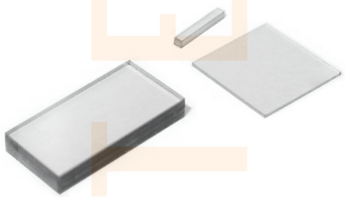
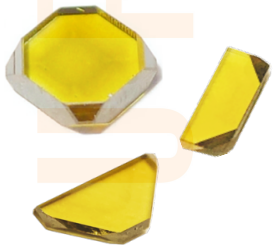
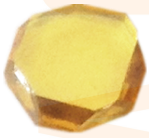
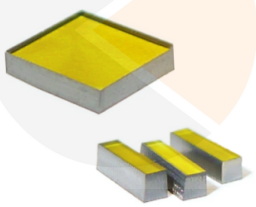
ACCURATE

super-high surface finishing and ultra-precision machining

Monocrystalline Diamond - CVD and HPHT

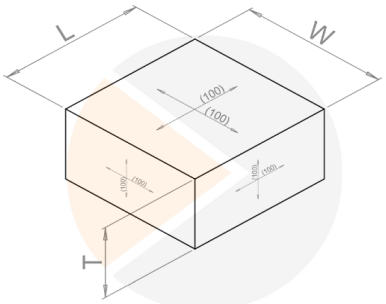
Monocrystalline Diamond - CVD and HPHT

In our synthetic diamond product range, the monocrystalline diamonds, also known as single crystal diamonds, are synthesized by Chemical Vapor Deposition (CVD) and High Pressure High Temperature (HPHT) technologies.

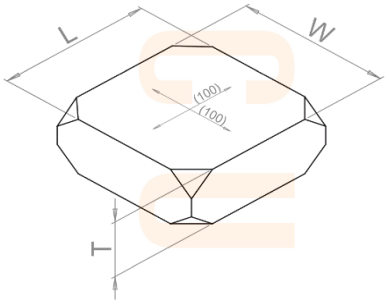
Name	Product	Properties	Applications
CVD-M		• Colorless to light brown • IIa type • Orientation (100) • Synthesized by CVD technology • Produced under ultra-high purity conditions in a vacuum chamber • Super-high hardness • Round, square, rectangle, triangle and any other custom shapes • Length available: from 2.0mm to 10.0mm • Thickness available: from 0.3mm to 10.0mm	• For super-high surface finishing • Ultra precision cutting tools • Optical windows • As diamond seeds for growing lab diamonds • Semiconductor devices • Electronic component • High-power lasers • Thermal sink devices • Aerospace parts
MCD-S		• Yellow color • Orientation (100) • Synthesized by HPHT technology • Close to the shapes of square, rectangle and triangle • Length available: 2.0mm, 3.0mm, 3.5mm, 4.0mm, 4.5mm, 5.0mm, 5.5mm, 6.0mm, 6.5mm • Thickness available: from 1.0mm to 1.5mm	• For super-high surface finishing • Ultra precision cutting tools • For precious metals • Wear parts • As diamond seeds for growing lab diamonds
MCD-R		• Yellow color • Orientation (100) • Synthesized by HPHT technology • Close to the shapes of square and rectangle • Length available: 2.0mm, 3.0mm, 3.5mm, 4.0mm, 4.5mm, 5.0mm, 5.5mm, 6.0mm, 6.5mm • Thickness available: from 1.0mm to 1.2mm	• For super-high surface finishing • Ultra precision cutting tools • For precious metals • Wear parts • As diamond seeds for growing lab diamonds
MCD-K		• Yellow color • Orientation (100) • Synthesized by HPHT technology and further processed by laser cutting • Complete square, rectangle and stick shapes • Length available: 2.0mm, 3.0mm, 3.5mm, 4.0mm, 4.5mm, 5.5mm, 6.0mm • Thickness available: from 1.0mm to 1.5mm	• For super-high surface finishing • Ultra precision cutting tools • For precious metals • Dressing tools • Wear parts • As diamond seeds for growing lab diamonds

