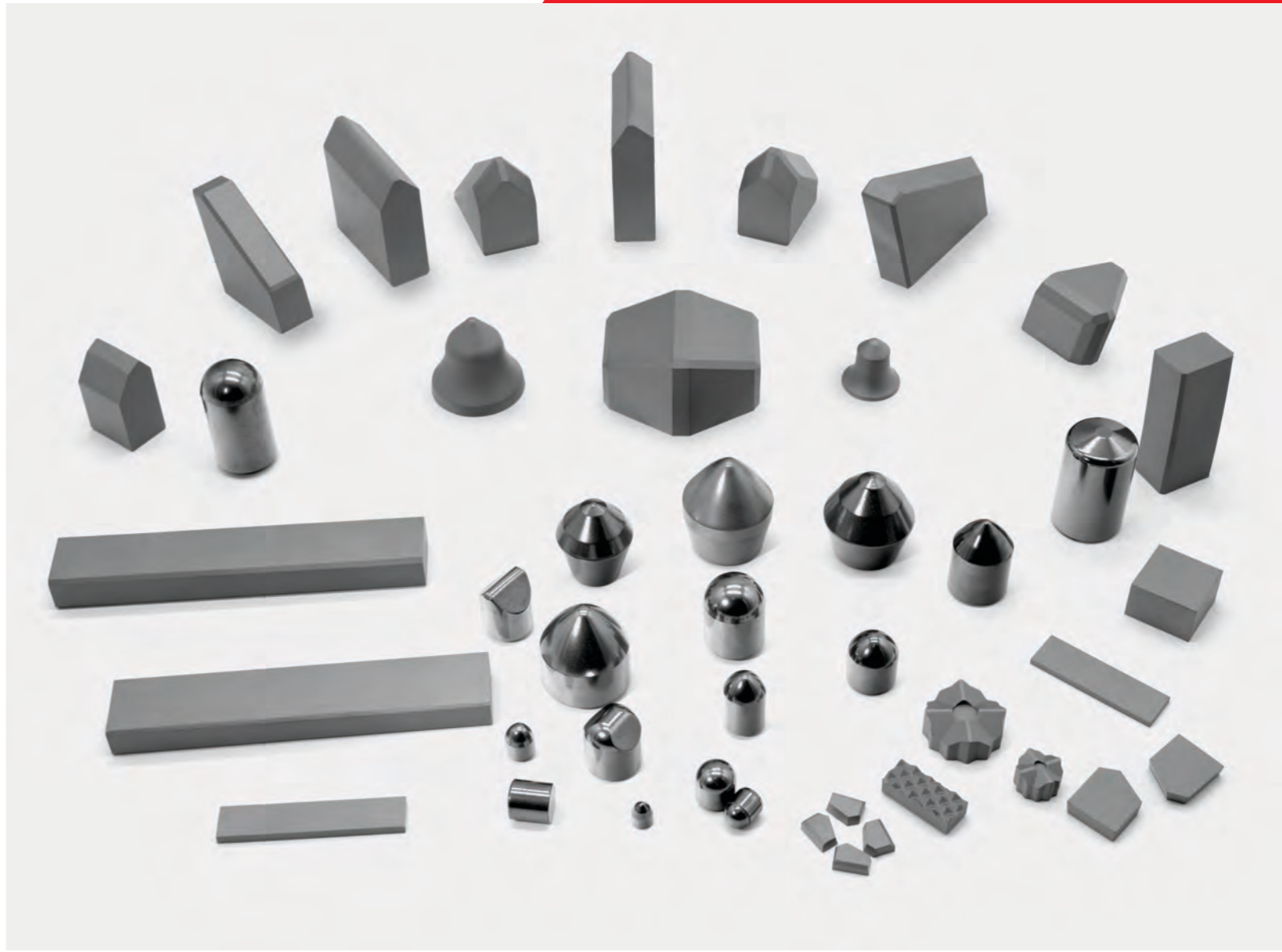




**HARDMETAL SPECIALIST**

**Mining, Construction, Oil & Gas**

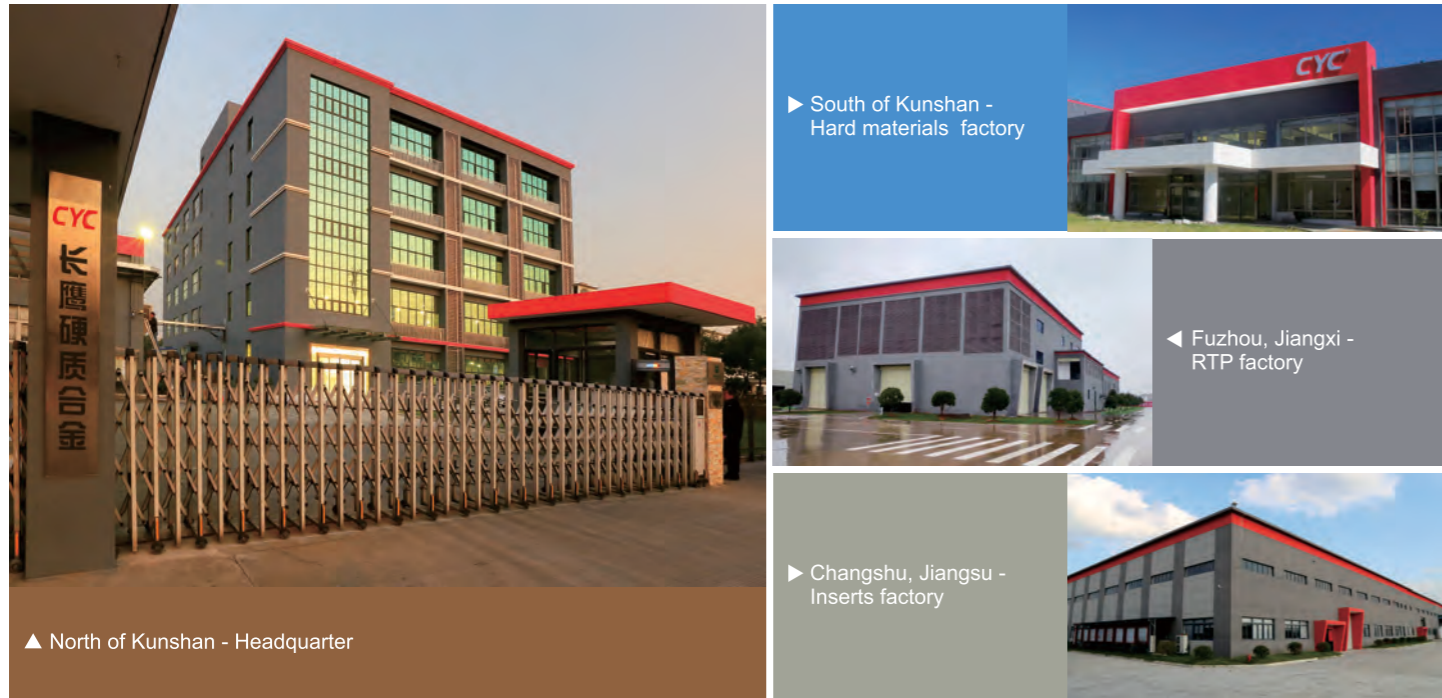


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24REV2

**CY CARBIDE MFG. CO., LTD.**



**QUALITY  
CONSISTENCY  
EXPERTISE**

# About Us



ISO9001:2015

CYC CARBIDE MFG. CO., LTD., Established in 2003, is a professional manufacturer and exporter of high performance tungsten carbide products, RTP powders and CERMET materials. CYC delivers globally a high performance standard and special products offering, that meet the most challenging demands from industry sectors including...metalworking, mining, construction, oil & gas, die & mold, and woodworking.

CYC has two production sites which located in Kunshan city, 50km away from Shanghai, together with the Jiangxi raw material production and Changshu inserts production, consist of production, laboratories and R&D facilities. 800+ skilled employees, including tooling and material grade design engineering on site.

CYC High performance products are guaranteed by a strong process management system, resulting in consistent quality for every batch and product. Strict control of our raw material supply chains and 100% traceability for every product batch throughout the entire manufacturing process. A philosophy of continuous improvements within every process is a core principle in our ways of working. CYC is an ISO 9001:2015(TUV), ISO 14001:2015, ISO 50001:2018 and ISO 45001:2018 certified business.

CYC Adheres to responsible and sustainable business practices, including conflict free raw material sourcing, proactive health management for our employees, and continuous concern about the environmental impacts of our business. Our open and transparent business philosophy allows our customers, employees, and external suppliers, to have confidence in our business, ways of working, and our products.

