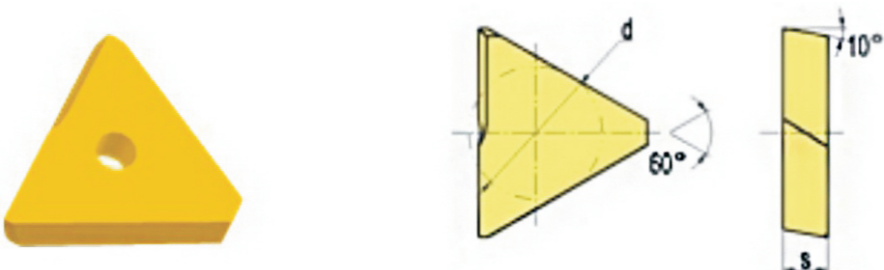
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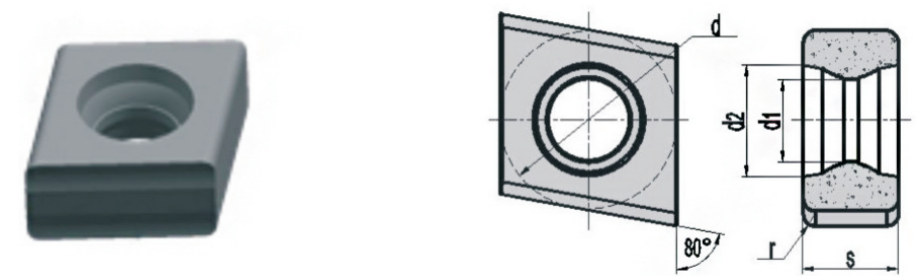


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C/9921	9.525	3.17	●	○

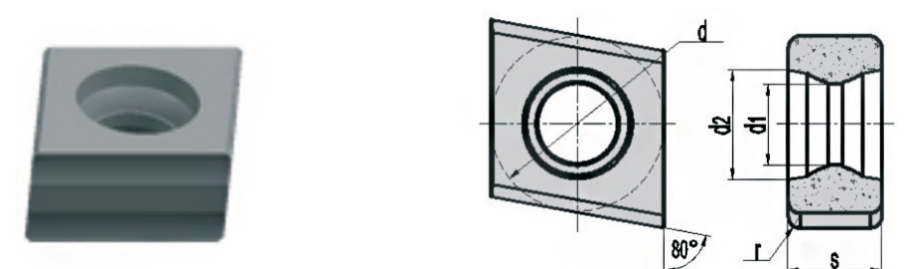


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C/9922	9.525	3.17	●	○

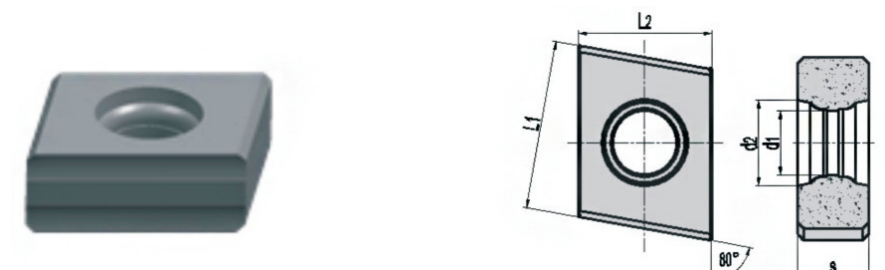
●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade



订货号 Order No.	尺寸 Dimension (mm)					材料牌号 Grade	
	d	s	d1	d2	r	GY7026	GY83
335.18-100508-M10	10	5.4	4.6	6.3	0.7	●	○

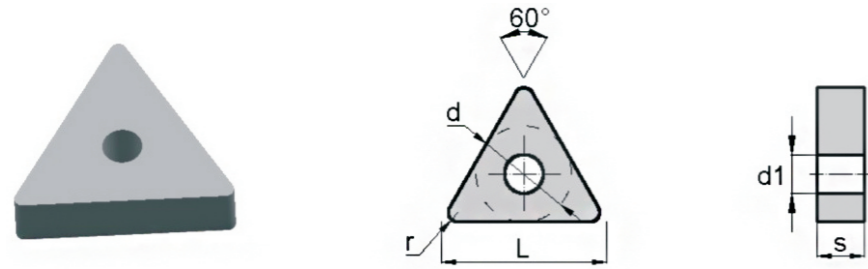


订货号 Order No.	尺寸 Dimension (mm)					材料牌号 Grade	
	d	s	d1	d2	r	GY70	GY8326
335.18-1005T-M10	10	5.4	4.6	6.3	0.7	●	○

