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CEMENTED CARBIDE PRODUCTS

MINING AND CONSTRUCTION

Shareate Tools Ltd.

COMPANY PROFILE

Shareate Tools Ltd. (hereinafter referred to as "Shareate") is a national high-tech enterprise, focusing on six core businesses such as cemented carbide, mining drilling tools, cutting tools, petroleum instrumentation, engineering equipment, international trade and mining services, forming an operation model of upstream and downstream industrial chain penetration and industrial integration development. Shareate includes Australia AMS, the United States AMS, Canada Shareate, South Korea Shareate, Wuhan Shareate, and 24 other domestic and foreign molecular companies, with the domestic leading and largest drilling tools R&D, and manufacturing base, thousand-ton cemented carbide R&D and manufacturing base. Shareate has a sound technology research and development system and independent intellectual property rights system, the comprehensive introduction of the intelligent management system and production equipment, many products leading the domestic market segments, widely used in the petroleum industry, mining, infrastructure, aerospace, automobile manufacturing, electronic information, machining, intelligent equipment, and other fields.

In April 2017, Shareate established a wholly owned subsidiary Wuhan Shareate Tools LTD. (hereinafter referred to as "Wuhan Shareate") in Wuhan Caidian District. Wuhan Shareate's cemented segment covers tungsten carbide inserts for mining, cemented carbide bars, petroleum wear-resistant precision parts, and other categories. The mining products include carbide inserts for rock drilling, matrix for superhard composite sheets, and other wear-resistant parts

Shareate consistently supports the development of core technologies, works to establish a globally recognized brand of mining drilling tools and cemented carbide, and follows the path of internationalization, modernization, and integration of manufacturing services. Shareate is prepared to collaborate with local and international users to build a better future!



PASSION WINS DREAM
QUALITY WINS RESPECT

Continuous Accumulation and Innovation of
Cemented Carbide Technology for
Over 40 Years

- © The first enterprise in China to fully introduce American cemented carbide production equipment and technology.
- © A pioneer in low-pressure sintering technology, possessing high-end professional pressure sintering furnaces.
- © Advanced and complete physical and chemical testing equipment and laboratory center, with research and development capabilities that are forward-looking for industry development.

ADVANCED MANUFACTURING EQUIPMENT

On-site 6S management, reasonable workstation layout, intelligent production line, advanced manufacturing equipment, and standardized operating procedures.



Intelligent manufacturing production line



Raw Materials Warehouse



Batching Workshop



Ball Milling Workshop



Spray Tower



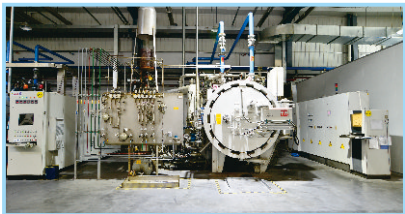
Mixing Material Warehouse



Pressing Workshop



Sintering Workshop



Sintering Furnace



Grinding Workshop

ADVANCED INSPECTION EQUIPMENT

Advanced and complete test and inspection equipment, professional technical team



Rockwell Hardness Tester



Vickers Hardness Tester



Coercive Magnetometer



Cobalt Magnetometer



Metallographic Microscope



Scanning Electron Microscope



Oxygen Analyzer



Infrared Carbon and Sulfur Analyzer



Fatigue Impact Testing Machine



Abrasive Wear Testing Machine



Universal Testing Machine



Image Measuring Instrument



Projector



Automatic Sorting



Keyence 3D Profile Measurement

CARBIDE INSERTS FOR OILFIELD AND MINING TRI-CONE DRILL BITS

Carbide inserts for oilfield and mining tri-cone drill bits come in a wide variety of grades and types. According to the shape of the insert tip, there are mainly spoon-shaped inserts, conical inserts, wedged inserts, flat inserts, etc., which can be customized in shape and size according to customer requirements.

✧ Grades properties and applications

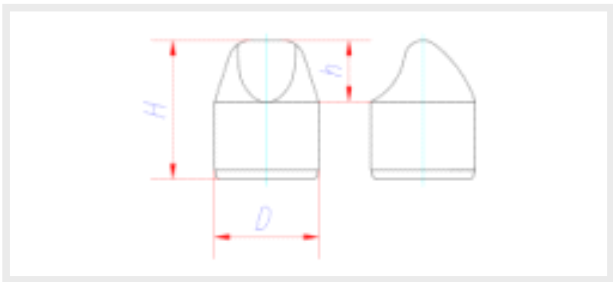
Grade	Cobalt Content	Density	Hardness	Bending Strength	Application Introduction
	%(±0.5)	g/cm³(±0.1)	HRA(±0.5)	N/mm²(≥)	
JZ06	6	14.95	90.3	2700	Applied to the wear protection of cone bits to reduce the wear of the bit steel body.
JZ08	8	14.75	89.5	3000	With high wear resistance and applied to the tri-cone drill bits with medium exposed height of inserts.
JZ09	9	14.65	89.5	/	Applied to various wear-resistant parts, such as wear protection insert and serrated insert.
JZ10	10	14.55	88.4	2900	With higher wear resistance than JZ10C and applied to the tri-cone drill bits with medium exposed height of inserts in drilling medium-hard rock.
JZ10C	10	14.55	87.8	2850	Applied to the tri-cone drill bits with medium exposed height of inserts in drilling medium-hard rock.
XR11C	11	14.45	87.0	2800	With higher toughness than JZ10C and applied to the tri-cone drill bits with medium exposed height of inserts in drilling hard rock.
JZ12	12	14.35	87.8	3000	With higher wear resistance than JZ12C and applied to the tri-cone drill bits with medium-long exposed height of inserts in drilling medium-hard rock.
JZ12C	12	14.35	86.6	2800	With high wear resistance and applied to the tri-cone drill bits with medium-long exposed heights of inserts in drilling medium-hard and hard rock.
JZ13	13	14.25	87.5	2900	Applied to the tri-cone drill bits with medium-long exposed height of inserts in drilling medium-hard rock.
XR13C	13	14.25	86.5	2800	Applied to the tri-cone drill bits with medium-long exposed height of inserts in drilling medium-hard and hard rock.
JZ14	14	14.15	87.0	2850	With higher wear resistance than JZ14C and applied to the tri-cone drill bits with medium-long exposed heights of inserts in drilling medium-hard and hard rock.
JZ14C	14	14.15	85.9	2800	Applied to the tri-cone drill bits with medium-long exposed height of inserts in drilling hard rock.
JZ16	16	13.95	86.5	2950	Applied to the tri-cone drill bits with medium-long exposed height of inserts in drilling hard rock.
JZ16C	16	13.95	85.5	2850	With higher toughness than JZ16 and applied to the tri-cone drill bits with medium-long exposed height of inserts, suitable for higher speeds and drilling pressures.