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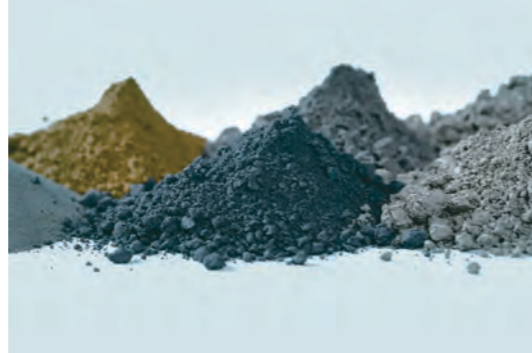




## Manufacturing Process

### 1. Grade Design

CYC grades are designed upon application. Our process start with powder mixing. Raw materials includes WC, Co and other elements.



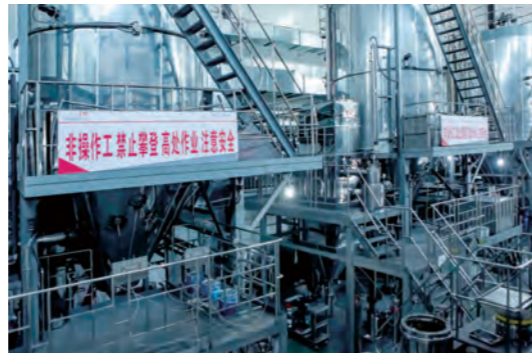
### 2. RTP Ball milling

Wide variety of CYC designed grades from superfine to coarse grain size are available. Grades with different grain size are ball-milled, sieved, granulated in separated systems to avoid grain contamination.



### 3. Spray Drying

Spray drying process makes the powder into superior homogeneous particle sizes with good flowability and as a result, the dimension variation on sintered blank is much smaller.



### 4. Direct Pressing

Most of the parts in Mining, Construction, Oil & Gas can be formed by direct pressing. CYC technical control of direct pressing system ensure consistency of dimension.



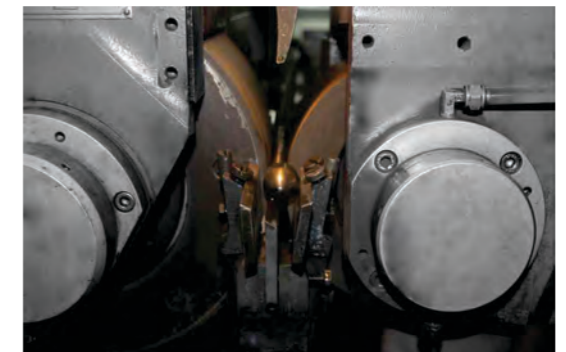
### 5. Sintering

Green blanks are sintered at temperature around 1400 °C (cobalt melting) to become super hard and tough. CYC utilizes HIP (hot isostatic pressure) sintering furnace which gives carbide maximum toughness to meet the most critical working applications.



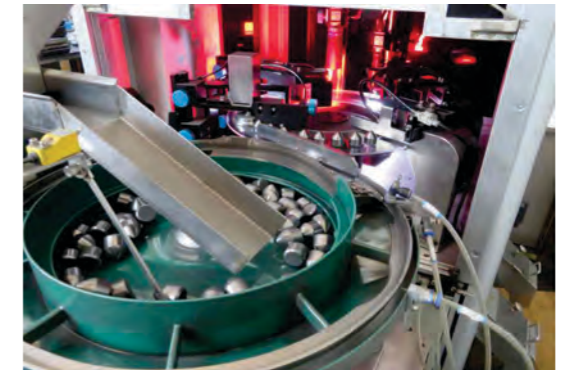
### 6. Finishing Process

CYC offers multiple surface finishing options, including centerless grinding and surface polishing for high performance and product dimensional accuracy, under the most demanding applications.



### 7. Inspection

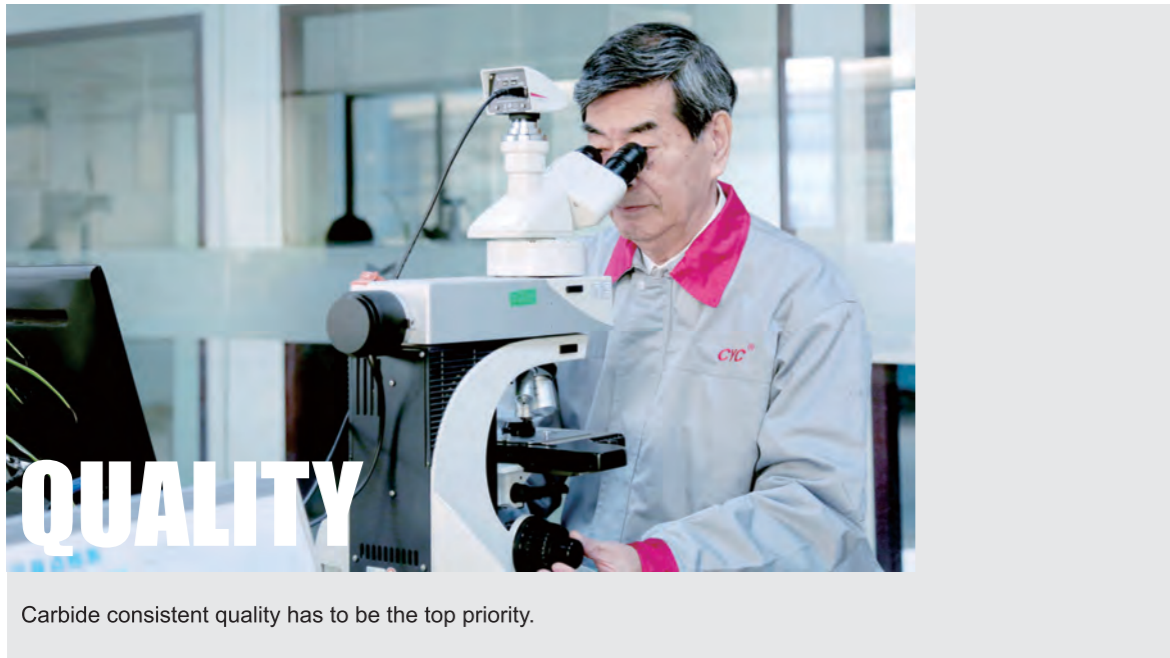
The Key properties are monitored from raw material, RTP and raw sintered parts in our laboratory for quality and performance guarantee. Strict dimensional measurements by automatic equipment will be done before the parts are shipped to the customer.





## Our Capabilities

Over 20 years of experience doing R&D and manufacturing carbide, CYC has built a dedicated team consisting global experts in technical and commercial areas who always stand behind our customers.



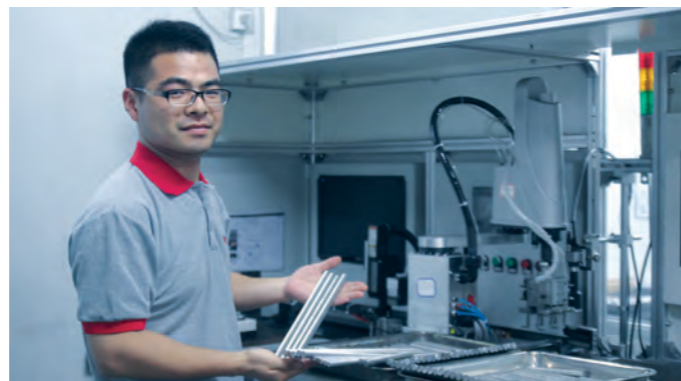
**QUALITY**

Carbide consistent quality has to be the top priority.



**CONSISTENCY**

Our manufacturing process is operating fully in compliance with ISO9001:2015 (TUV). Consistency and traceability is the promise we keep to our customers .



**EXPERTISE**

The mission of meeting and exceeding customer's expectations is ongoing. CYC has a wide range of capabilities to provide more high value services.

1. Grade design for specific applications
2. Geometry design for specific jobs
3. Prototypes for any quantity
4. Issuing of 2D/3D drawings
5. Surface Passivation
6. Hard machining service include :
  - Centless Grinding
  - Chamfer Grinding
  - Plain Surface Grinding







## Inserts for Rock Drilling

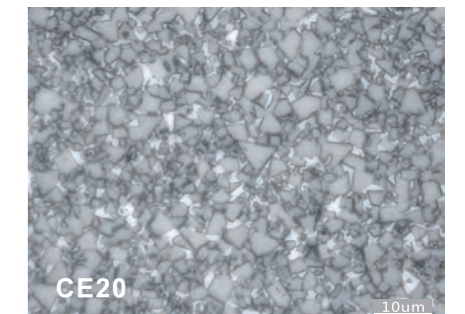
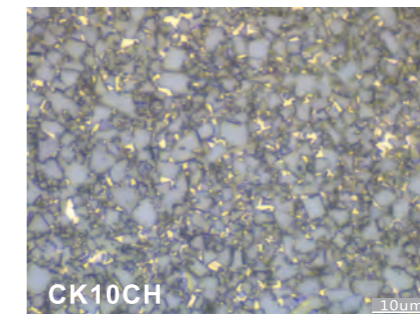
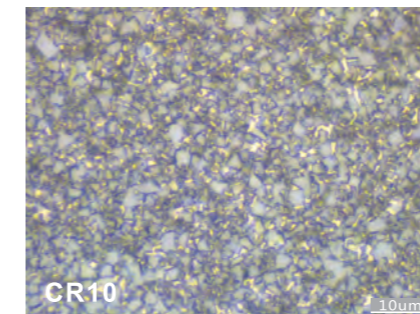
**Application:** High and Low Air Pressure DTH Drill Bits, Top Hammer Bits and others.

