

PCD Tools

- Standard & Customized -



Company Profile

ToolingBox (Beijing) Industrial Technology Co.,Ltd is a Chinese professional manufacturer for cutting tools. We supply solid&brazed CBN tools, Tipped PCD inserts and tools, carbide inserts and tools for woodworking and metalworking industries.

With over a decade of dedicated expertise, our company specializes in the research, development, production, promotion, and technical service of tungsten carbide cutting tools. Our product range includes woodworking carbide reversible knives, molding knives, circular cutters, oscillating knives, carbide thin razor blades, carbide scrapers, and more. These products find extensive applications in wood processing, paper printing, film and fiber industries, electronic battery cutting, and various other sectors. Renowned for our outstanding product quality and prompt deliveries, we have garnered recognition from numerous customers, leading to a significant domestic market share and exports to countries and regions, including Europe, the United States, Russia ,Mid east ,India and Southeast Asia.

Our company possesses a comprehensive set of standardized testing equipment and processes to ensure product quality. We are supported by a professional team specializing in production, technology, and sales, capable of addressing various customer-related issues. With over 100 CNC grinding machines, end mills, surface grinders, and a variety of imported inspection devices, we stand as one of the industry's largest, highest-output, most diverse, and fully-equipped enterprises in China.

We adhere to the business philosophy of "integrity in operation, superior quality, and customer-first", continuously enhancing our corporate image and product quality, reducing overall costs, shortening delivery times, and consistently improving customer satisfaction.

ToolingBox, Professional makes values!





Raw material production



Raw material inspection



Flat grinding



CNC cutting edge



CNC grinding machine



Cleaning



Inspection of the first



Inspection of the second

Page	05-06	PCD Material Introduction
Page	07-09	PCD End mills
Page	10	PCD Ball Nose End mills
Page	11	PCD Chamfer Tools
Page	12	PCD Polishing Tools
Page	13	PCD Engraving Tools
Page	14-15	Customized PCD tools
Page	16	Cutting Speed Recommendation
Page	17	Checklist for Customized PCD tools

PCD material is called Polycrystalline diamond, is a kind of new superhard material which is studied and researched in the 1970s. It can be sintered at a high temperature of 1400°C and high pressure of 6GPa.

The diamond grit that has been fused together under high-pressure, high-temperature conditions in the presence of a catalytic metal. The extreme hardness, wear resistance, and thermal conductivity of diamond make it an ideal material for the cutting tools manufacturing.

Polycrystalline diamond is not only a kind of new engineering material but also a kind of new functional material. It is not only a high-tech product but also a high-benefit product. With the development of modern industry and science and technology, polycrystalline diamond has been widely used in modern industry, national defense and high-tech fields because of its excellent mechanical, thermal, chemical, acoustic, optical and electrical properties.

what's the advantage of PCD tools?

The diamond cutting tool has become an indispensable tool in the modern cutting process, which is mainly shown in the following aspects:

1. High-speed cutting, high stability processing
2. Ultra-precision mirror processing
3. Dry cutting, clean machining

Common Applications for PCD:

- Aluminum and aluminum alloys
- Copper, brass and bronze alloys
- Zinc and magnesium alloys
- Carbon Fiber
- Epoxy resins
- Plastics
- Fiberglass composites
- Graphite composites