✧ The customized specification is available.



◎ SPOON-SHAPED INSERT

The spoon-shaped insert is used for inserted cone bits, and breaking rocks by cutting, and is suitable for high-speed drilling in soft rock formations.

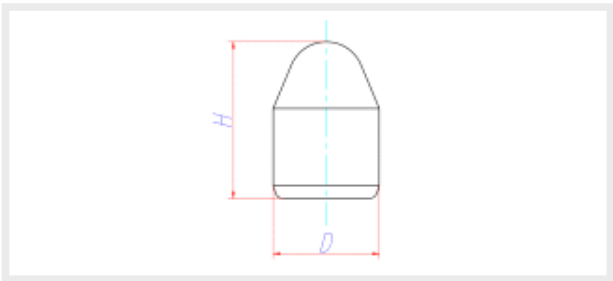


Model	Basic size (mm)			Model	Basic size (mm)		
	D	H	h		D	H	h
S0813	8.1	13.0	5.0	S1624	16.1	25.0	11.5
S1115	11.1	15.0	7.0	S2235	22.1	35.0	17.0
S1320	13.1	20.0	8.5	S3047	30.1	47.0	19.0
S1423	14.1	23.0	11.0	S3252	32.1	52.0	22.0

★ The customized specification is available.

◎ CONICAL INSERT

The conical insert is used for inserted cone bits, breaking rocks by chiseling and crushing, and is suitable for hard rock formations.

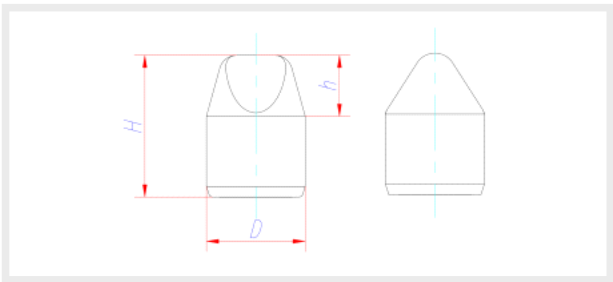


Model	Basic size (mm)		Model	Basic size (mm)	
	D	H		D	H
Z0710	7.1	10.0	Z1317	13.1	17.0
Z0812	8.1	12.0	Z1420	14.1	20.0
Z0913	9.1	13.0	Z1517	15.1	17.0
Z1016	10.1	16.0	Z1625	16.1	25.0
Z1217	12.1	17.0	Z1824	18.1	24.0

★ The customized specification is available.

◎ WEDGED INSERT

The wedged insert is used for inserted cone bit, breaking rocks by cutting and chiseling, and is suitable for medium soft rock formations.

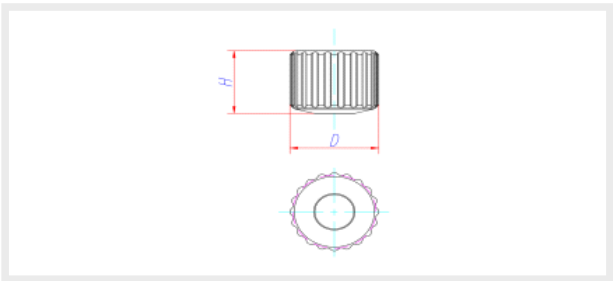


Model	Basic size (mm)			Model	Basic size (mm)		
	D	H	h		D	H	h
X1013	10.1	13.0	6.0	X1420	14.1	20.0	8.8
X1114	11.1	14.0	6.3	X1620	16.1	20.0	10.0
X1217	12.1	17.0	7.5	X2032	20.1	32.0	16.0
X1317	13.1	17.0	7.8	X2632	26.1	32.0	10.0

★ The customized specification is available.

◎ SERRATED INSERT

The serrated insert can be applied to the cone bit and the stabilizer in the drilling rig, etc. It can reduce the wear of drill bit and drill pipe steel body.



Model	Basic size (mm)	
	D	H
K0807	8.1	7.0
K1008	10.1	8.0
K1210	12.1	10.0

★ The customized specification is available.