### Grade Specification

Grades	Binder %	Grain Size	Density	Hardness		T.R.S
			g/cm <sup>3</sup>	HRA	HV30	N/mm <sup>2</sup>
<b>CL10</b>	6.0	Medium	14.90	90.8	1450	2800
	Suitable for high air pressure DTH/TH drill bits on hard and extra hard rock formations.					
<b>CR10</b>	6.0	Medium	14.85	90.4	1420	2800
	Suitable for high air pressure DTH drill bits on hard rock formations.					
<b>CK10CH</b>	6.5	Medium	14.80	90.2	1390	2600
	Suitable for low air pressure DTH/TH Drill Bits on medium soft formations and small size inserts for Tapered Drill Bits on medium hard rock formations.					
<b>CE20</b>	8.0	Coarse	14.70	89.2	1260	2800
	Suitable for welded DHT drill bit on medium soft rock formations.					

## Engineered Solutions for Demanding Applications

### Example of Metallography 1500X



## Superior Grade for Rock Drilling Tools

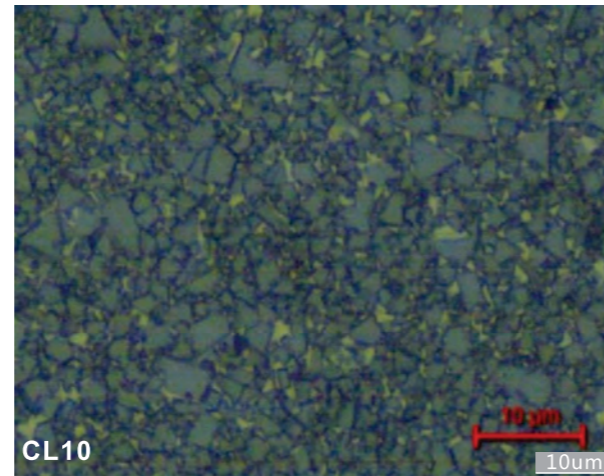
### Grade Specification

#### CL10

Composition 14.90g/cm<sup>3</sup>

Hardness 1450HV30  
90.8HRA

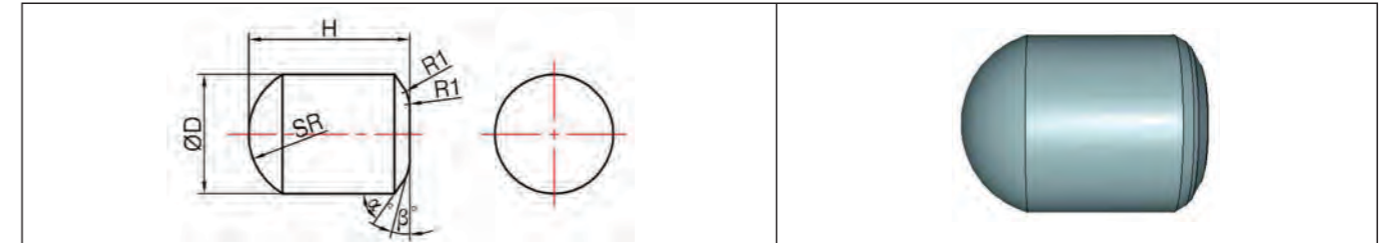
T.R.S 2800N/mm<sup>2</sup>



With ideal composition design and process control, CL10 with good wear and impact resistance is widely used for producing high air pressure DTH drill bits, threaded drill bits on hard and extra hard rock formations.



### Hemispherical Shaped Inserts

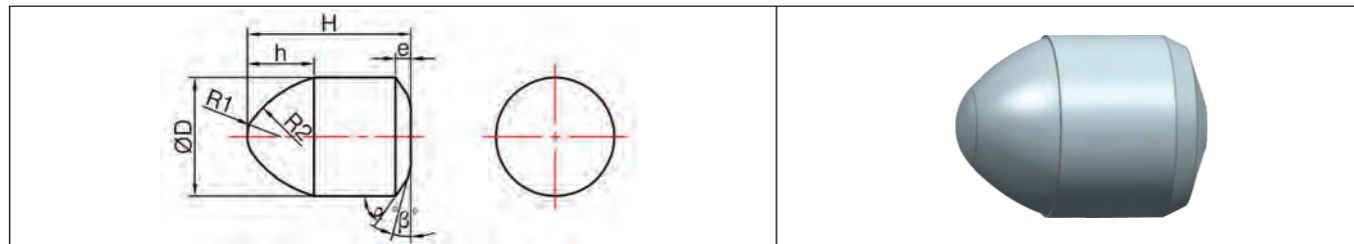


TYPE	D	H	SR
BQ0809	8.2	9.0	4.2
BQ0812	8.2	12.0	4.2
BQ0813	8.2	13.3	4.4
BQ0913	9.2	13.5	4.7
BQ0914	9.2	14.0	5.0
BQ0915	9.2	15.0	5.0
BQ1014	10.2	14.0	5.5
BQ1015	10.2	15.0	5.5
BQ1016	10.2	16.3	5.5
BQ1017	10.2	17.3	5.5
BQ1019	10.2	19	5.5
BQ1112	11.3	12.7	5.7
BQ1116	11.3	16.0	6.0
BQ1117	11.3	17.0	6.0
BQ1119	11.3	19.0	6.0
BQ1216	12.3	16.35	6.2
BQ1217	12.3	17.1	6.6
BQ1218	12.3	18.0	6.6

TYPE	D	H	SR
BQ1219	12.3	19.0	6.6
BQ1222	12.3	22.2	6.6
BQ1318	13.3	18.0	6.7
BQ1319	13.3	19.4	6.7
BQ1320	13.3	20.0	7.0
BQ1322	13.3	22.0	7.0
BQ1420	14.3	20.0	7.7
BQ1422	14.3	22.2	7.7
BQ1423	14.3	23.0	7.7
BQ1621	16.3	21.0	8.2
BQ1624	16.3	24.0	8.8
BQ1628	16.3	28.0	8.8
BQ1726	17.3	26.0	8.8
BQ1825	18.3	25.0	9.15
BQ1826	18.3	26.0	9.15
BQ1923	19.4	23.1	10.0
BQ1928	19.4	28.6	10.0
BQ2028	20.4	28.0	10.0

• Diameters can be ground to customer specifications.  
• Non-standard specifications and grades can be provided upon request.

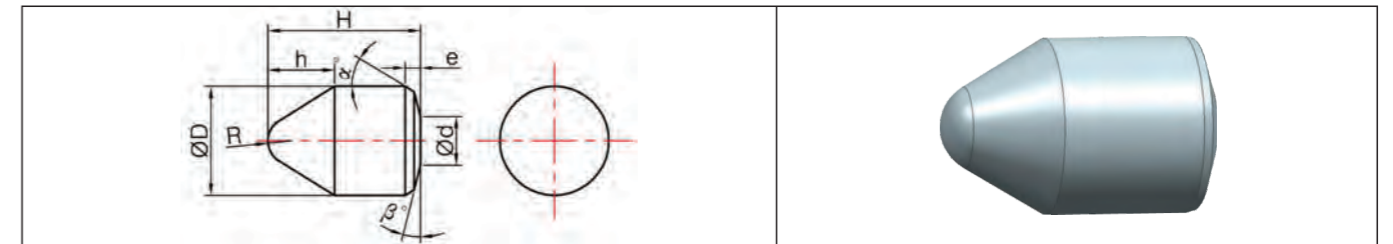
■ Parabolic Shaped Inserts



TYPE	D	H
BP0711	7.2	11.0
BP0812	8.2	12.0
BP0913	9.2	13.5
BP0914	9.2	14.5
BP0915	9.2	15.0
BP1015	10.2	15.0
BP1016	10.2	16.0
BP1017	10.2	17.0
BP1018	10.2	18.0
BP1114	11.3	14.9
BP1117	11.3	17.5
BP1120	11.3	20.0
BP1221	12.3	21.7