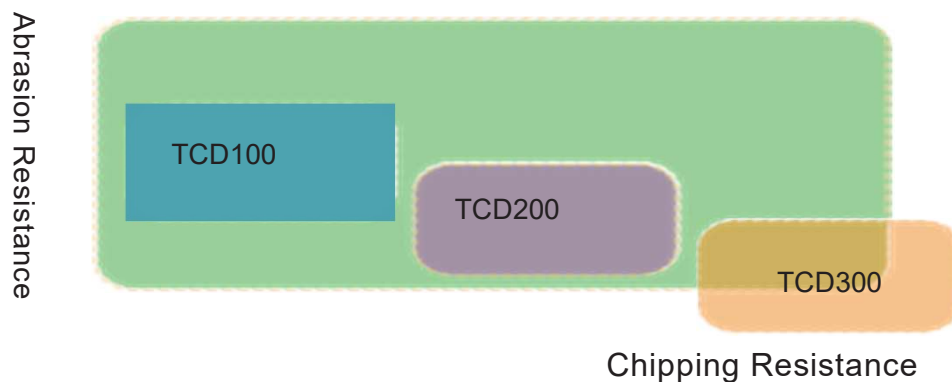


PCD Material Introduction

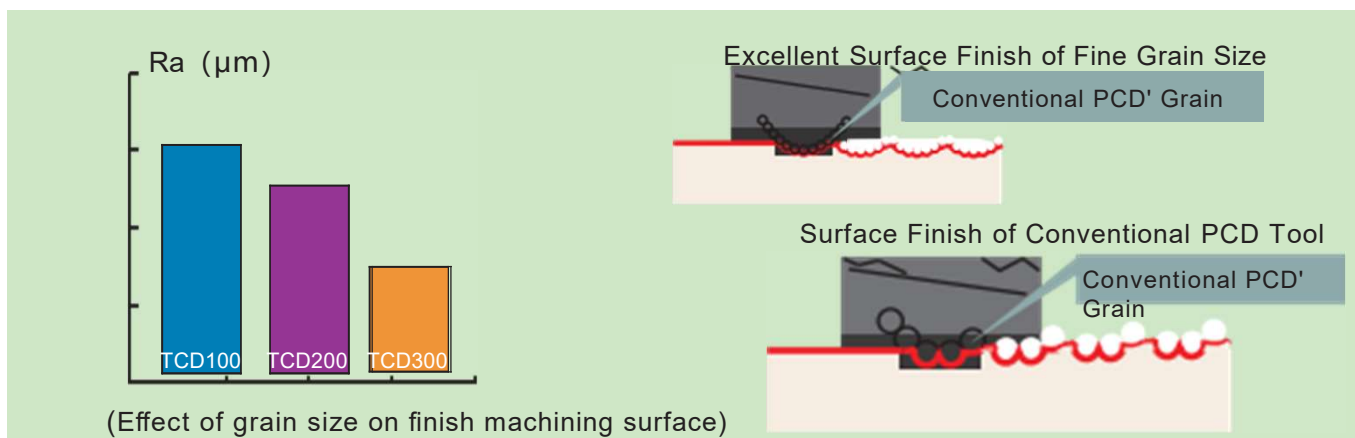
Application Recommendation

PCD Blank Grade	Particle Size (um)	Bond	Characteristics	Application
TCD100	10	metal	General PCD grade, with high impact resistance and very high wear resistance	suitable for aluminum alloy (Si<13%) and non-metal finishing turning, wood plank cutting off
TCD200	5	metal	General PCD grade, with high impact resistance and high wear resistance	suitable for ceramic, graphite, non-metal & wood turning
TCD300	2-30	metal	Excellent wear resistance, high thermal stability and high impact resistance through adopting mixed grains	suitable for aluminum alloy (Si>13%), MMC material (metal-matrix composite) based aluminum, sintered ceramic and rocks.

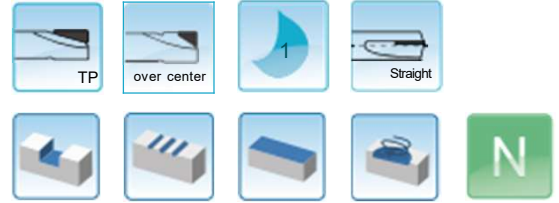
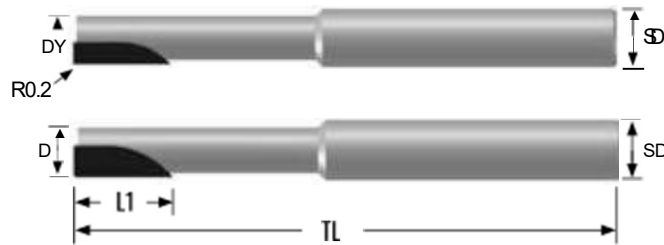
Micro-Structure of PCD Materials