CARBIDE INSERTS FOR MINING IMPACT DRILL BITS

Applied to the DTH drilling bits, hydraulic thread bits, and taper jointed bits. There are mainly ovoid inserts, parabolic inserts, conical inserts, etc., according to the shape of the insert tip, which can be customized in shape and size according to the customer's requirements.

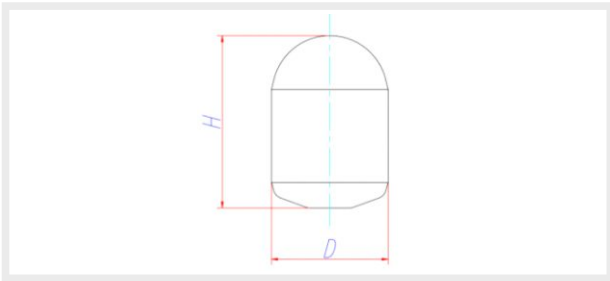
* Grades properties and applications

Grade	Cobalt Content	Density	Hardness	Bending Strength	Application Introduction
	%(±0.5)	g/cm³(±0.1)	HRA(±0.3)	N/mm²(≥)	
XR062	6	14.95	90.0	2800	Applied to the DTH bits and thread bits for medium and high air pressure, can be used on medium-hard rock formations.
XR06A	6	14.95	90.5	2900	Applied to the DTH bits, thread bits, and ordinary small-diameter bits for medium and low air pressure can be used on medium-soft or medium-hard rock formations.
XR06AH	6	14.95	90.3	3100	Applied to the DTH bits and thread bits for high air pressure, can be used on medium hard or hard rock formations, with good impact toughness and versatility
XR06AT	6	14.95	90.6	3200	Applied to the DTH bits and thread bits for high air pressure, suitable for hard and extremely hard rock formations, with good wear resistance

★ The customized specification is available.

◎ OVOID INSERT

The ovoid insert is used for the DTH drilling bit and hydraulic thread bit. It breaks rocks by chiseling and crashing, suitable for a hard and extremely hard rock formation.

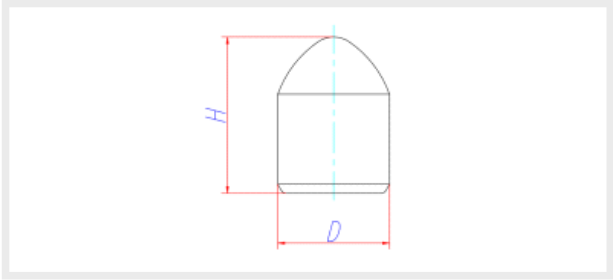


Model	Basic size (mm)		Model	Basic size (mm)	
	D	H		D	H
Q0606	6.1	6.0	Q1417	14.1	17.0
Q0709	7.1	9.0	Q1624	16.1	24.0
Q0810	8.1	10.0	Q1826	18.1	26.0
Q0910	9.1	10.0	Q1927	19.1	27.0
Q1012	10.1	12.0	Q2028	20.1	28.0
Q1114	11.1	14.0	Q2230	22.1	30.0
Q1216	12.1	16.0	Q2540	25.2	40.0

★ The customized specification is available.

◎ PARABOLIC INSERT

The parabolic insert is applied to the DTH drilling bits, hydraulic thread bits, and taper jointed bits. It breaks rocks by chiseling, crushing and cutting, suitable for drilling medium-hard rock formations.

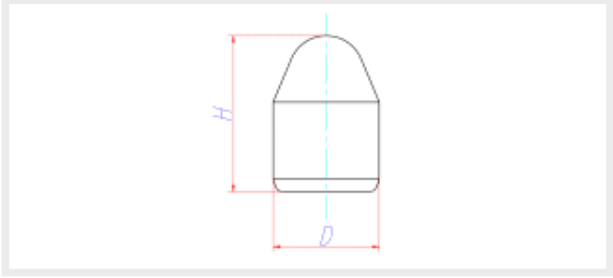


Model	Basic size (mm)			Model	Basic size (mm)		
	D	H	h		D	H	h
D0710	7.1	10.0	3.9	D1320	13.1	20.0	6.3
D0812	8.1	12.0	4.5	D1419	14.1	19.0	7.1
D0914	9.1	14.0	4.7	D1521	15.1	21.0	8.5
D1016	10.1	16.0	5.1	D1622	16.1	22.0	9.8
D1117	11.1	17.0	5.8	D1827	18.1	27.0	9.7
D1218	12.1	18.0	7.2	D2030	20.1	30.0	11.4

★ The customized specification is available.

◎ CONICAL INSERT

The conical insert is applied to the DTH drilling bits, hydraulic thread bits, and taper jointed bits. It breaks rocks by chiseling, crushing and cutting, suitable for drilling medium-hard rock formations.



Model	Basic size (mm)		Model	Basic size (mm)	
	D	H		D	H
Z0710	7.1	10.0	Z1317	13.1	17.0
Z0811	8.1	11.0	Z1419	14.1	19.0
Z0912	9.1	12.0	Z1520	15.1	20.0
Z1013	10.1	13.0	Z1622	16.1	22.0
Z1114	11.1	14.0	Z1824	18.1	24.0
Z1215	12.1	15.0	Z1928	19.1	28.0

★ The customized specification is available.