TYPE	D	H
BP1218	12.3	18.0
BP1219	12.3	19.0
BP1221	12.3	21.0
BP1321	13.3	21.0
BP1323	13.3	23.5
BP1420	14.3	20.0
BP1422	14.3	22.0
BP1423	14.3	23.0
BP1425	14.3	25.0
BP1426	14.3	26.0
BP1625	16.3	25.8
BP1628	16.3	28.0
BP1632	16.3	32.0

■ Conical Shaped Inserts



TYPE	D	H
BC0709	7.2	9.7
BC0711	7.2	11.0
BC0712	7.2	12.7
BC0811	8.2	11.4
BC0813	8.2	13.0
BC0913	9.2	13.0
BC0914	9.2	14.0
BC0915	9.2	15.5
BC1015	10.2	15.5
BC1016	10.2	16.5
BC1017	10.2	17.0
BC1116	11.3	16.0
BC1118	11.3	18.5

TYPE	D	H
BC1119	11.3	19.3
BC1120	11.3	20.6
BC1219	12.3	19.5
BC1220	12.3	20.0
BC1223	12.3	23.0
BC1317	13.3	17.4
BC1318	13.3	18.51
BC1417	14.3	17.5
BC1420	14.3	20.0
BC1424	14.3	24.0
BC1521	15.3	21.0
BC1625	16.3	25.0
BC1628	16.3	28.0



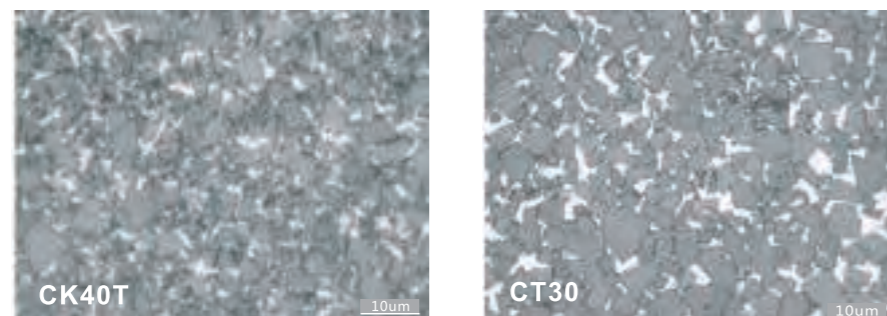
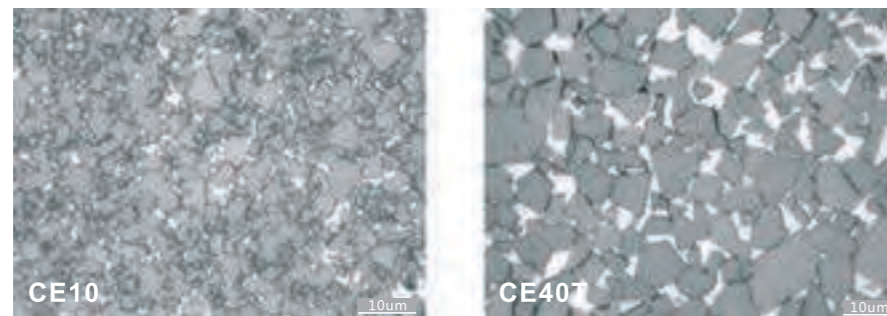
## Inserts for Coal Mining

**Application:** Round Shank Picks for Coal Mining and others.

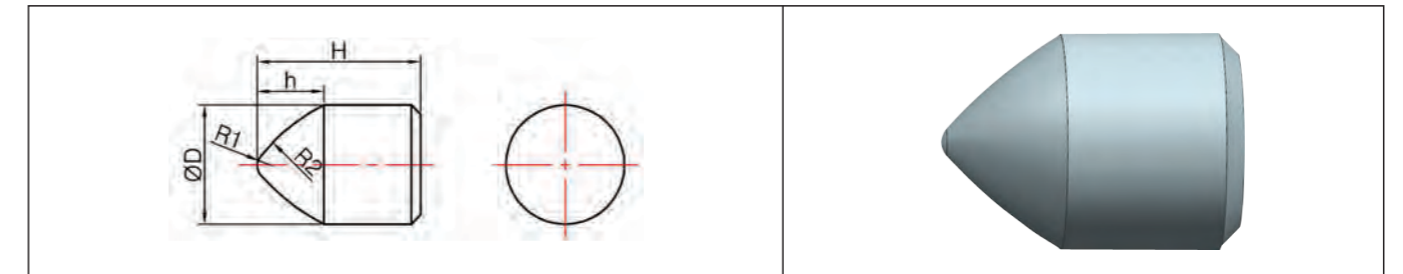
### Grade Specification

Grades	Binder %	Grain Size	Density	Hardness		T.R.S
			g/cm <sup>3</sup>	HRA	HV30	N/mm <sup>2</sup>
<b>CE10</b>	6.0	Medium	14.95	89.7	1350	2700
	Suitable for coal mining on soft rock formations.					
<b>CE40T</b>	10.0	Extra Coarse	14.5	85.7	1000	2500
	Suitable for coal mining on hard rock formations with high impact resistance.					
<b>CK40T</b>	12.0	Coarse	14.3	86.7	1050	2600
	Suitable for coal mining on soft rock formations.					
<b>CT30</b>	10.0	Coarse	14.50	87.8	1140	2800
	suitable for inserts used for chisel drill bit with medium duty.					

### Example of Metallography 1500X

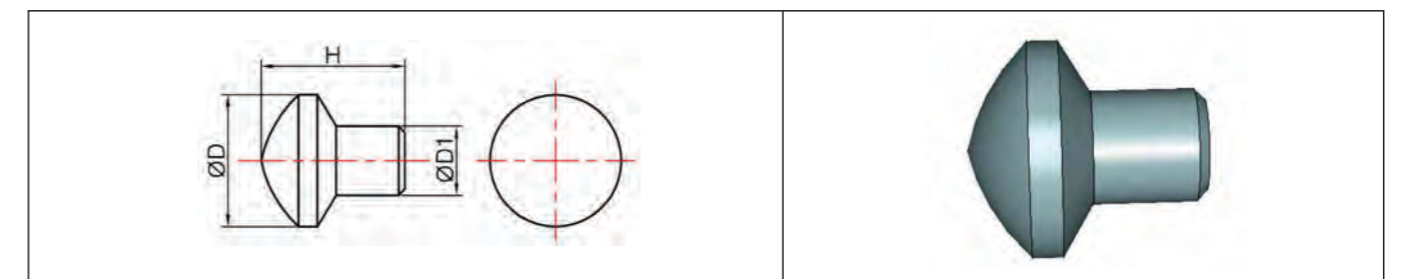


### Round Shank Picks



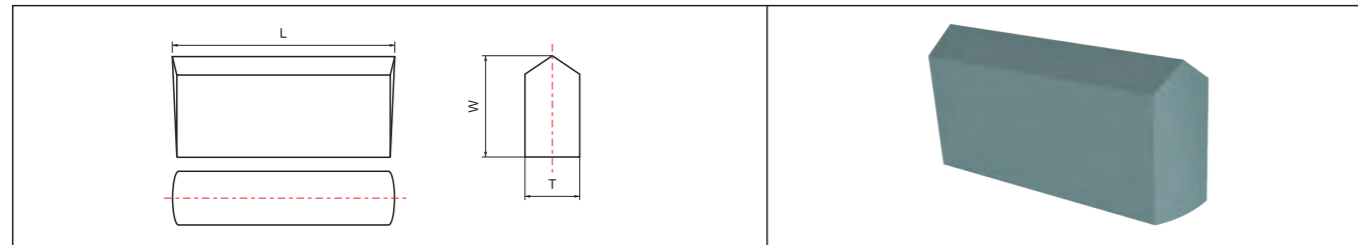
TYPE	D	H
BM1524	15.0	24.0
BM1722	17.5	22.0
BM1724	17.5	24.0
BM1729	17.5	29.0
BM1926	19.0	26.0
BM1928	19.0	28.0
BM2228	22.0	28.0
BM2230	22.0	30.0
BM2234	22.0	34.0
BM2534	25.0	34.0
BM2536	25.0	36.0