PCD Grain Size Affects Roughness of Workpiece's Surface



PCD End Mill with Short Single Flute

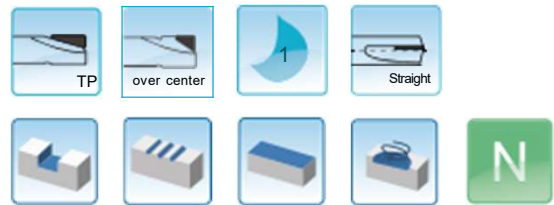


Order No.	D h7 [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDEM-SSF-003	3	4	60	4	1
PCDEM-SSF-004	4	6	60	4	1
PCDEM-SSF-006	6	8	70	6	1

*Other size can be customized

Order No.	D h7 [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDEM-SSFC-003	3	4	60	4	1
PCDEM-SSFC-004	4	6	60	4	1
PCDEM-SSFC-006	8	8	70	6	1

■ Blade over center



PCD End Mill with Long Single Flute

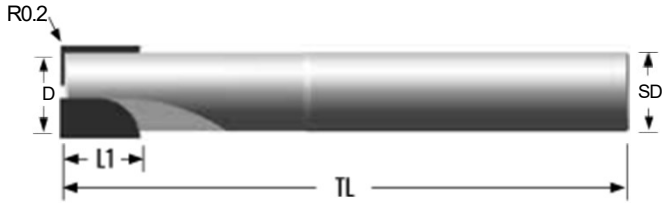
Order No.	D h7 [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDEM-LSF-003	3	6	60	4	1
PCDEM-LSF-004	4	10	60	4	1
PCDEM-LSF-006	6	12	70	6	1

*Other size can be customized

Order No.	D h7 [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDEM-LSFC-003	3	6	60	4	1
PCDEM-LSFC-004	4	10	60	4	1
PCDEM-LSFC-006	8	12	70	6	1

■ Blade over center

PCD End Mills with TWO Flutes short Blade

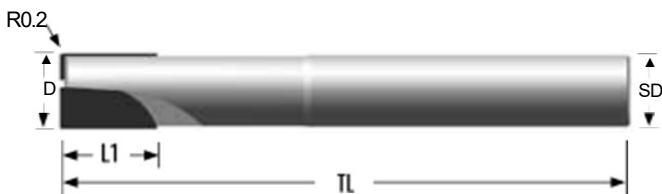


Order No.	D h7 [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDEM-TFS-003	3	6	60	4	2
PCDEM-TFS-004	4	6	60	4	2
PCDEM-TFS-005	5	6	60	6	2
PCDEM-TFS-006	6	7	60	6	2
PCDEM-TFS-008	8	7	70	8	2
PCDEM-TFS-010	10	7	80	10	2
PCDEM-TFS-012	12	7	80	12	2

*Other size can be customized

Order No.	D h7 [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDEM-TFS-014	14	7	100	14	2
PCDEM-TFS-016	16	7	100	16	2
PCDEM-TFS-018	18	7	100	18	2
PCDEM-TFS-020	20	7	110	20	2
PCDEM-TFS-022	22	7	110	22	2
PCDEM-TFS-024	24	7	110	24	2
PCDEM-TFS-026	26	7	110	26	2

PCD End Mill TWO Flutes short Blade one Blade over center

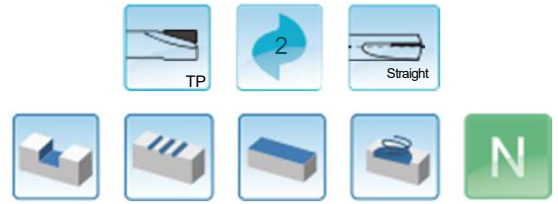
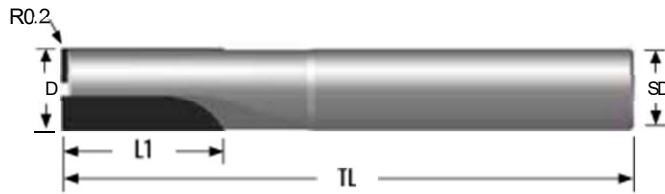