CARBIDE INSERTS FOR ENGINEERING

It can be applied to roller cutters and disc cutters, mainly divided into shafts, and reverse well inserts. It can be customized according to customer requirements of size and size production

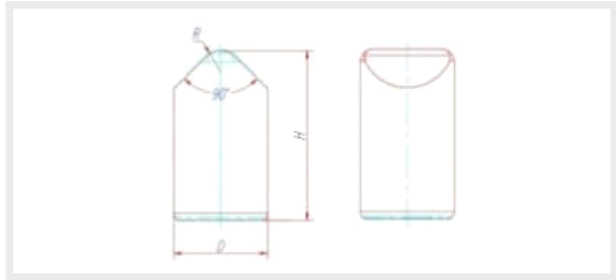
* Grades properties and applications

Grade	Cobalt Content	Density	Hardness	Bending Strength	Application Introduction
	%(±0.5)	g/cm³(±0.1)	HRA(±0.3)	N/mm²(≥)	
JZ10C	10	14.55	87.8	2850	With good wear resistance and applied to the roller cutter and disk cutter inserts used in medium-hard rock formations.
XR11C	11	14.45	87.0	2800	Applied to the roller cutter and disk cutter inserts used in medium-hard rock formations.
XR13C	13	14.25	86.5	2800	With good toughness and applied to the roller cutter and disk cutter inserts used in hard rock formations
JZ16	16	13.95	86.5	2950	With good toughness and applied to the roller cutter inserts used in medium hard to hard rock formations
JZ16C	16	13.95	85.5	2850	With excellent impact resistance and applied to the roller inserts used in hard to extremely hard rock formations with high compressive strength.

★ The customized specification is available.

© AIRFOIL INSERT

The unique insert design is used to increase the drilling speed in engineering operations and break rocks through cutting and chiseling. It is suitable for medium soft rock formations.

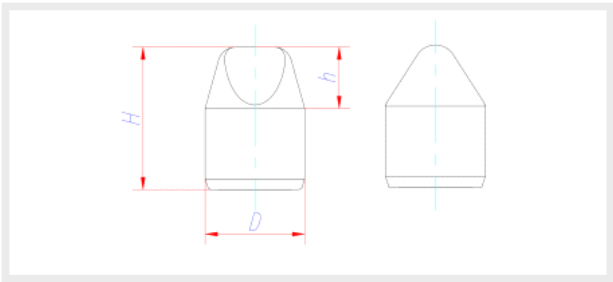


Model	Basic size (mm)		Model	Basic size (mm)	
	D	H		D	H
X1625	16.0	25.0	X2235	22.0	35.0
X1826	18.0	26.0	X2240	22.0	40.0
X2030	20.0	30.0	X2437	24.1	37.0

★ The customized specification is available.

WEDGED INSERT

It breaks rock by cutting and chiseling, suitable for soft rock formations with high drilling speed and low insert breakage rate.



Model	Basic size (mm)			Model	Basic size (mm)		
	D	H	h		D	H	h
X1015	10.0	15.0	6.2	X1620	16.4	20.0	7.6
X1114	11.6	14.0	7.5	X1828	18.5	28.0	13.3
X1217	12.2	17.0	6.0	X2032	20.6	32.0	15.5
X1218	12.5	18.0	7.3	X2838	28.6	38.0	15.4
X1421	14.4	21.0	8.1	X3040	30.5	40.0	16.3

✧ The customized specification is available.



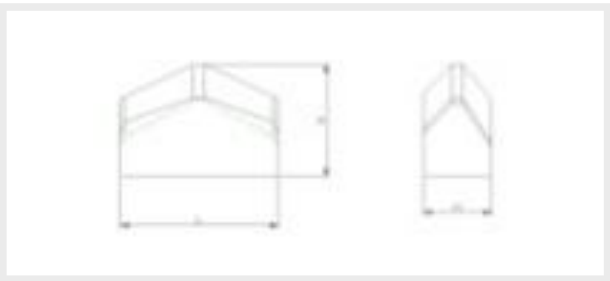
CARBIDE INSERTS FOR SHIELD TBM

It has the characteristics of high strength, wear resistance, and so on.

Grade	Cobalt Content	Density	Hardness	Bending Strength	Application Introduction
	%(±0.5)	g/cm³(±0.1)	HRA(±0.3)	N/mm²(≥)	
JZ10C	10	14.55	87.8	2850	With good wear resistance and applied to the shield tips used for medium-hard formations.
JZ12C	12	14.33	86.6	2800	With good toughness and thermal fatigue resistance for shield tips used in complex formation.
JZ14	14	14.15	87.0	2850	Used For medium to hard formation shield tips.

✧ The customized specification is available.

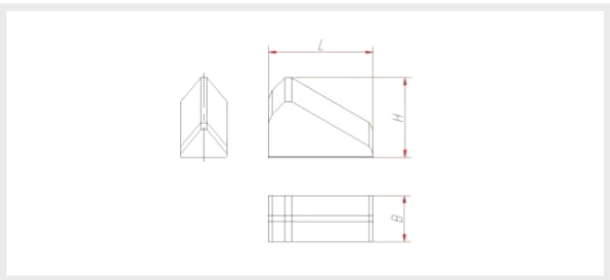
MASTER INSERTS



Model	L	I	H
DKY050040025	50	25	40
DKY060042028	60	28	42

✧ The customized specification is available.

