

## Wire line Core Bits

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## Impregnated Diamond Core Bits

Bits are manufactured with very small, high quality synthetic diamonds, mixed evenly through a metal alloy matrix. The matrix erodes away at the same rate as the diamonds become worn and rounded. Thus new sharp diamonds are exposed to continue cutting through the rock. In most geological formations, impregnated bits are more economical to use than other bits.

The application of impregnated diamond bit range from medium to ultra-hard formations. The bit's crown is made up of a metal powder and diamond matrix that wears away during the drilling process and exposes new layers of diamonds, renewing the cutting points. The combination of diamond and proprietary matrix result in the optimal performance.

Our impregnated bits are manufactured to give optimum penetration rates and bit life, which is required to keep the cost of diamond drilling to a minimum.



### Size :

Sinocoredrill bits are available in all standard drilling sizes(BQ,NQ,HQ,PQ,etc.)

Also, non-standard sized bits can be produced according to requirements from clients.

### Crown Height:

Sinocoredrill offers crown depths of 10mm, 12mm, 14mm.

The taller crown heights provide improved bit stability and reduced vibrations, enhancing bit life and performance. Unless otherwise specified, a standard 14mm impregnation depth is supplied for most of our customer.

### Waterways:

Various waterways are available for diamond impregnated bits.

Differing waterways allow for better flushing in various ground conditions and drilling systems.

### Matrix hardness:

For convenience of customer from different countries, Sinocoredrill impregnated bit matrices adopts the international standard matrix number system. Matrices to be used on various rock conditions can be ordered according to the MATRIX SELECTION CHART.

### Threads:

Standard Q threads as well as thread types required by clients are available.

## Matrix Selection Chart

Matrix Selection		Soft Rock		Medium Rock			Hard Rock	
Matrix	胎体配方及适用岩层	Series1/2	Series3/4	Series5/6	Series7/8	Series9/10	Series11/12	Series13/14
Overburden	超负荷状态							
Hole obstructions	孔塞阻状态							
Abrasive sandstone	耐磨蚀砂岩							
Broken abrasive rock	破碎耐磨砂岩							
Sandy shale	砂质页岩							
Pyroxenite	辉岩							
Norite	苏长岩							
Gabbro	辉长岩							
Diabase	辉绿岩							
Dolerite	粗粒玄武岩							
Mica schist	云母片岩							
Siltstone	粉砂岩							
Granite	花岗岩							
Hematite	赤铁矿							
Basalt	玄武岩							
Hard quartzite	坚硬石英岩							
Quartz conglomerate	石英砾岩							
Banded ironstone	条带状铁矿石							
Taconite	铁燧岩							
Glassy quartz	石英岩							
Chert	黑硅石							

very coarse grained	medium-hard competent	hard to very hard&	non abrasive
Abrasive or fractured	&medium to fine grained	medium to fine grained	super hard ultra
rocks	rock	rocks	fine grained rock

## Crown Profile



### Serrated/ W Profile / 尖齿“W”型

Standard profile for most impregnated bits. It provides good drilling stability and is suitable for various formations.



### Flat Profile / 平底型

It's suitable for various rocks, often used impregnated casing bits, casing shoes as well as the bits with very hard matrices



### Cross Profile / 交叉唇面

It's especially designed for ultra-hard formations, such as granite(hardness 8-9), ganister, quartzite, siliceous limestone, cherty, etc.



### Semi-Round Profile / 半圆形

Even diamond distribution in the bit face, suitable for drilling medium-hard and hard rocks, or a little broken and loose formation.



### Multi-Step Profile / 阶梯型

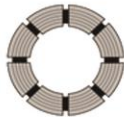
Multi-Step type impregnated bit are suitable for soft to medium hard formations and alternating hard-soft formations.





## Waterway Configurations

SINOCOREDRILL Bit' s are offered with multiple custom waterway configurations. Waterway selection should be determined based on the drilling conditions and adjusted appropriately to cool the bit, flush away cuttings, and maximize penetration rates.



### STANDARD/CHANNEL FLUSHING (CF)

Standard waterways are recommended for most general purpose coring operations and off great fluid circulation in a variety of conditions.



### FACE DISCHARGE

Recommended for very soft and broken formations or when using triple-tube(WL3) barrels  
SINOCOREDRILL Face Discharge waterways increase flushing characteristics to prevent waterway blockage by ejecting fluid through ports molded into the face of the bit.