Order No.	D h7 [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDEM-TFSC-003	3	6	60	4	2
PCDEM-TFSC-004	4	6	60	4	2
PCDEM-TFSC-005	5	6	60	6	2
PCDEM-TFSC-006	6	7	60	6	2
PCDEM-TFSC-008	8	7	70	8	2
PCDEM-TFSC-010	10	7	80	10	2
PCDEM-TFSC-012	12	7	80	12	2

*Other size can be customized

Order No.	D h7 [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDEM-TFSC-014	14	7	100	14	2
PCDEM-TFSC-016	16	7	100	16	2
PCDEM-TFSC-018	18	7	100	18	2
PCDEM-TFSC-020	20	7	110	20	2
PCDEM-TFSC-022	22	7	110	22	2

PCD End Mill with TWO Flutes Long Blade

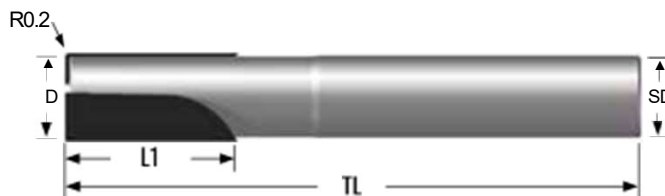


Order No.	D h7 [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDEM-TFL-003	3	12	60	4	2
PCDEM-TFL-004	4	12	60	4	2
PCDEM-TFL-005	5	12	60	6	2
PCDEM-TFL-006	6	12	60	6	2
PCDEM-TFL-008	8	12	70	8	2
PCDEM-TFL-010	10	12	80	10	2
PCDEM-TFL-012	12	12	80	12	2

Order No.	D h7 [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDEM-TFL-014	14	12	100	14	2
PCDEM-TFL-016	16	12	100	16	2
PCDEM-TFL-018	18	12	100	18	2
PCDEM-TFL-020	20	12	110	20	2
PCDEM-TFL-022	22	12	110	22	2
PCDEM-TFL-024	24	12	110	24	2
PCDEM-TFL-026	26	12	110	26	2

*Other size can be customized

PCD End Mills TWO Flutes Long Blade one Blade over center

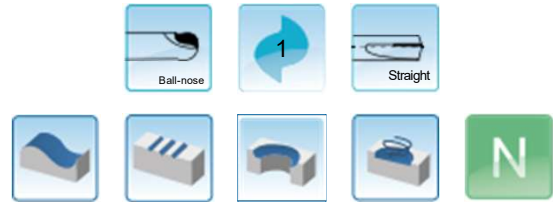


Order No.	D h7 [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDEM-TFLC-003	3	12	60	4	2
PCDEM-TFLC-004	4	12	60	4	2
PCDEM-TFLC-005	5	12	60	6	2
PCDEM-TFLC-006	6	12	60	6	2
PCDEM-TFLC-008	8	12	70	8	2
PCDEM-TFLC-010	10	12	80	10	2
PCDEM-TFLC-012	12	12	80	12	2

Order No.	D h7 [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDEM-TFLC-014	14	12	100	100	2
PCDEM-TFLC-016	16	12	100	100	2
PCDEM-TFLC-018	18	12	100	100	2
PCDEM-TFLC-020	20	12	110	110	2

*Other size can be customized

PCD Ball-nose Milling cutter with single flute

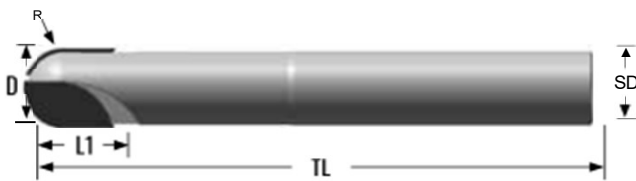


Order No.	D h7 [mm]	R [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDBN-1N-001	1	0.5	1	50	2	1
PCDBN-1N-002	2	1	2	50	2	1
PCDBN-1N-003	3	1.5	3	50	4	1
PCDBN-1N-004A	4	2	4	50	4	1
PCDBN-1N-004B	4	2	4	75	4	1
PCDBN-1N-006A	6	3	6	50	6	1