General dimensions and tolerances of monocrystalline diamonds

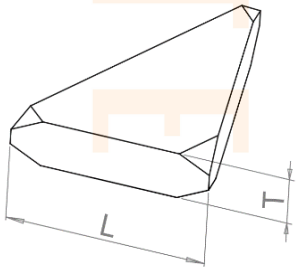
Product name	Size mm	L=Length	W=Width	T=Thickness	Unit: mm
CVD-M	3.0 × 1.0 × 1.2	3.0 (+0/+0.1)	1.0 (+0/+0.1)	1.2 (+0/+0.1)	
	3.0 × 2.5 × 1.2	3.0 (+0/+0.1)	2.5 (+0/+0.1)	1.2 (+0/+0.1)	
	3.0 × 3.0 × 1.2	3.0 (+0/+0.1)	3.0 (+0/+0.1)	1.2 (+0/+0.1)	
	4.0 × 3.0 × 1.2	4.0 (+0/+0.1)	3.0 (+0/+0.1)	1.2 (+0/+0.1)	
	5.0 × 4.0 × 1.2	5.0 (+0/+0.1)	4.0 (+0/+0.1)	1.2 (+0/+0.1)	
	6.0 × 4.0 × 1.2	6.0 (+0/+0.1)	4.0 (+0/+0.1)	1.2 (+0/+0.1)	
	7.0 × 5.0 × 1.5	7.0 (+0/+0.1)	5.0 (+0/+0.1)	1.5 (+0/+0.1)	
	8.0 × 5.0 × 1.5	8.0 (+0/+0.1)	5.0 (+0/+0.1)	1.5 (+0/+0.1)	
	9.0 × 5.0 × 1.5	9.0 (+0/+0.1)	5.0 (+0/+0.1)	1.5 (+0/+0.1)	
	Sizes smaller than 10mm are available on request.				
	Shapes can be squares, rectangles, sticks, triangles, rounds, and custom ones.				



Product name	Size mm	L=Length	W=Width	T=Thickness	Unit: mm
MCD-S	2.5 × 2.5 × 1.0	2.5 (+0/+0.5)	2.5 (+0/+0.5)	1.0 (+0/+0.1)	
	3.0 × 3.0 × 1.0	3.0 (+0/+0.5)	3.0 (+0/+0.5)	1.0 (+0/+0.1)	
	3.5 × 3.5 × 1.1	3.5 (+0/+0.5)	3.5 (+0/+0.5)	1.1 (-0.1/+0.1)	
	4.0 × 2.0 × 1.1	4.0 (+0/+0.5)	2.0 (+0/+0.1)	1.1 (-0.1/+0.1)	
	4.0 × 4.0 × 1.2	4.0 (+0/+0.5)	4.0 (+0/+0.5)	1.2 (-0.1/+0.1)	
	4.5 × 4.5 × 1.2	4.5 (+0/+0.5)	4.5 (+0/+0.5)	1.2 (-0.1/+0.1)	
	5.0 × 2.5 × 1.2	5.0 (+0/+0.5)	2.5 (+0/+0.1)	1.2 (-0.1/+0.1)	
	5.0 × 5.0 × 1.2	5.0 (+0/+0.5)	5.0 (+0/+0.5)	1.2 (-0.1/+0.1)	
	5.5 × 5.5 × 1.2	5.5 (+0/+0.5)	5.5 (+0/+0.5)	1.2 (-0.1/+0.1)	
	6.0 × 6.0 × 1.2	6.0 (+0/+0.5)	6.0 (+0/+0.5)	1.2 (-0.1/+0.1)	
	Other sizes are available on request.				
	Thickness of 1.5mm may be available.				

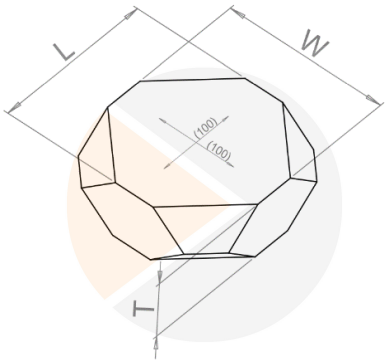


Product name	Size mm	L=Length	T=Thickness	Unit: mm
MCD-S (triangle)	3.0 × 0.8	3.0 (+0/+0.5)	0.8 (+0/+0.1)	
	3.0 × 1.0	3.0 (+0/+0.5)	1.0 (+0/+0.1)	
	3.5 × 1.1	3.5 (+0/+0.5)	1.1 (-0.1/+0.1)	
	4.0 × 1.2	4.0 (+0/+0.5)	1.2 (-0.1/+0.1)	
	4.5 × 1.2	4.5 (+0/+0.5)	1.2 (-0.1/+0.1)	
	Other sizes are available on request.			
	Thickness of 1.5mm may be available.			