### Mushroom Shaped Inserts



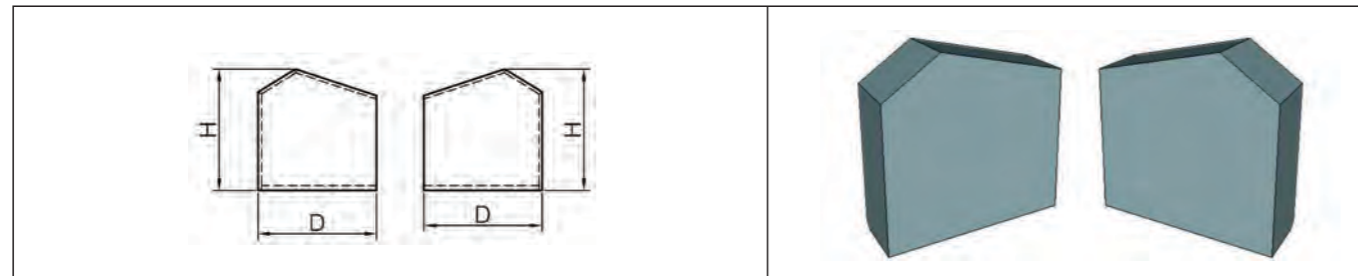
TYPE	D	H
MJ1728	17.0	28.0
MJ1931	19.0	31.0
MJ2032	20.0	32.0
MJ2236	22.0	36.0
MJ2538	25.0	38.0

### Flat Mining Inserts



TYPE	L	W	T
K030	30	18	8
K034	34	18	8
K036	36	18	10
K038	38	18	10
K040	40	18	10

### Plates for Auger Drill Bits



TYPE	L	H1	H2	B
MD143.6-L	14.05	2.1	10.6	3.6
MD143.6-R	14.05	3.5	7.6	3.6
MD1003-L	10.45	13.0	4.0	3.0
MD1003-R	10.45	13.0	6.0	3.0
MD1504-L	15.0	2.7	4.67	4.0
MD1504-R	15.0	5.49	4.67	4.0

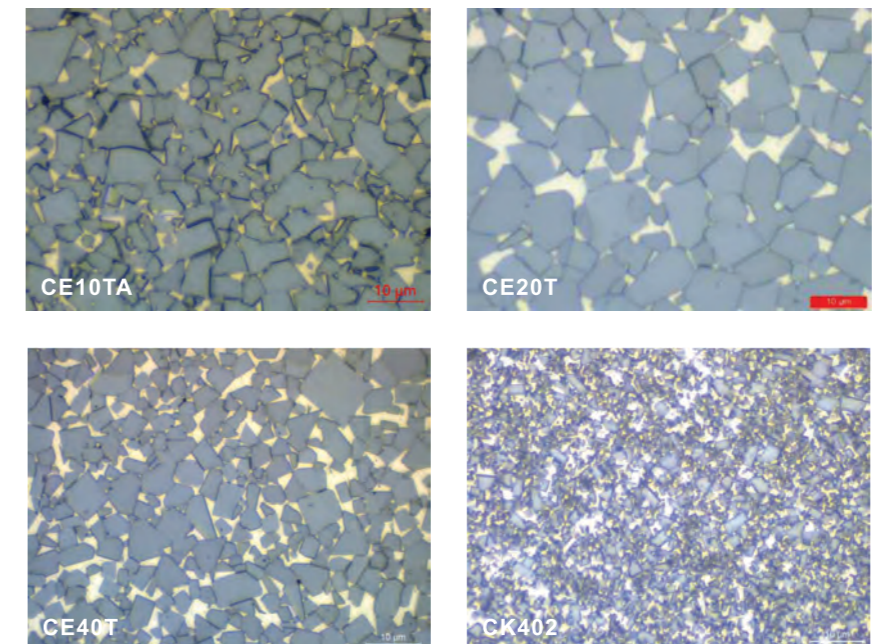
### Inserts and Blades for Construction

**Application:** Tunnel Boring, Excavation, Road Milling, HPGR and others.

#### Grade Specification

Grades	Binder %	Grain Size	Density	Hardness		T.R.S
			g/cm <sup>3</sup>	HRA	HV30	N/mm <sup>2</sup>
<b>CE10TA</b>	6.0	Extra Coarse	14.95	88.5	1210	2200
	Suitable for concrete road milling.					
<b>CE10TB</b>	6.0	Extra Coarse	14.95	87.8	1140	2200
	Suitable for asphalt and mixed road milling.					
<b>CE20T</b>	8.0	Extra Coarse	14.70	85.0	950	1800
	Suitable for foundation excavation on hard rock formations.					
<b>CE40T</b>	10.0	Extra Coarse	14.50	85.7	1000	2500
	Suitable for cement road plane milling and foundation excavation.					
<b>CK402</b>	15.0	Medium	14.00	87.6	1120	3000
	Suitable for HPGR.					

#### Example of Metallography 1500X



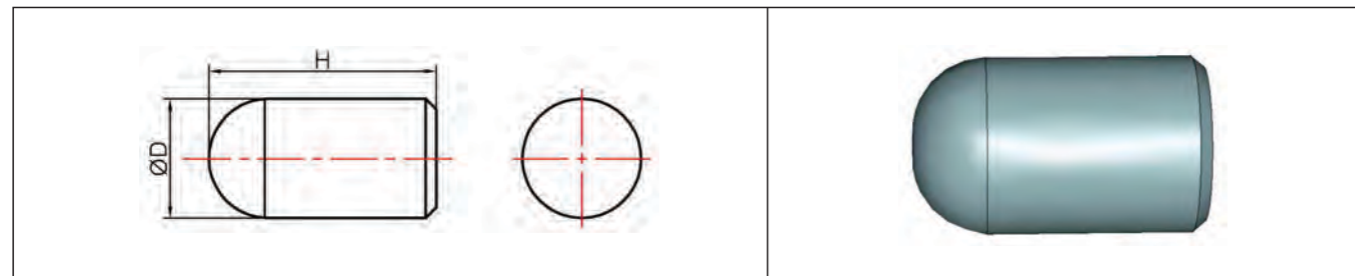


■ Rooftop shaped Inserts



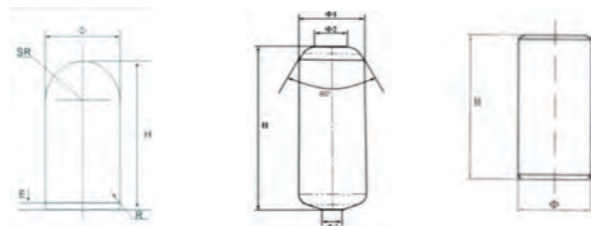
TYPE	D	H
BR1222	12.0	22.0
BR1422	14.6	22.0
BR2236	22.0	36.0
BR2538	25.5	38.0

■ Buttons for HPGR



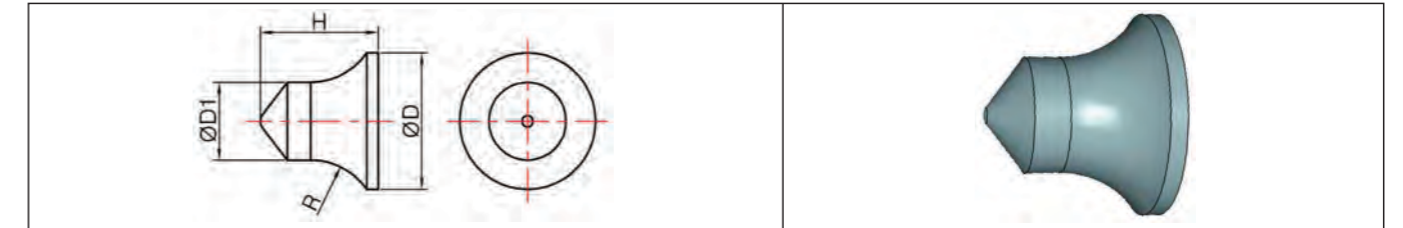
Grades	Binder %	Grain Size	Density	Hardness		T.R.S
			g/cm <sup>3</sup>	HRA	HV30	N/mm <sup>2</sup>
<b>MH12</b>	12.0	Submicron	14.15	90.8	1450	3800
<b>CG50</b>	12.0	Medium	14.20	88.2	1180	3500
<b>CK402</b>	15.0	Medium	14.00	87.6	1120	3000
<b>YG11C</b>	11.2	Medium	14.30	88.1	1170	2600

TYPE	D	H
BH1040	10	40
BH1640	16	40
BH1645	16	45
BH1850	18	50
BH1855	18	55
BH2040	20	40



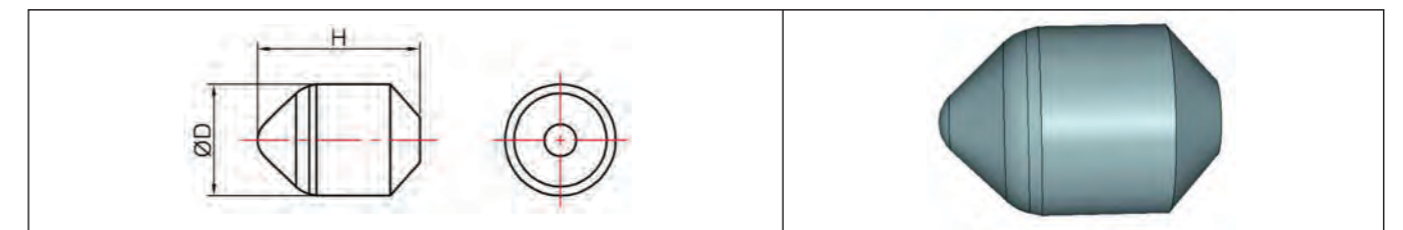
• Diameters can be ground to customer specifications.  
• Non-standard specifications and grades can be provided upon request.