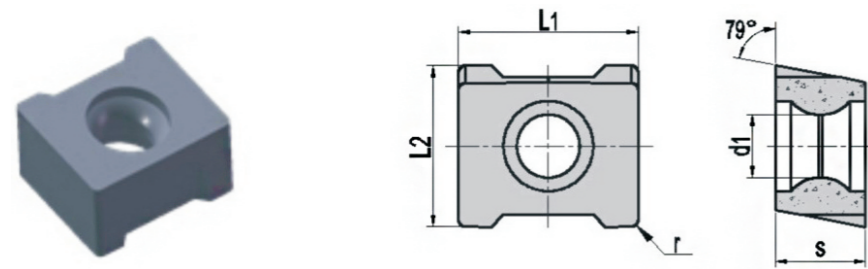


订货号 Order No.	尺寸 Dimension (mm)					材料牌号 Grade	
	L1	L2	s	d1	r	Gy7026	GY83
335.18-1305T-M11	12.7	10	5.4	4.6	6.4	●	○

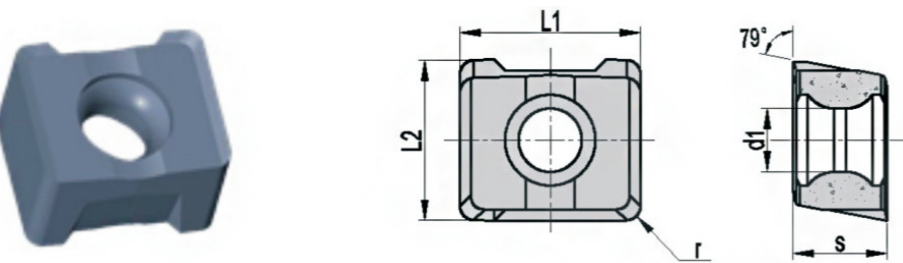
●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade



订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	d	s	d1	r	GY70	GY8326
TNMA160408	9.525	4.76	3.81	0.8	○	●
TNMA220408	12.7	4.76	5.16	0.8	○	●

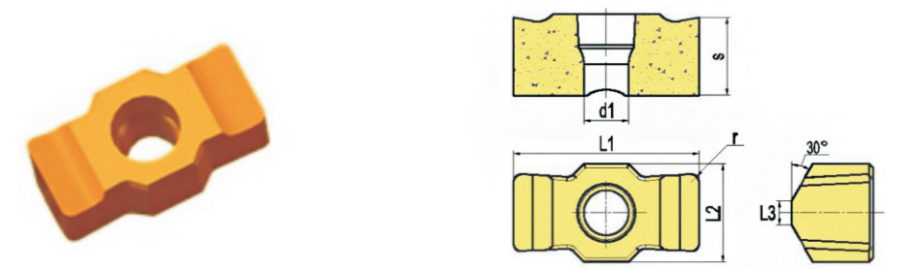


订货号 Order No.	尺寸 Dimension (mm)					材料牌号 Grade	
	L1	L2	s	d1	r	GY70	GY8326
LNKW080508PPTN-MD08	10	7.7	5	3.5	0.4	○	●



订货号 Order No.	尺寸 Dimension (mm)					材料牌号 Grade	
	L1	L2	s	d1	r	GY70	GY8326
LNKT080508PPTN-M06	10	7.7	5.2	3.5	0.8	○	●

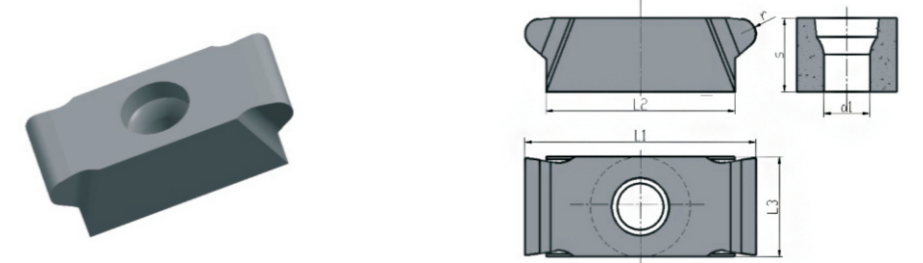
●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade



订货号 Order No.	尺寸 Dimension (mm)						材料牌号 Grade	
	L1	L2	L3	s	d1	r	GY7059	GY83
W269414087	19	10	2.5	8	4.6	0.8	●	○

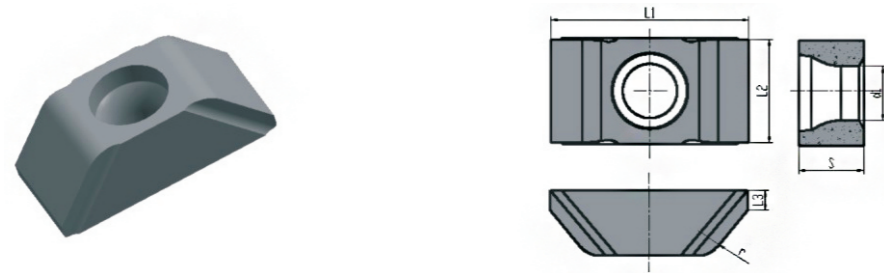


订货号 Order No.	尺寸 Dimension (mm)					材料牌号 Grade	
	L1	L2	s	d1	r	GY7063	GY83
W269404097	14.5	12	5.56	4.4	1.6	●	○



订货号 Order No.	尺寸 Dimension (mm)						材料牌号 Grade	
	L1	L2	L3	s	d1	r	GY7026	GY83
W269414098	22	18	9.525	7	4.4	1.4	●	○

●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade

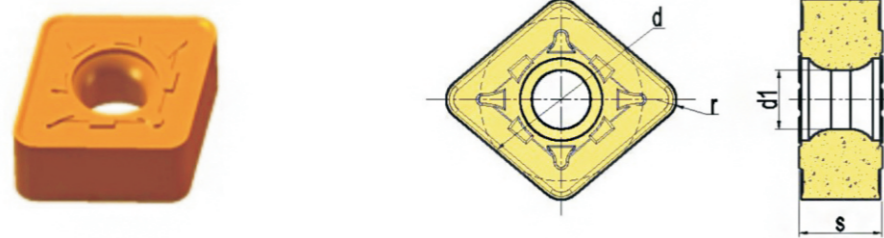


订货号 Order No.	尺寸 Dimension (mm)						材料牌号 Grade	
	L1	L2	L3	s	d1	r	GY7026	GY83
W269404098	20	10.7	2	6.6	5.5	2.5	●	○
W269404096	23	10.7	1.7	7.94	5.45	3	●	○

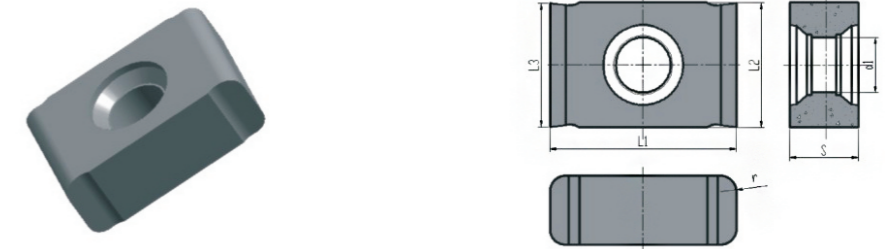
●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade



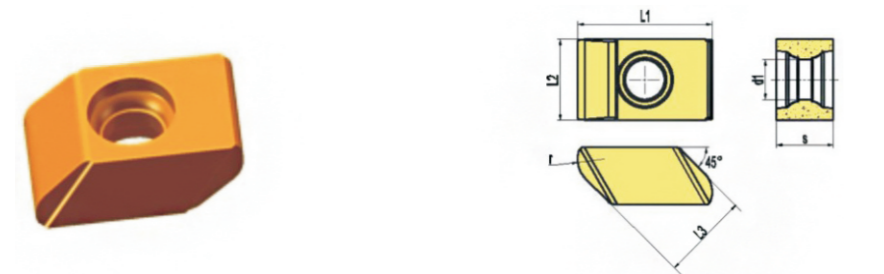
订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	L1	L2	s	d1	GY7056	GY83
W269414088	24.5	12.7	6.35	4.7	●	○