General dimensions and tolerances of monocrystalline diamonds

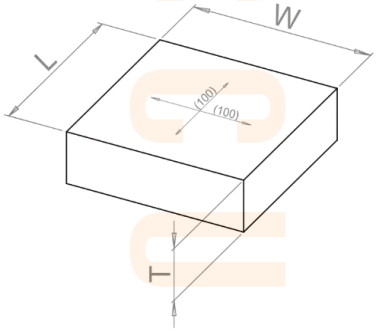
Product name	Size mm	L=Length	W=Width	T=Thickness	Unit: mm
MCD-R	2.5 × 2.5 × 1.0	2.5 (+0/+0.5)	2.5 (+0/+0.5)	1.0 (+0/+0.1)	
	3.0 × 3.0 × 1.0	3.0 (+0/+0.5)	3.0 (+0/+0.5)	1.0 (+0/+0.1)	
	3.5 × 3.5 × 1.0	3.5 (+0/+0.5)	3.5 (+0/+0.5)	1.0 (+0/+0.1)	
	4.0 × 4.0 × 1.0	4.0 (+0/+0.5)	4.0 (+0/+0.5)	1.0 (+0/+0.1)	
	4.5 × 4.5 × 1.0	4.5 (+0/+0.5)	4.5 (+0/+0.5)	1.0 (+0/+0.1)	
	5.0 × 5.0 × 1.0	5.0 (+0/+0.5)	5.0 (+0/+0.5)	1.0 (+0/+0.1)	
	5.5 × 5.5 × 1.0	5.5 (+0/+0.5)	5.5 (+0/+0.5)	1.0 (+0/+0.1)	
	6.0 × 6.0 × 1.0	6.0 (+0/+0.5)	6.0 (+0/+0.5)	1.0 (+0/+0.1)	



Other sizes are available on request.

Thickness of 1.2mm may be available.

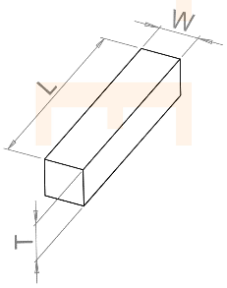
Product name	Size mm	L=Length	W=Width	T=Thickness	Unit: mm
MCD-K	2.0 × 2.0 × 1.0	2.0 (+0/+0.1)	2.0 (+0/+0.1)	1.0 (+0/+0.1)	
	2.5 × 2.5 × 1.0	2.5 (+0/+0.1)	2.5 (+0/+0.1)	1.0 (+0/+0.1)	
	3.0 × 3.0 × 1.0	3.0 (+0/+0.1)	3.0 (+0/+0.1)	1.0 (+0/+0.1)	
	3.5 × 3.5 × 1.0	3.5 (+0/+0.1)	3.5 (+0/+0.1)	1.0 (+0/+0.1)	
	4.0 × 3.0 × 1.0	4.0 (+0/+0.1)	3.0 (+0/+0.1)	1.0 (+0/+0.1)	
	4.0 × 4.0 × 1.0	4.0 (+0/+0.1)	4.0 (+0/+0.1)	1.0 (+0/+0.1)	



Other sizes are available on request.

Thickness of 1.5mm may be available.

Product name	Size mm	L=Length	W=Width	T=Thickness	Unit: mm
MCD-K (sticks)	3.0 × 0.8 × 0.8	3.0 (+0/+0.1)	0.8 (+0/+0.1)	0.8 (+0/+0.1)	
	3.0 × 1.0 × 1.0	3.0 (+0/+0.1)	1.0 (+0/+0.1)	1.0 (+0/+0.1)	
	4.0 × 0.8 × 0.8	4.0 (+0/+0.1)	0.8 (+0/+0.1)	0.8 (+0/+0.1)	
	4.0 × 1.0 × 1.0	4.0 (+0/+0.1)	1.0 (+0/+0.1)	1.0 (+0/+0.1)	
	4.0 × 1.2 × 1.2	4.0 (+0/+0.1)	1.2 (+0/+0.1)	1.2 (-0.1/+0.1)	



Other sizes are available on request.

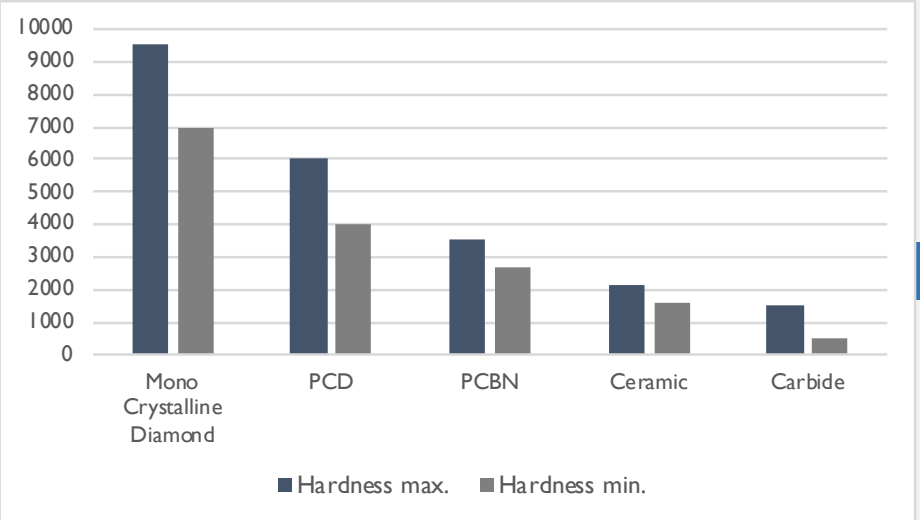
Thickness of 1.5mm may be available.