■ Cap-Shaped Inserts



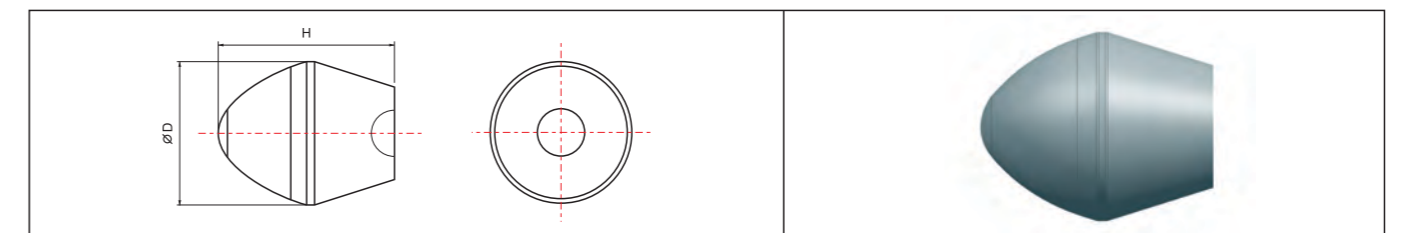
TYPE	D	H
XP0914	9.30	14.5
XP1615	16.2	15.1
XP1717	17.8	17.1
XP1919	19.0	19.9
XP2119	21.0	19.7
XP2223	22.0	23.0
XP2728	27.0	28.2
XP2926	29.0	26.0

■ Rotary Inserts



TYPE	D	H
XW0812	8.0	12.0
XW1219	12.0	19.0
XW1322	13.0	22.0
XW1624	16.0	24.0

■ Inserts for Foundation Excavation



TYPE	D	H
BM2329	23.5	29.0
BM2531	23.5	29.0
BM2831	28.0	31.0

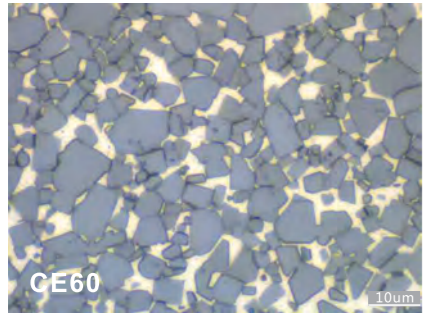
• Diameters can be ground to customer specifications.  
• Non-standard specifications and grades can be provided upon request.

■ Inserts for Tunnel Boring(TBM)

Grade Specification

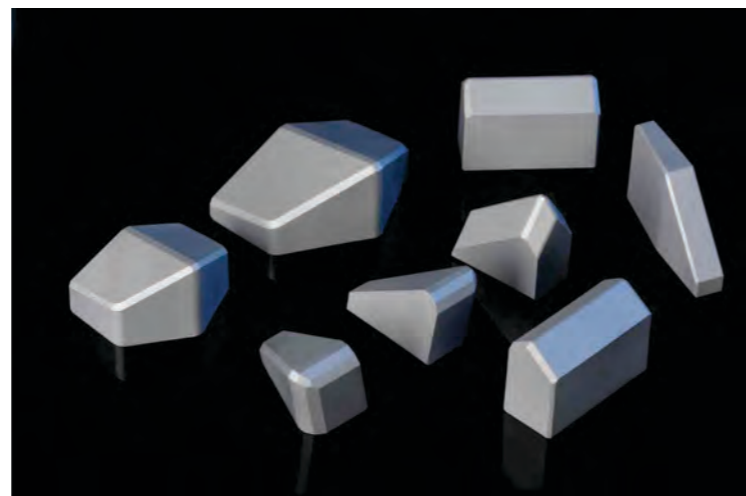
Grades	Binder %	Grain Size	Density	Hardness		T.R.S
			g/cm <sup>3</sup>	HRA	HV30	N/mm <sup>2</sup>
<b>CE30</b>	9.0	Coarse	14.60	89.0	1260	2800
	Suitable for super hard rock formations with excellent wear resistance.					
<b>CE60</b>	12.5	Coarse	14.20	87.0	1070	2850
	Suitable for soft, medium and hard rock formations, with high toughness.					

Example of Metallography 1500X



CYC grade of TBM inserts achieved ideal balance between wear and impact resistance, with excellent corrosion resistance.

CYC unique preforming process (CIP) allows supplying TBM inserts in small batch with complicated shapes and geometry.



■ Carbide Crushing Blades

Grade Specification

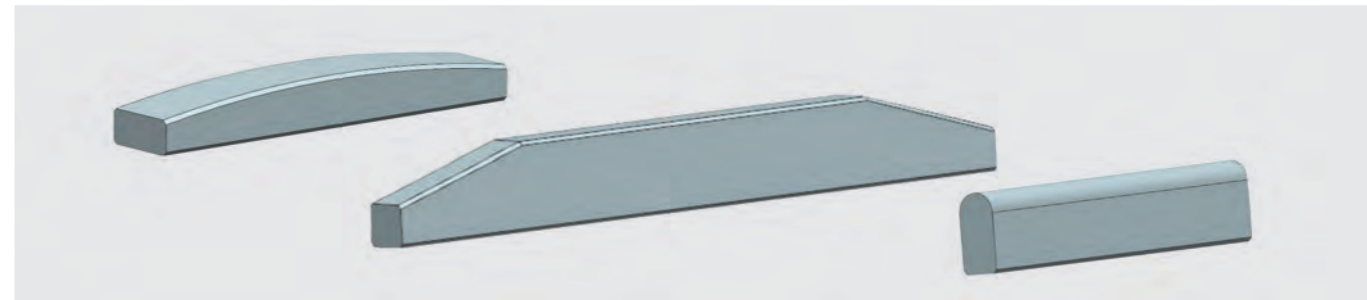
Grades	Binder %	Grain Size	Density	Hardness		T.R.S
			g/cm <sup>3</sup>	HRA	HV30	N/mm <sup>2</sup>
<b>CR10</b>	6.0	Medium	14.85	90.4	1420	2800
	Suitable for construction, rotor tips, ZS&VSI crushers on medium hard, hard rock& stone.					
<b>CK10H</b>	6.0	Medium Fine	14.90	91.3	1500	2500
	Suitable for construction, rotor tips, ZS&VSI crushers on medium hard hard rock& stone.					

Rectangle

L	W	T
80.0	33.0	10.0/12.0
105.0	20.0	
110.0	20.0	
165.0	20.0	
180.0	20.0	
220.0	20.0	
250.0	22.0	
260.0	25.0	
280.0	22.0	
227.0	30.0	
210.0	40.0	



Irregular Shape





### Conveyor System Scraper

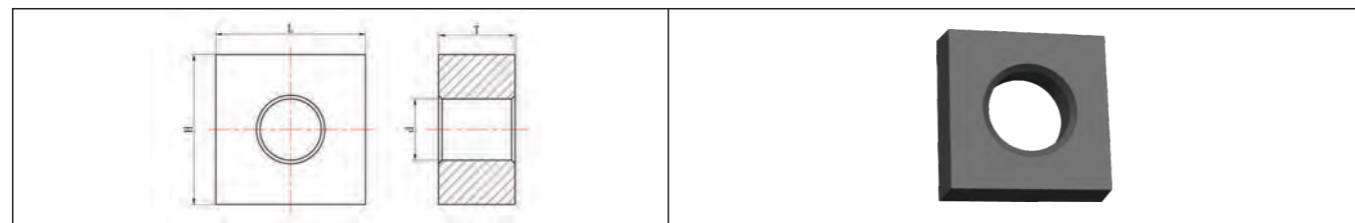
Grades	Binder %	Grain Size	Density	Hardness		T.R.S
			g/cm <sup>3</sup>	HRA	HV30	N/mm <sup>2</sup>
<b>SK10</b>	9.5(Co+Ni)	Submicron	14.5	91.5	1540	3000
	Suitable for conveyor system scrapers, with high wear resistance and anti-corrosion properties.					