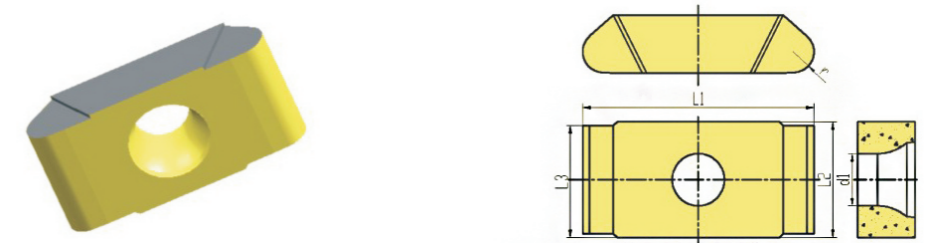
订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	d	s	d1	r	GY7059	GY83
W269414085	12.7	6.35	4.6	1.6	●	○



订货号 Order No.	尺寸 Dimension (mm)						材料牌号 Grade	
	L1	L2	L3	s	d1	r	GY7026	GY83
W269414090	19.05	12.7	12.54	7	5.6	1.6	●	○



订货号 Order No.	尺寸 Dimension (mm)						材料牌号 Grade	
	L1	L2	L3	s	d1	r	GY70	GY8363
W269404099	15.04	9	9.82	9	4.4	3.2	○	●

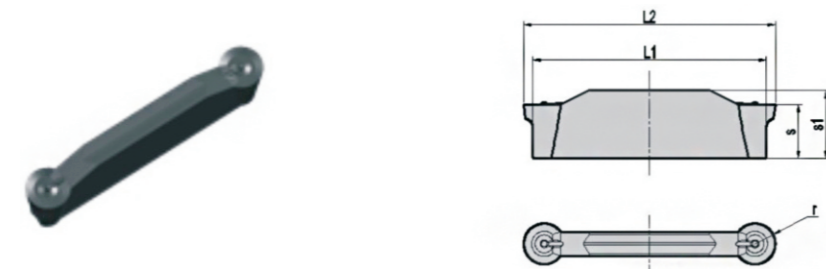


订货号 Order No.	尺寸 Dimension (mm)						材料牌号 Grade	
	L1	L2	L3	s	d1	r	GY7050	GY83
W269414089	19.05	9.525	8.9	4.76	4.3	1.7	●	○

●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade



订货号 Order No.	尺寸 Dimension (mm)					材料牌号 Grade	
	L1	L2	s	d1	r	GY7026	GY83
W269414099	12.95	12.7	7.46	4.3	1.35	●	○

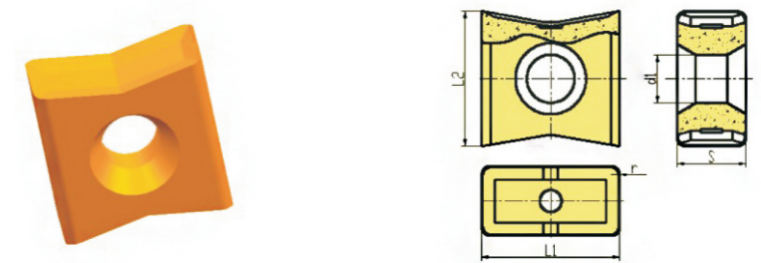


订货号 Order No.	尺寸 Dimension (mm)					材料牌号 Grade	
	L1	L2	s	s1	r	GY7082	GY83
W269414083	21	20.25	4.3	5.65	1.7	●	○

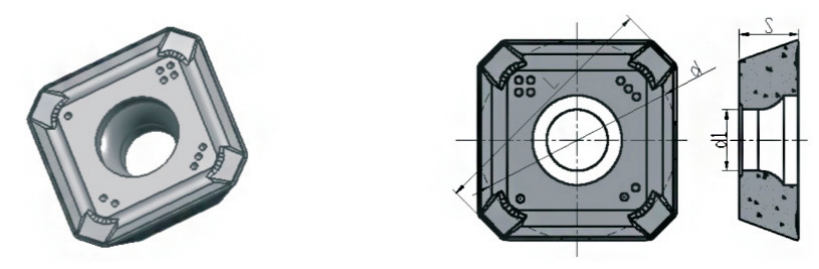


订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	d	s	d1	r	GY7085	GY83
HNHX1006ANTN-M	21	4.3	5.65	1.7	●	○