Comparison of superhard materials

Superhard Materials						Superhard Tools
	Diamond	MCD	Monocrystalline MCD-S MCD-R MCD-K (HPHT - yellow)	MCD/CVD tools	**Mirror finish** precious metals, non-ferrous metals, PMMA, copper, aluminum,etc. **Applications** clock, jewelry, glasses, optics, camera, lens, mold, contact lenses, etc.	
		CVD	Monocrystalline CVD-M (CVD - colorless)			
			Polycrystalline CVD-P (CVD - opaque)	CVD/PCD tools	**Fine finish, rough finish** non-ferrous metals, CFRP, copper, copper alloy, aluminum, aluminum alloy, wood, stone, cemented carbide,etc. **Applications** engine, bearing, camera, motor, mold, 3C, fiber board, chip board, hard board, fiberglass, graphite epoxy, etc.	
		PCD	Polycrystalline (carbide based)			
	Cubic Boron Nitride	PCBN	Polycrystalline	PCBN tools	**Fine finish, rough finish** ferrous metals, hardened steel, tool steel, high-speed steel, cast iron, etc. **Applications** bearing, brake disc, cylinder liner, roller, ballscrew, transmission shaft, etc.	

Diamond tools have much higher wear resistance and longer tool life than convitional ceramic and carbide tools, the productivity and working efficiency are largely improved for difficult to machine materials.

Hardness (kg/mm²)



Features of monocrystalline diamonds

- high hardness
- high thermal conductivity
- low thermal expansion
- low friction coefficient
- consistent performance

Advantages of superhard tools

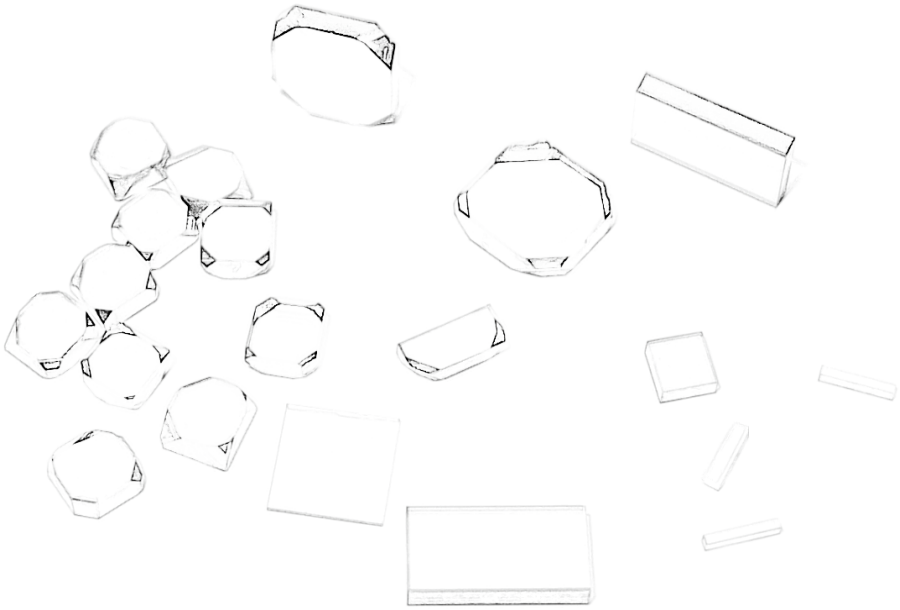
- greatly increased tool life
- higher cutting speed
- better surface finish
- higher removal rate
- higher precision

About Us

With more than 20 years' experience in super-hard material industry, we have been supplying the diamonds materials and the related products for years, we are using our know-how to help customers to find accurate solutions, the word "ACCURATE" fits our culture very much, with that, we provide not only the product itself, but also our services.

Our Product Range

- Monocrystalline diamond (CVD and HPHT) for high surface finishing and precision machining
- CVD diamond polycrystalline (CVD-P) for dressing tools, heat spreading and optics
- Polycrystalline diamond (PCD) carbide based for woodworking and aluminum



ACCURATE

LUOYANG ACCURATE TOOLING CO., LTD.
No.1 Chun Cheng Rd. Hi-Tech Development Zone 471003 Luoyang China
Tel +86 379 6327 3379 Cell +86 130 1555 5420
www.accuratedia.com info@accuratedia.com