L	W	T
50.0	8.0	2.0
50.0	10.0	2.0
50.0	10.0	3.0
100.0	8.0	2.0
100.0	10.0	2.0
100.0	10.0	3.0
150.0	8.0	2.0
150.0	10.0	2.0
150.0	10.0	3.0
120.0	12.0	2.0
120.0	20.0	2.0
120.0	20.0	4.0



### Carbide Chain Saw Inserts for Stone Cutting

Grades	Binder %	Grain Size	Density	Hardness		T.R.S
			g/cm <sup>3</sup>	HRA	HV30	N/mm <sup>2</sup>
<b>CR10</b>	6.0	Medium	14.85	90.4	1420	2800
	Suitable for various types of stone cutting and shaping applications.					



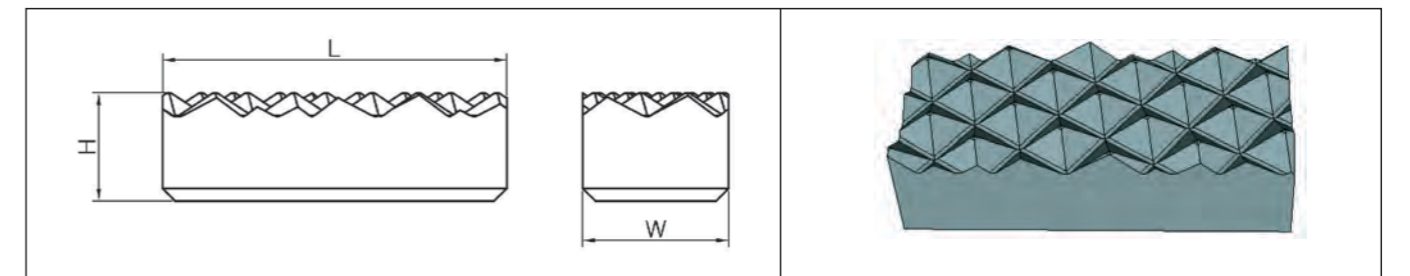
L	H	T	d
12.7	12.7	5.6	5.0
12.7	12.7	6.6	5.0
12.7	12.7	6.5	5.2

• Non-standard specifications and grades can be provided upon request.  
• All the grade parameters are typical value, please refer to our standard grade datasheet for more details.

### Gripper Inserts for Chuck Jaws

#### Grade Specification

Grades	Binder %	Grain Size	Density	Hardness		T.R.S
			g/cm <sup>3</sup>	HRA	HV30	N/mm <sup>2</sup>
<b>CE30</b>	9.0	Coarse	14.60	89	1260	2800
	Suitable for controlling Drilling Rods opening and closing.					



TYPE	D	H	E
JG22X9.3X6.9	22.0	9.3	6.9
JG22.1X9.05X6.15	22.1	9.05	6.15
JG22.1X9.35X6.25	22.1	9.35	6.25
JG29X8.6X6	29	8.6	6.0

• Non-standard specifications and grades can be provided upon request.  
• All the grade parameters are typical value, please refer to our standard grade datasheet for more details.

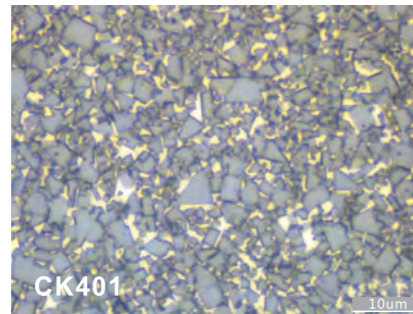
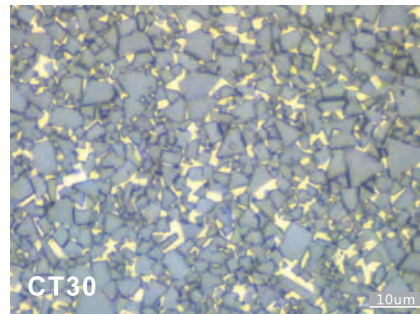
## Inserts for Oil & Gas

Application: Tricon Bits for Oil & Gas.

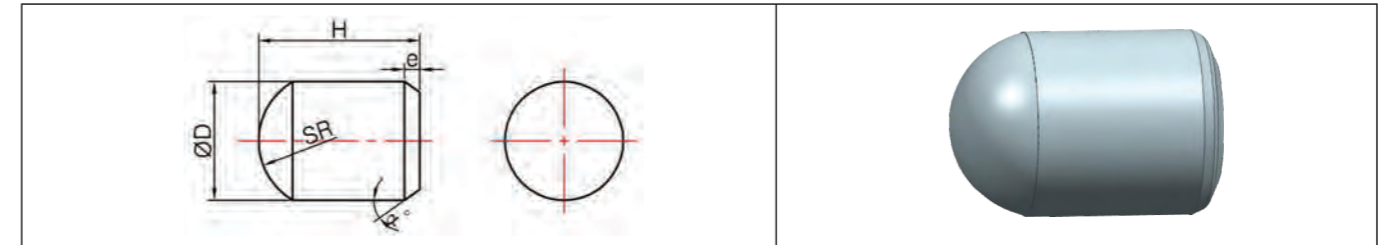
### Grade Specification

Grades	Binder %	Grain Size	Density	Hardness		T.R.S
			g/cm <sup>3</sup>	HRA	HV30	N/mm <sup>2</sup>
<b>CT30</b>	10.0	Coarse	14.50	87.8	1140	2800
	Suitable for various shapes and sizes inserts for cone bits with higher wear resistance and toughness.					
<b>CK401</b>	11.5	Coarse	14.30	87.6	1120	2700
	Suitable for drill bits with simple shape on medium hard and soft rock formations.					

### Example of Metallography 1500X

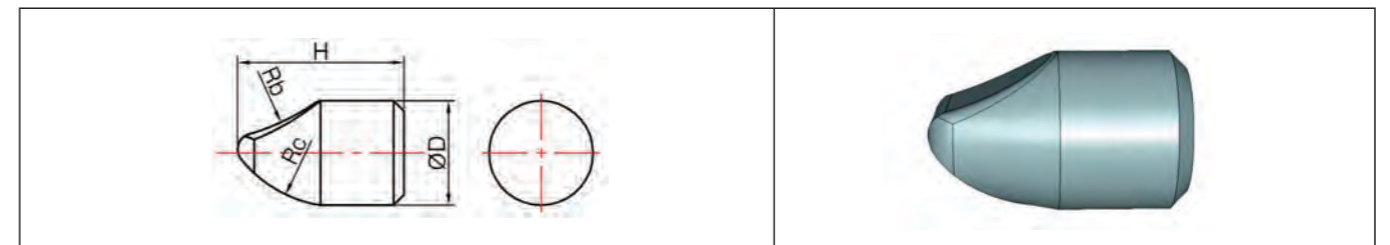


## Hemispherical Shaped Inserts



TYPE	D	H
BQ0707-T	7.2	7.0
BQ0709-T	7.2	9.0
BQ0812-T	8.2	12.3
BQ0813-T	8.2	13.3
BQ0914-T	9.2	14.0
BQ1013-T	10.2	13.0
BQ1014-T	10.2	14.0
BQ1114-T	11.3	14.0
BQ1214-T	12.3	14.5
BQ1216-T	12.3	16.5
BQ1414-T	14.3	14.5
BQ1416-T	14.3	16.5
BQ1419-T	14.3	19.0
BQ1420-T	14.3	20.0
BQ1422-T	14.3	22.0
BQ1623-T	16.3	23.0
BQ1625-T	16.3	25.0

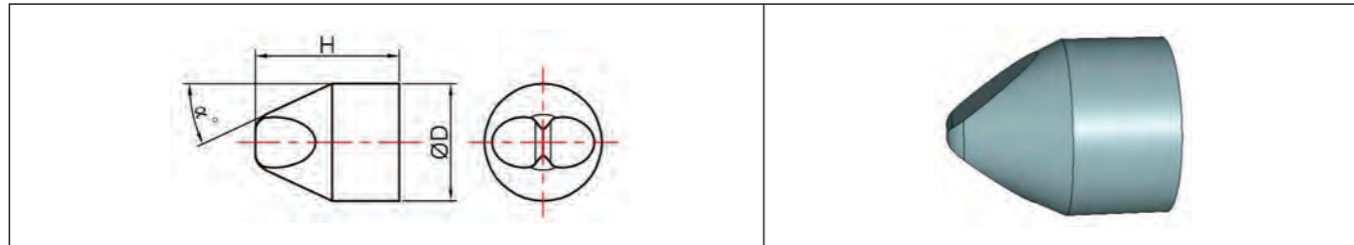
## Spoon Shaped Inserts



TYPE	D	H
BS1217	12.3	17.0
BS1318	13.3	18.0
BS1421	14.3	21.0
BS1623	16.3	23.0
BS1930	19.3	30.0
BS2233	22.3	33.0
BS2640	26.3	40.0