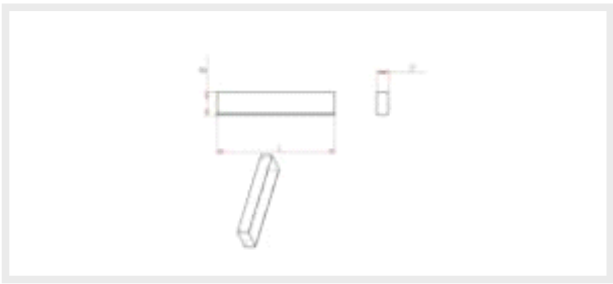
PAIRED INSERTS



Model	L	I	H
DKY040035022	40	21.7	35
DKY045040025	45	24.5	40

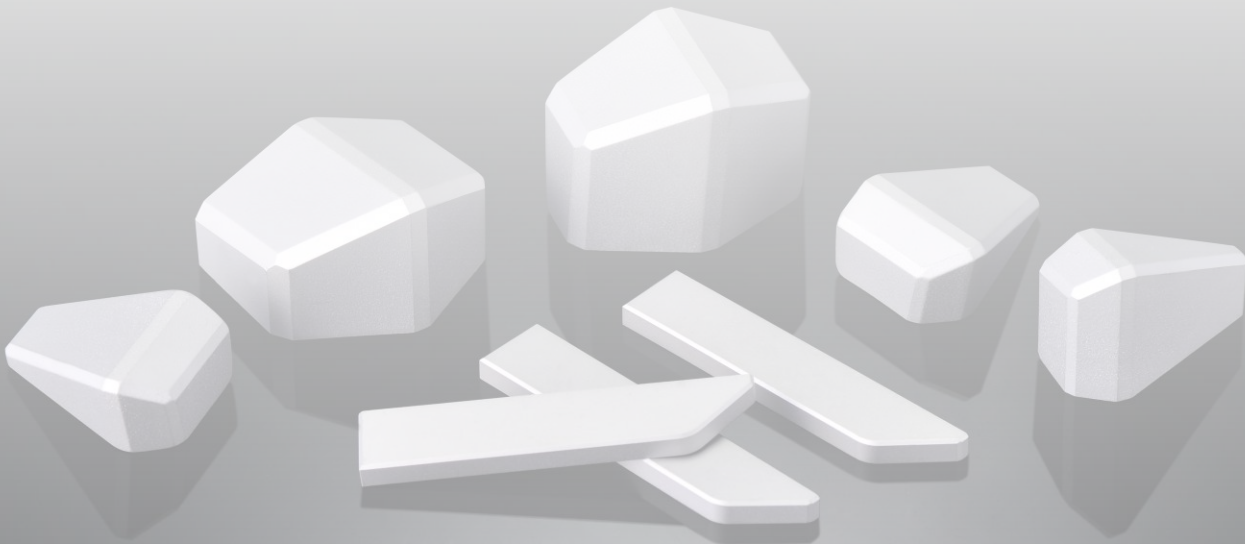
✧ The customized specification is available.

LONG INSERTS



Model	L	I	H
DKY093016010	93	10	16
DKY073016010	73	10	16

★ The customized specification is available.



CARBIDE CUTTING PICKS

The carbide cutting picks are super coarse grain carbides with good toughness and thermal fatigue resistance, which is suitable for inserted carbide cutting picks and engineering rotary cutter picks. According to the shape of the insert, there are mainly multi-conical inserts and mushroom-shaped inserts, etc., and the shape and size can be customized according to the requirements of customers.

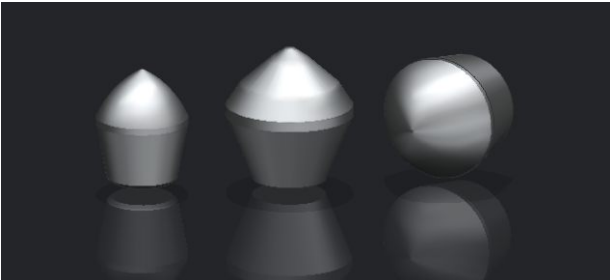
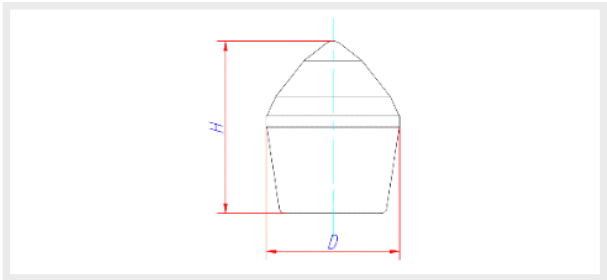
Grade Chart

Grade	Cobalt Content	Density	Hardness	Bending Strength	Application Introduction
	%(±0.5)	g/cm³(±0.1)	HRA(±0.3)	N/mm²(≥)	
XR08TC	8	14.72	86.0	2500	It has high wear resistance and is suitable for engineering rotary digging in medium-hard rock formations.
XR09CC	9	14.67	86.3	2700	With moderate wear resistance and toughness, it is suitable for engineering rotary digging in medium-hard rock formations.
XR06VC	6	14.95	86.0	1800	Super coarse grain grade with extremely high toughness, suitable for coal mining and complex rock excavation.
XR08KC	8	14.72	85.5	2300	It has high toughness and is suitable for tunneling in extremely hard rock formations.
XR10CC	10	14.45	86.5	2800	It has high wear resistance and is suitable for coal mining containing waste rock.

★ The customized specification is available.