### TURBO

SINOCOREDRILL Turbo Bits waterways provide increased flushing ability and lessen the contact area of the bit to the rock, therefore giving the bit more cutting ability with less pressure. The allows for reduced torque and increased penetration rate. Only available in IMPREGNATED DIAMOND bits



### DEEP I.D.WATERWAYS

Designed to maximize the waterway depth on the I.D. of the bit, which reduces the jetting or washing away of the core. The extra clearance minimizes the vacuum effect caused by the water flow past the lifter case in a lost circulation application.



### TAPERED WATERWAYS

Recommended for soft and broken formations when standard waterways may become blocked. The taper flushes cuttings to help keep the waterways clear.



### SPIRAL

Recommended for drilling in broken formations. Specifically angled waterways allow for greater fluid ejection.

# Diamond Bits Specification



Size	Bit O.D.	Hole Diameter	Bit I.D.	Core Diameter	Reaming Shell O.D.	
	INCHES	MM	INCHES	MM	INCHES	MM
AQ	1.870/1.880	47.50/47.75	1.057/1.067	26.85/27.10	1.885/1.895	47.88/48.13
LTK48	1.870/1.880	47.50/47.75	1.384/1.394	35.15/35.41	1.885/1.895	47.88/48.13
BQ	2.340/2.350	59.44/59.69	1.428/1.438	36.27/36.53	2.355/2.365	59.82/60.07
BQ3	2.340/2.350	59.44/59.69	1.315/1.325	33.40/33.65	2.355/2.365	59.82/60.07
NQ	2.960/2.970	75.18/75.44	1.870/1.880	47.50/47.75	2.975/2.985	75.57/75.82
NQ2	2.960/2.970	75.18/75.44	1.990/2.000	50.65/50.80	2.975/2.985	75.57/75.82
NQ3/NQTT	2.960/2.970	75.18/75.44	1.770/1.780	44.96/45.21	2.975/2.985	75.57/75.82
NMLC	2.960/2.970	75.00/75.44	2.042/2.052	51.87/52.12	2.975/2.985	75.50/75.82
HQ	3.755/3.770	95.38/96.00	2.495/2.505	63.38/63.63	3.775/3.790	95.89/96.27
HQ3/HQTT	3.755/3.770	95.38/95.57	2.401/2.411	60.99/61.24	3.775/3.790	95.89/96.27
PQ	4.795/4.815	121.80/122.30	3.340/3.350	84.84/85.09	4.820/4.835	122.43/122.81
PQ3	4.795/4.815	121.80/122.30	3.265/3.275	82.93/83.19	4.820/4.835	122.43/122.81
T2-76	2.987/2.997	75.87/76.12	2.424/2.434	61.56/61.82	2.999/3.009	76.17/76.42
T2-86	3.381/3.391	85.87/86.12	2.818/2.828	71.56/71.82	3.393/3.403	86.17/86.42
T2-101	3.970/3.982	100.84/101.14	3.290/3.300	83.56/84.00	3.984/3.994	101.19/101.44
T6-101	3.970/3.982	100.84/101.14	3.105/3.115	78.88/79.13	3.984/3.996	101.21/101.51
T6-116	4.560/4.575	115.80/116.18	3.657/3.667	92.88/93.13	4.575/4.590	116.21/116.59
T6-131	5.150/5.165	130.80/131.18	4.247/4.257	107.88/108.13	5.165/5.180	131.21/131.59
T6-146	5.740/5.755	145.80/146.18	4.837/4.847	122.88/123.13	5.757/5.772	146.23/146.61
HMLC	3.858	98.00	2.500	63.50	3.878	98.50



## Drilling Guidelines

System	Fluid volume		Rock hardness	Rotation Speed (rpm)		Penetration speed (in/min-cm/min)								Bit weight range	
	gpm	l/min				200(r/in)		250(r/in)		80(r/cm)		100(r/cm)		Lb	kg
BQ	7.0-9.5	27-36	H	1000	1400	5	7	4	5.6	12.5	17.5	10	12	5000-8000	2275-3650
			M	1000	1200	5	6	4	4.8	12.5	15	10	12	3500-6000	1600-2725
			S	800	1200	4	6	3.2	4.8	10	15	8	12	2500-3500	1150-1600
NQ	9.5-12	36-45	H	1000	1200	5	6	4	4.8	12.5	15	10	12	6000-8000	2725-3650
			M	800	1200	4	6	3.2	4.8	10	15	8	12	4000-6000	1800-2725
			S	600	1000	3	5	2.4	4	7.5	12.5	6	10	2500-3500	1150-1600
HQ	12.0-14.5	45-55	H	800	1000	4	5	3.2	4	10	12.5	8	10	6000-10000	2725-4550
			M	600	1000	3	5	2.4	4	7.5	12.5	6	10	4000-8000	1800-3650
			S	600	800	3	4	2.4	3.2	7.5	10	6	8	3000-6000	1350-2725
PQ	20-30	75-110	H	400	600	2	3	1.6	2.4	5	7.5	4	6	6000-12000	2725-5500
			M	400	600	2	3	1.6	2.4	5	7.5	4	6	5000-10000	2275-4550
			S	300	500	1.5	2.5	1.2	2	3.75	6.25	3	5	4000-8000	1800-3650