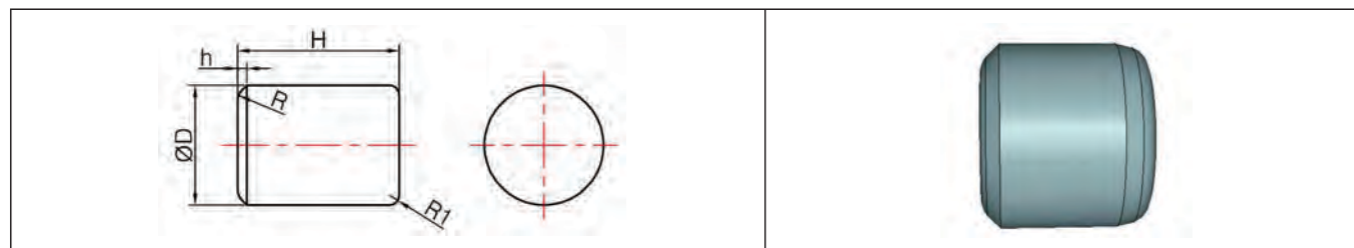


■ Chisel Shaped Inserts



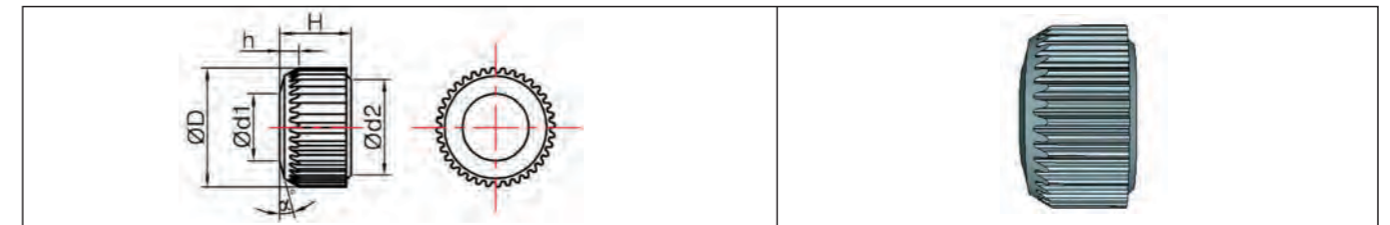
TYPE	D	H
BW0810	8.2	10.55
BW0912	9.2	12.7
BW1013	10.2	13.0
BW1014	10.2	14.0
BW1112	11.3	12.4
BW1214	12.3	14.0
BW1215	12.3	15.0
BW1418	14.3	18.0
BW1420	14.3	20.0
BW1623	16.3	23.0
BW1625	16.3	25.0
BW1827	18.3	27.0
BW2030	20.3	30.0
BW2233	22.3	33.0

■ Flat Top Inserts



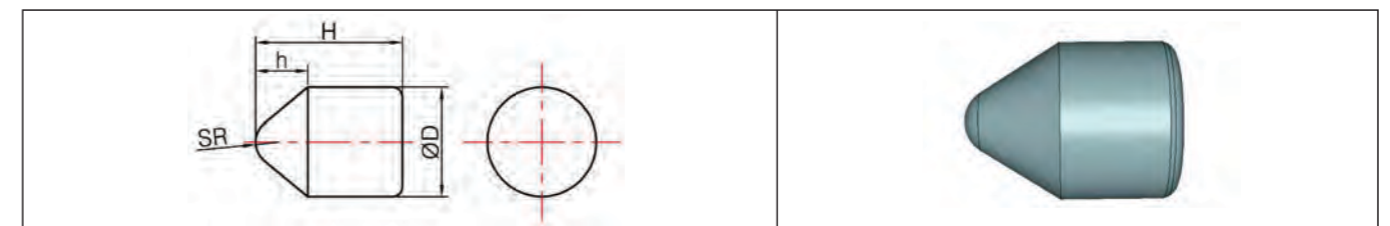
TYPE	D	H
BF0404	4.82	4.8
BF0604	6.0	4.8
BF0805	8.0	5.0
BF0908	9.6	8.0
BF1008	10.0	8.0
BF1108	11.2	8.7
BF1210	12.0	10.0
BF1311	13.4	11.2
BF1415	14.9	15.0

■ Serrated Flat Inserts



TYPE	D	H
BT0606	6.55	6.05
BT0805	8.2	5.0
BT0908	9.4	8.2
BT1108	11.2	8.3
BT1208	12.95	8.0

■ Conical Shaped Inserts



TYPE	D	H
BC0809-T	8.3	9.8
BC0810-T	8.3	10.8
BC1012-T	10.3	12.5
BC1114-T	11.3	14.0
BC1116-T	11.3	16.5
BC1215-T	12.3	15.7
BC1318-T	13.3	18.0
BC1419-T	14.3	19.0
BC1420-T	14.3	20.0
BC1421-T	14.3	21.0
BC1618-T	16.3	18.0
BC1622-T	16.3	22.0
BC1623-T	16.3	23.0
BC1624-T	16.3	24.0
BC1625-T	16.3	25.0
BC1721-T	17.8	21.5
BC1728-T	17.8	28.0
BC1729-T	17.9	29.0
BC1730-T	17.9	30.0
BC1826-T	18.2	26.5
BC1933-T	19.3	33.0

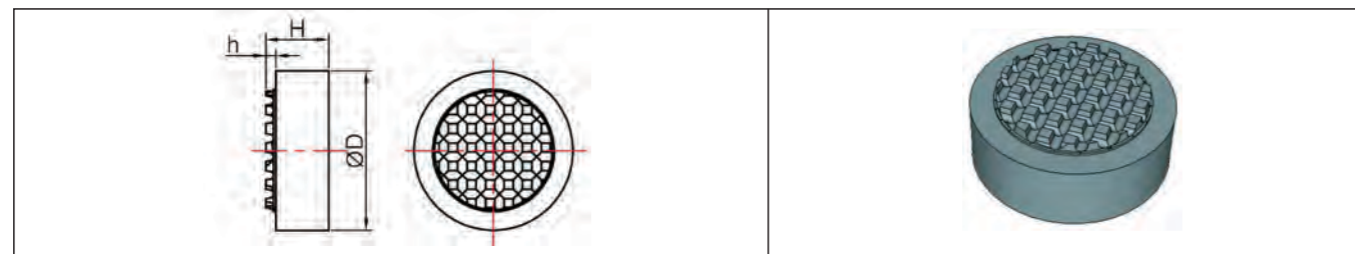
## Substrates

Application: Substrates of PDC(Polycrystalline Diamond Compact) Bits for Mining, Oil&Gas and others.

### Grade Specification

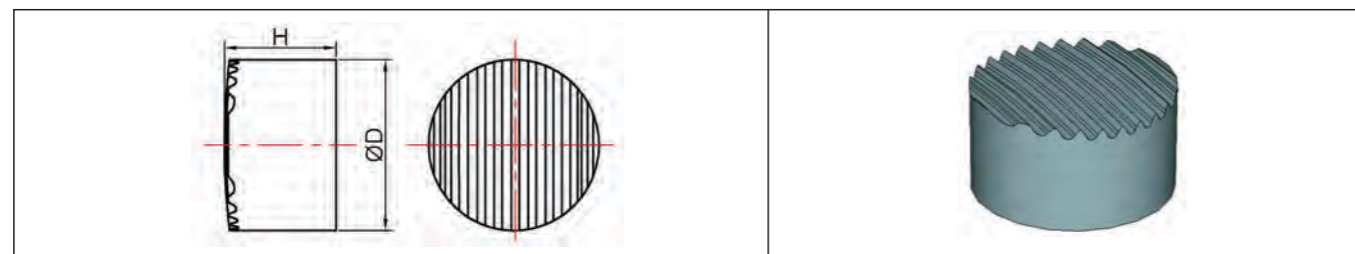
Grades	Binder %	Grain Size	Density	Hardness		T.R.S
			g/cm <sup>3</sup>	HRA	HV30	N/mm <sup>2</sup>
CK401	11.5	Coarse	14.30	87.6	1120	2700
CK402T	15.0	Coarse	14.00	85.8	970	2600

### Substrates for Mining



TYPE	D	H
FHR1204	12.0	4.0
FHR1405	14.5	5.0

### Substrates for Oil&Gas



TYPE	D	H
FHO1405	14.5	5.0
FHO1708	17.2	8.0
FHO2010	20.5	10.0



1. Metallographic Microscope (Leica-Germany)
2. Video Measuring System
3. Roundness measuring instrument (Mitutoyo-Japan)
4. SEM tester (JEOL-Japan)
5. Future tech-Japan
6. Magnetometer