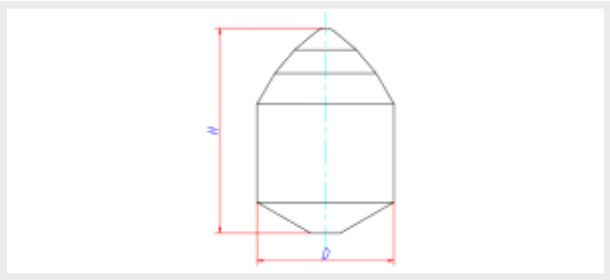
MULTI-CONICAL INSERT

The multi-conical insert can be applied to the coal cutter pick and rotary cutter pick. It is suitable for cutting hard coal rock formation and rock formation.



Model	Basic size (mm)	
	D	H
Z2228Y	22.0	28.0
Z2431Y	24.0	31.0
Z2838Y	28.0	38.0
Z3037Y	30.0	37.0

★ The customized specification is available.

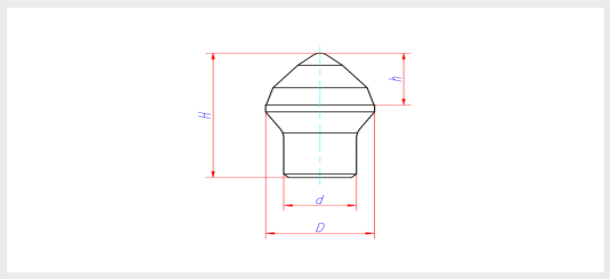


Model	Basic size (mm)	
	D	H
Z1625	16.0	25.0
Z1825	18.0	25.0
Z2030	20.0	30.0
Z2230	22.0	30.0
Z2335	23.0	35.0
Z2532	25.0	32.0

★ The customized specification is available.

◎ MUSHROOM-SHAPED INSERT

The mushroom-shaped insert can be applied to the coal cutter pick. It is suitable for cutting soft to medium-hard coal formations.



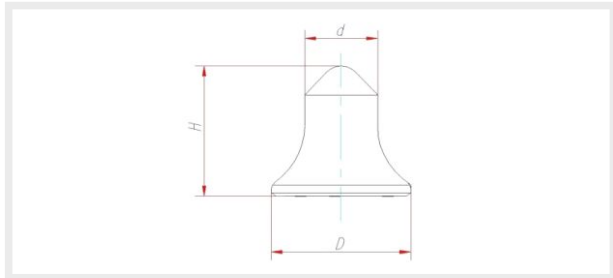
Model	Basic size (mm)			
	D	H	d	h
Z2430Y	24.0	30.0	20.0	13.0
Z2532Y	25.0	32.0	20.0	13.0
Z2836Y	28.0	36.0	20.0	15.5
Z3038Y	30.0	38.0	25.0	16.0

★ The customized specification is available.

CARBIDE PICKS FOR ROAD MILLING

Milling picks for cement, asphalt, and mixed pavement.

Grade	Cobalt Content	Density	Hardness	Bending Strength	Application Introduction
	%(±0.5)	g/cm³(±0.1)	HRA(±0.3)	N/mm²(≥)	
XR06EC	6	14.95	88.5	2700	Suitable for roughening and milling of concrete pavement.
XR06CC	6	14.95	87.7	2500	1 Suitable for milling asphalt and mixed surface. 2 Suitable for milling of asphalt and mixed surface.



Model	Basic size (mm)		
	D	H	d
WL1818	18.7	17.7	10.5
WL1918	19.0	18.2	11.5
WL2020	20.4	20.2	11.0
WL2222	22.0	22.8	11.5
WL2522	25.0	22.8	12.0

★ The customized specification is available.

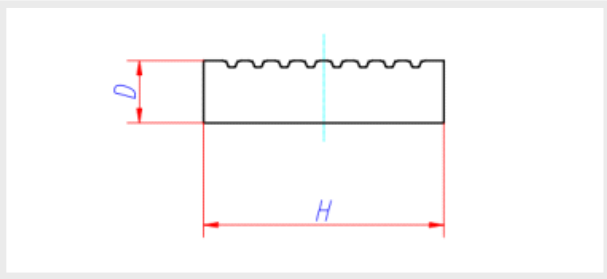
CARBIDE SUBSTRATES FOR SUPERHARD MATERIAL COMPACT

Carbide Substrates of superhard material compact for oil and gas extraction, coal geology and precision cutting, can be customized in shape and size according to the customer's usage requirements.

Grade	Cobalt Content	Density	Hardness	Bending Strength
	%(±0.5)	g/cm ³ (±0.1)	HRA(±0.5)	N/mm ² (≥)
JZ13	13	14.25	87.5	2900
JZ13A	13	14.25	88.5	3300
JZ16	16	13.95	86.5	2850
XR111	11	14.45	89.7	3000
XR121	12	14.35	89.2	3100
XR13II	13	14.25	88.5	3300
XR131	13	14.25	88.7	3000
XR133	13	14.25	88.1	3100

★ The customized specification is available.

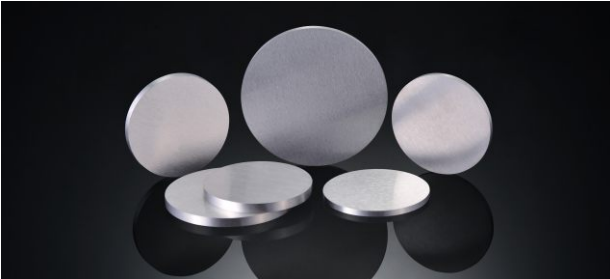
CARBIDE SUBSTRATES OF PDC COMPACT FOR OIL AND GAS EXTRACTION



Model	Basic size (mm)	
	D	H
J15	14.5-14.8	3.0-13.0
J18	17.4-18.5	5.0-16.0
J21	20.4-21.5	8.0-19.0

★ The customized specification is available.