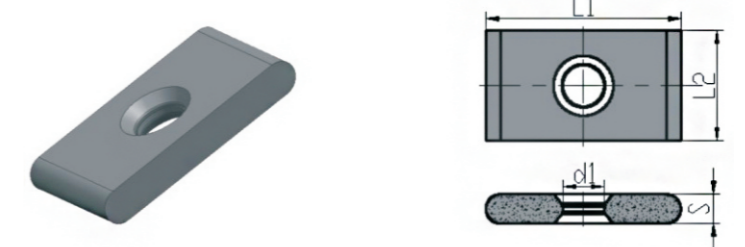
●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade



订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	L1	L2	s	d1	GY7085	GY83
XNE120608	12.7	12.3	6.35	4.4	●	○

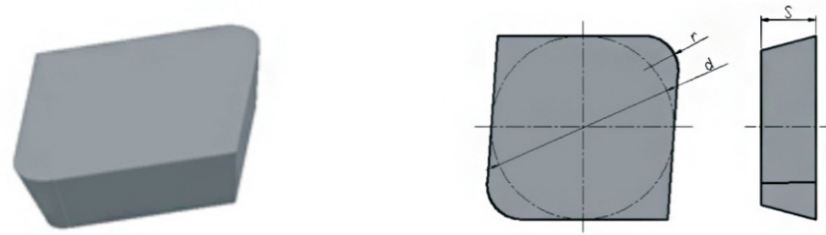


订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	L	d	s	d1	GY7082	GY83
SEMT1304-ST	16.5	13.34	4	4.1	●	○



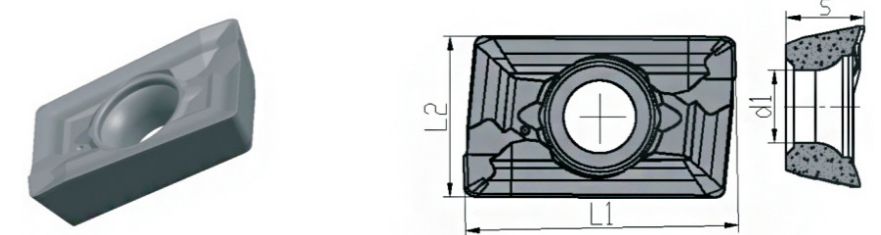
订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	L1	L2	s	d1	GY7092	GY83
LNC442-103	25.4	14.3	3.8	5.4	●	○

●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade

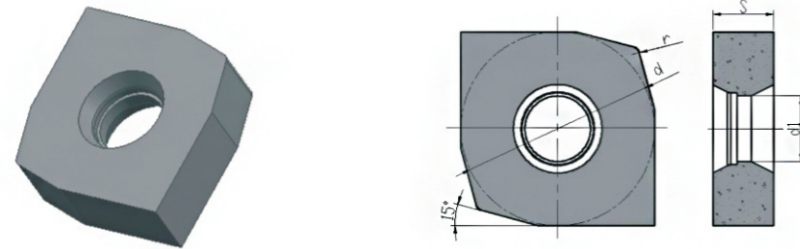


订货号 Order No.	尺寸 Dimension (mm)			材料牌号 Grade	
	d	s	r	GY7092	GY83
MDHN150430T	15.875	4.76	3	●	○

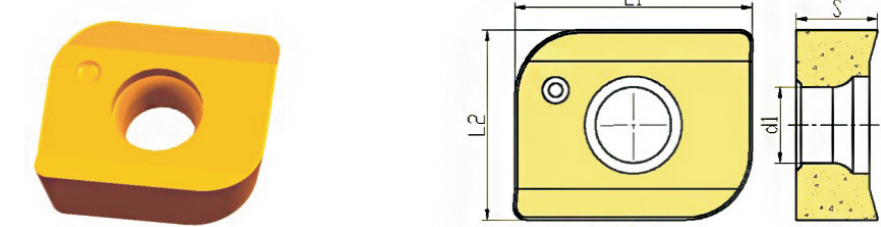
●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade



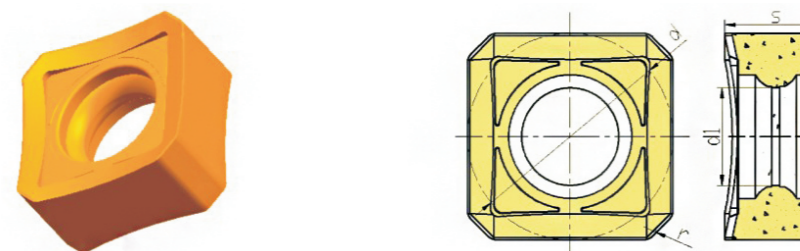
订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	L1	L2	s	d1	GY7092	GY83
JADPMT160408	16.51	9.67	4.76	4.4	●	○



订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	d	s	r	D1	GY7092	GY83
SNHX12T3XF	12.7	3.97	0.5	4.3	●	○



订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	L1	L2	s	d1	GY7085	GY83
248817	14.42	11.5	4.97	4	●	○



订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	d	d1	s	r	GY7085	GY83
SNMG1206CX	12.7	6	6.35	0.5	●	○



订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	L1	L2	s	d1	GY7064	GY83
DR822	22.3	12.66	7.94	5.6	●	○

●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade



订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	L1	L2	s	r	GY7000	GY83
JDR3124-13	31.5	24	7	8	●	○

●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade



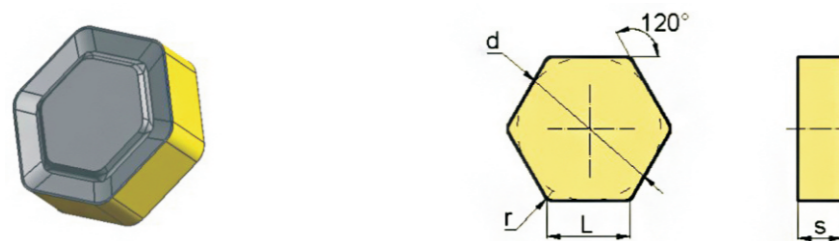
订货号 Order No.	尺寸 Dimension (mm)			材料牌号 Grade	
	d	s	r	GY7059	GY83
OPMN050408	12.7	4.76	0.8	●	○



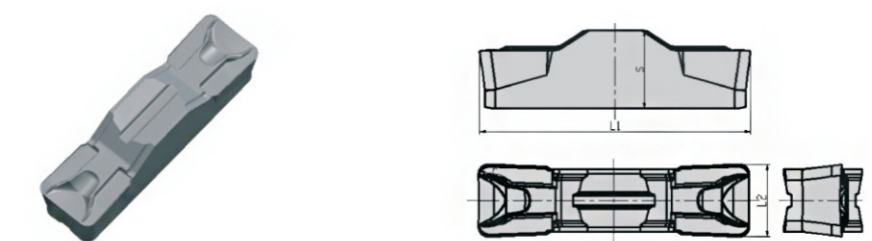
订货号 Order No.	尺寸 Dimension (mm)			材料牌号 Grade	
	d	s	r	GY3900	GY70
SNKN1906	19.05	7	1.2	●	○



订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	L1	L2	s	r	GY7018	GY83
QC300708	30	8	8.24	0.8	●	○



订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	L	d	s	r	GY7050	GY83
HNGF0950FN	9.4	16.2	5.56	0.4	●	○



订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	L1	L2	s	r	GY7018	GY83
QCD0712	30	8	8.66	1.2	●	○

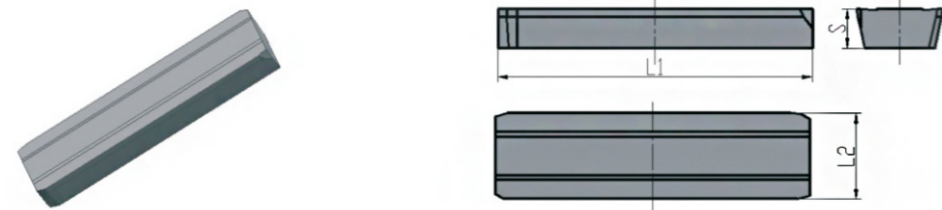
●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade



订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	d	s	r	d1	GY70	GY8385
TDGW090404	9.525	3.97	0.4	4	○	●