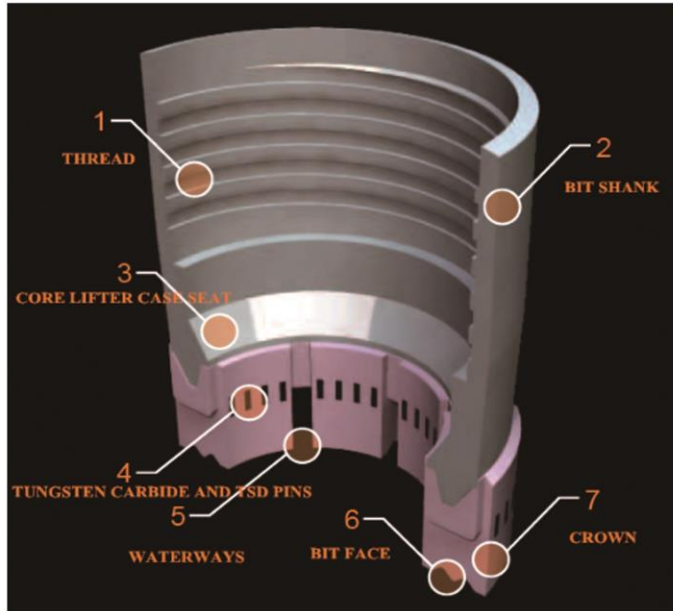
\*Max peripheral speed for impregnated:5m/s and minimum:3m/s.

Calculation of n(rpm)=V(s(peripheral speed in m/s) ×60×1000)/(D(bit outer diameter mm)×π)

\*Fluid flow, RPM, bit weight may all have to be adjusted to suit the local drilling conditions.



## Bits Ordering Guidelines



### ORDERING GT BITS

1. Size – Bits are available in all standard industry size.
2. Series – Select the series bit most appropriate for the formation.
3. Gauge – Standard and reaming shell shown in catalog. Oversized options available.

### ORDERING PREMIUM BITS

1. Size – Bits are available in all standard industry sizes.
2. Series – Select the series bit most appropriate for the formation
3. Gauge – Standard and reaming shell shown in catalog. Oversized option available.
4. Waterway Configuration – Standard shown in catalog unless otherwise noted. Custom options available.
5. Waterway width – Standard. Custom waterway widths available.
6. No. of Waterways – Standard for each size shown in catalog. Custom options available.
7. Crown Height – Hole Products' premium series bits come standard with 14mm crown height. Customized crown heights available.



## Surface Set Core Bits

### Surface Set Diamond Core Bits:

Set with singular layer of natural/synthetic diamond and utilized a hard matrix compound on the bit face, our surface set diamonds can help ensure sufficient overlap to prevent premature wear of the matrix. This diamond tool is also suitable for drilling broken formation rocks which cannot be cored.

### Standard Profiles for Surface Set Core bits:

- Multi-steps
- Semi-round
- Face discharge (FD)
- Non-coring bits with concave profile

**Multi-steps**  
多阶梯唇面



**Semi-round**  
圆弧形唇面



**Face discharge**  
底喷唇面



**Concave profile**  
全面钻进导向唇面



To choose a right surface set for the formations drilled, we need at least consider the following aspects: diamond size, diamond grade, profile design.

Diamond Size	Formation Drilled
10/20 SPC*	Soft formation
20/30 SPC	soft to medium formation
30/40 SPC	medium formation
40/60 SPC	Medium to hard formation
< 60/80 SPC	Very hard formation

\*SPC is short for Stone per Carat

\*\*40/60 is Forsun standard diamond size for natural diamond core bit

\*\*\*Other sizes are available as per request