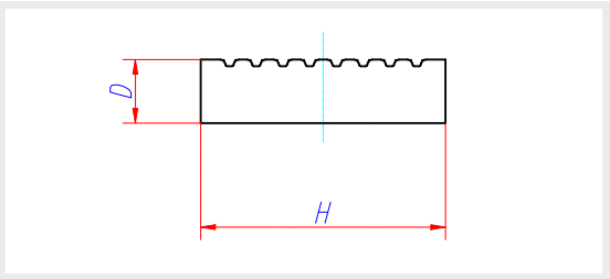
CARBIDE SUBSTRATES FOR PRECISION CUTTING



Model	Basic size (mm)	
	D	H
J32	32.3	3.0-8.0
J47	47.7	3.0-8.0
J52	52.0	3.0-8.0
J55	55.1	3.0-8.0
J58	58.1	3.0-8.0
J62	61.9	3.0-8.0
J66	66.0	3.0-8.0
J77	77.4	3.0-8.0

★ The customized specification is available.

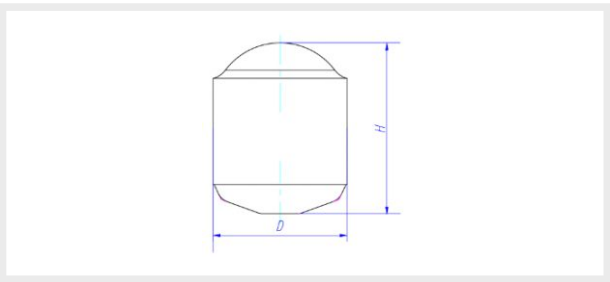
CARBIDE SUBSTRATES OF PDC COMPACT FOR COAL GEOLOGY



Model	Basic size (mm)	
	D	H
J12	11.5-12.5	3.0-8.0
J15	14.2-15.2	3.0-8.0

★ The customized specification is available.

CARBIDE INSERTS FOR PDC COMPOSITE INSERT



Model		Basic size (mm)	
		D	H
Q08	Q0810	8.0	10.0
	Q0812		12.0
Q09	Q0913	9.0	13.0
	Q0913		14.0
Q10	Q1013	10.0	13.0
	Q1014		14.0
Q11	Q1113	11.5	13.0
	Q1114		14.0
Q12	Q1216	12.0	16.0
	Q1216		17.0
Q13	Q1308	13.0	8.0
	Q1312		12.0
Q16	Q1610	16.0	10.0
	Q1618		18.0
Q19	Q1913	19.0	13.0
	Q1917		17.0

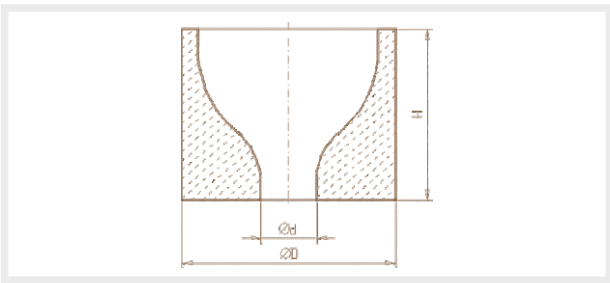
★ The customized specification is available.



DRILLING ACCESSORIES

NOZZLE

Shareate can provide various types of thread nozzles for PDC bits, common type nozzles, extended nozzles, center nozzles, etc. for tri-cone drill bits.