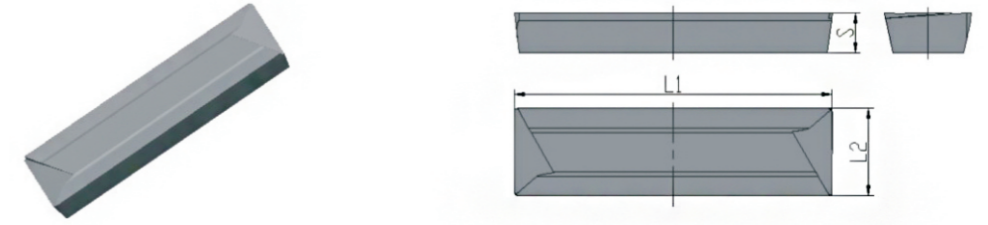


订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	d	s	r	d1	GY70	GP1085
XTC100402	10.3	4.76	0.2	5	○	●



订货号 Order No.	尺寸 Dimension (mm)			材料牌号 Grade	
	L1	L2	s	GY16781	GY70
GR02-ARB300-HE	20	5.46	2.5	●	○

●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade



订货号 Order No.	尺寸 Dimension (mm)			材料牌号 Grade	
	L1	L2	s	GY16781	GY70
SK-18415-1-HF	20	5.46	2.5	●	○

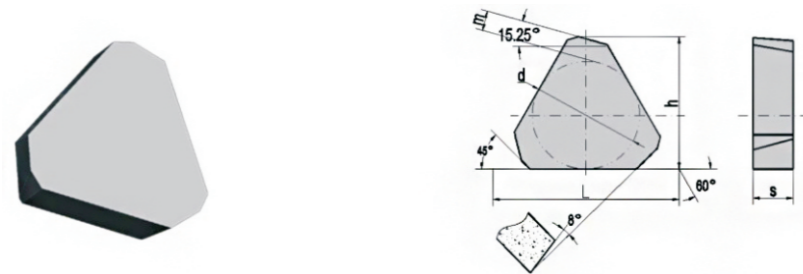


订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	L1	L2	s	d	GY7050	GY83
GD0045	32.35	17.12	6.35	15.875	●	○



订货号 Order No.	尺寸 Dimension (mm)					材料牌号 Grade	
	L	D	s	m	h	GY7052	GY83
E-32120L	22	12.7	4.76	2.34	15.62	●	○

●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade

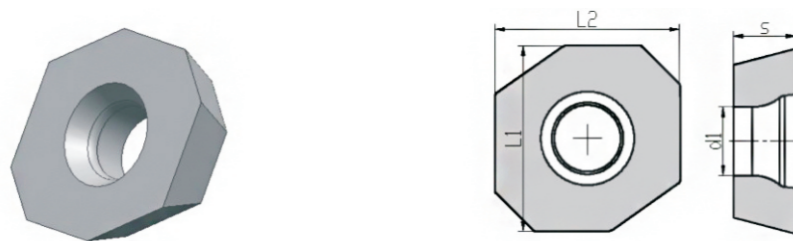


订货号 Order No.	尺寸 Dimension (mm)					材料牌号 Grade	
	L	D	s	m	h	GY7052	GY83
E-32120R	22	12.7	4.76	2.34	15.62	●	○

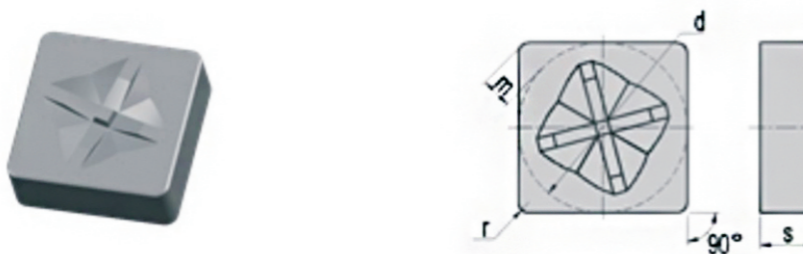


陶瓷刀片

CERAMIC INSERT



订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	L1	L2	s	d1	GY0600	
SPET0903	9.5	9.5	3.18	3.4	●	



订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	d	s	m	r	GY0600	
SNGX120408	12.7	4.76	2.29	0.8	●	

●代表主推牌号 Recommended Grade ○代表可选牌号 Optional Grade



订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	d	s	m	r	GY0600	
SNMF120408	12.7	4.86	2.3	0.8	●	



订货号 Order No.	尺寸 Dimension (mm)				材料牌号 Grade	
	d	s	m	r	GY0600	
SNGN130612	13.4	6	2.287	1.2	●	