*Other size can be customized

Order No.	D h7 [mm]	R [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDBN-1N-006B	6	3	6	75	6	1
PCDBN-1N-008A	8	4	8	75	8	1
PCDBN-1N-008B	8	4	8	100	8	1
PCDBN-1N-010A	10	5	10	75	10	1
PCDBN-1N-010B	10	5	10	100	10	1
PCDBN-1N-012	12	6	12	100	12	1

PCD Ball-nose Milling cutter with two flutes

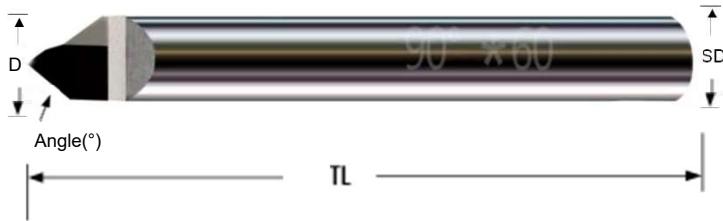


Order No.	D h7 [mm]	R [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDBN-2N-001	1	0.5	1	50	2	2
PCDBN-2N-002	2	1	2	50	2	2
PCDBN-2N-003	3	1.5	3	50	4	2
PCDBN-2N-004A	4	2	4	50	4	2
PCDBN-2N-004B	4	2	4	75	4	2
PCDBN-2N-006A	6	3	6	50	6	2

*Other size can be customized

Order No.	D h7 [mm]	R [mm]	L1 [mm]	TL [mm]	SD h6 [mm]	Z FLUTES
PCDBN-2N-006B	6	3	6	75	6	2
PCDBN-2N-008A	8	4	8	75	8	2
PCDBN-2N-008B	8	4	8	100	8	2
PCDBN-2N-010A	10	5	10	75	10	2
PCDBN-2N-010B	10	5	10	100	10	2
PCDBN-2N-012	12	6	12	100	12	2

PCD Chamfer Tools



- High grade PCD materials and sharpened edges for chamfering machining for Cast Aluminum, Aluminum-Silicon Alloy, Aluminum, PVC and Acrylic.
- Can process difficult-to-process workpieces
- High wear resistance, long service life.
- Excellent price-performance ratio, great value for money

Application	Chamfer Machining
Suitable Materials	Cast Aluminum, Aluminum-Silicon Alloy, Aluminum, PVC Acrylic
Tolerance	0.005-0.01mm

Order No.	D [mm]	TL [mm]	Angle [°]	SD h6 [mm]
D2×90°×4D×40L	2	40	90	4
D2×120°×4D×40L	2	40	120	4
D3×90°×4D×40L	3	40	90	4
D3×120°×4D×40L	3	40	120	4
D4×60°×4D×40L	4	40	60	4
D4×90°×4D×40L	4	40	90	4
D4×120°×4D×40L	4	40	120	4
D6×60°×6D×40L	6	40	60	6
D6×90°×6D×40L	6	40	90	6
D6×100°×6D×40L	6	40	100	6
D6×120°×6D×40L	6	40	120	6
D6×150°×6D×40L	6	40	150	6

Order No.	D [mm]	TL [mm]	Angle [°]	S D [mm]
*D8×90°×8D×50L	8	50	90	8
*D8×120°×8D×50L	8	50	90	8
*D10×90°×10D×100L	10	100	90	10
*D10×95°×10D×80L	10	80	95	10
*D10×135°×10D×100L	10	100	135	10
*D12×90°×12D×50L	12	50	90	12
*D15×90°×12D×50L	15	50	90	12