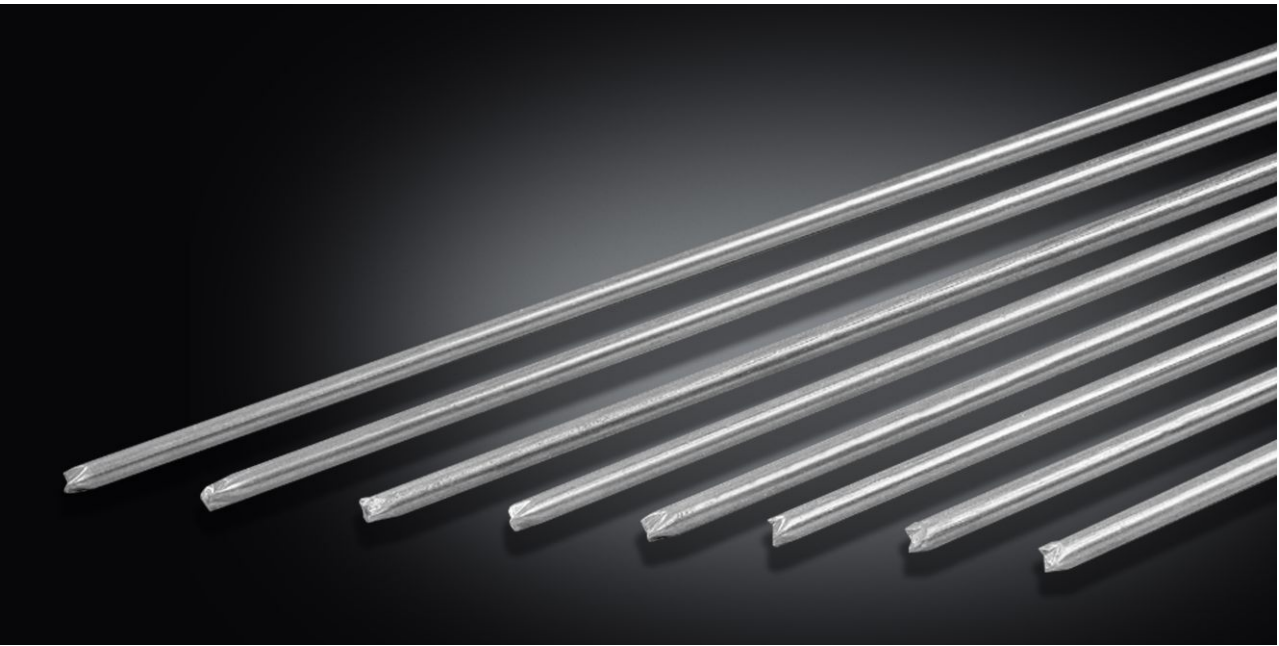


Nozzle OD	25.350-0.28	23.50±0.13	29.74±0.13	32.89±0.13	40.84±0.13	Water Hole Diameter	
Assembly Length		19.05	20.62	26.97	26.97		
Bit Model	PDC Bit Series	Tri-cone Bit Series 53/4-63/4	Tri-cone Bit Series 83/6-133/4	Tri-cone Bit Series 143/4-26	Tri-cone Bit Series 33/4-43/4		
Nozzle Type	Thread	Common	Common	Common	Extended		Common
Nozzle Code	SD08	S2-6	S3-6	S4-6		S5-6	6.53
	SD09	S2-7	S3-7	S4-7		S5-7	7.14
	SD10	S2-8	S3-8	S4-8		S5-8	7.92
	SD11	S2-9	S3-9	S4-9		S5-9	8.74
	SD12	S2-10	S3-10	S4-10		S5-10	9.53
	SD13	S2-10A	S3-10A	S4-10A		S5-10A	10.31
	SD14	S2-11	S3-11	S4-11		S5-11	11.13
	SD15	S2-12	S3-12	S4-12		S5-12	11.91
	SD16	S2-13	S3-13	S4-13		S5-13	12.7
	SD17	S2-13A	S3-13A	S4-13A		S5-13A	13.49
	SD18	S2-14	S3-14	S4-14		S5-14	14.27
		S2-15	S3-15	S4-15		S5-15	15.08
			S3-16	S4-16		S5-16	15.88
			S3-17	S4-17		S5-17	17
			S3-17A	S4-17A		S5-17A	17.48
			S3-18	S4-18		S5-18	18.25
			S3-19	S4-19		S5-19	19.05
			S3-20	S4-20		S5-20	19.84
			S3-21	S4-21		S5-21	21
			S3-22	S4-22		S5-22	22.23
			S3-23	S4-23		S5-23	23.01
			S3-24	S4-24		S5-24	23.81

★ The customized specification is available.

TUNGSTEN CARBIDE TUBULAR WELDING RODS

Tungsten carbide welding rod has better weldability, wear resistance, and impact resistance, which is suitable for surfacing welding and repair of oil drilling tools, construction, building materials machinery, mining geological tools, agricultural machinery, and other strong wear parts.



*Specification and Application

Grade	Specification		Characteristics, Typical Application Areas, and Working Conditions
	Diameter (mm)	Length (mm)	
XRYD-1	Φ3.2 ~ Φ6	400-1000	It has high resistance to low-stress abrasive wear and is suitable for surfacing and repairing of well drilling and salvage tools, concrete mixing blades, mud pumps, coal mine chutes, coal drill pipes, pulverizer blades, dredger blades, high-speed sand mixers and so on.
XRYD-2			
XRYD-3	Φ3.2 ~ Φ6	400-1000	Having better resistance to low-stress abrasive wear, particularly applicable to the oil drilling tool, the geological tool, such as steel drill bit and fishtail bit; is subject to strong abrasion of mechanical parts by rock and sand.
XRYD-4			
XRYD-5	Φ3.2 ~ Φ6	400-1000	Suitable for the working condition of medium impact and abrasion, such as the blades and scrapers of all kinds of mixers, and crushers. Disk-type scraper, slush pump blade, drill pipe joint, stabilizer, coal cutter pick, cone bit.
XRYD-6	Φ2.8 ~ Φ6	400-1000	Suitable for the surfacing of the workpiece suffering from higher impact loading, especially the tooth surface and tip of steel tooth bit for oil drilling, drilling Tig for mining. Coal cutter pick, rip saw tooth, etc.
XRYD-7			

★ The customized specification is available.

NOTES FOR CEMENTED CARBIDE

*01. Notes for Transportation

- ◆ The cemented carbide products could be easily broken when falling to the hard ground from a high position. Please check the products to see whether any damage happens when opening the package.
- ◆ Be careful not to get injure to hands or feet when carrying and using the products since the density of cemented carbide is two times higher than steel parts.
- ◆ The thin cement carbide products (pipe or strip shape or with sharp corners) will easily lose the corners or sides. So do not put excessive load on when fastening. Dismounting and transport before machining.

*02. Notes for Machining

© 2.1 Machining and grinding

- ◆ The cemented carbide could easily crack or chip 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 an iron hammer due to its non-good impact resistance.
- ◆ The general cemented carbide is not easily fixed by a magnet. When using the magnet for fastening, please double-check whether the parts are loose or not.
- ◆ The surfaces machined are very smooth and the corners are very sharp. Be careful of your safety when carrying and using.

© 2.2 Electro machining

- ◆ When the cemented carbide is in the process of electro-machining, the machining surfaces are easily cracking and chipping corners, the workpiece 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 the next procedure.

© 2.3 Welding

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