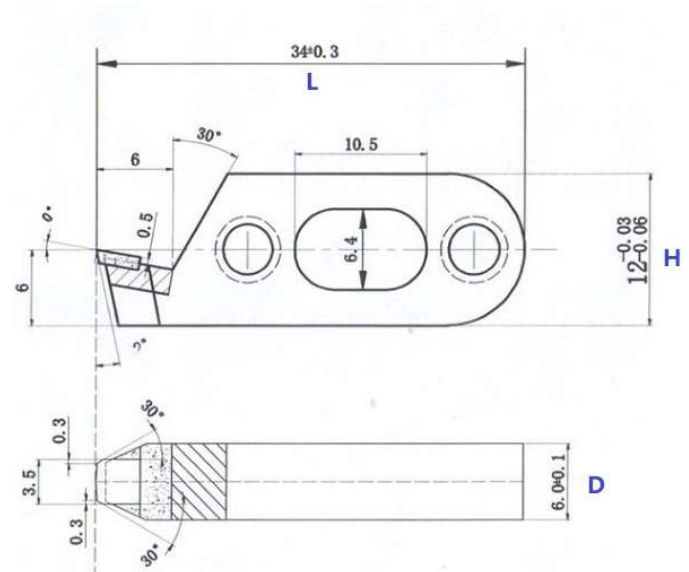
*HSS shank

@Other size can be customized

PCD and diamond polishing tools

- High grade PCD and diamond materials to meet bright finishing and mirror finishing machining effect for acrylic industry.
- Wide range of applications, suitable for any working conditions.
- Precision machining, high wear resistance, long service life.
- Excellent price/performance ratio, great value for money

Application	Polishing Machining
Suitable Materials	Acrylic, Glasses, Light guide plate
Tolerance	0.005-0.01mm



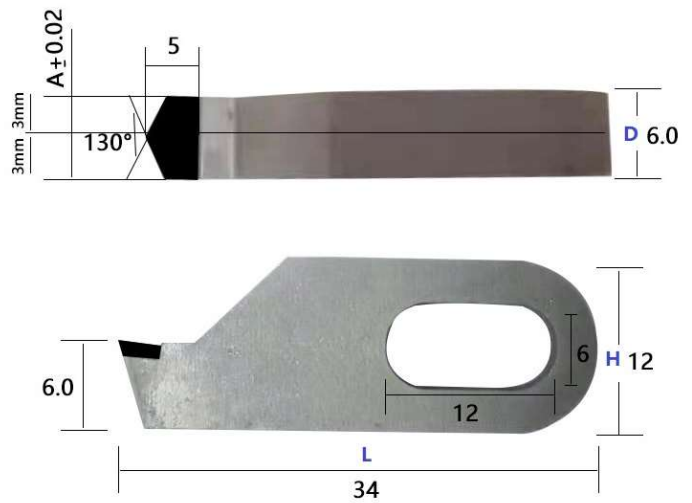
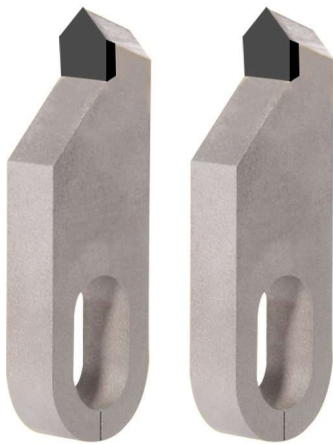
Order No.	L [mm]	H [mm]	D [mm]	R [mm]	Note
PCDP-34X12X6XR6 (PCD)	34	12	6	6	Roughing Polishing with PCD material
PCDP-34X12X6XR1.2 (PCD)	34	12	6	1.2	Finishing Polishing with PCD material
*MCDP-34X12X6XR10 (Diamond)	34	12	6	10	Mirror finishing Polishing with diamond material

@Other size can be customized

PCD Engraving tools

- High grade PCD materials and sharpened edges for engraving machining for non-ferrous metals, gold and silver jewelry and acrylic industry.
- Can process difficult-to-process workpieces.
- Precision machining, high wear resistance, long service life.
- Can be renewed many times, Excellent price/performance ratio, great value for money

Application	Engraving Machining
Suitable Materials	Non-ferrous metals, Gold and Silver Jewelry, Acrylic
Tolerance	0.005-0.01mm



Order No.	L [mm]	H [mm]	D [mm]	R [mm]	Cutting Angle [°]
PCDE- 34X12X6X130°XR0.05	34	12	6	0.05	130
PCDE- 34X12X6X130°XR0.1	34	12	6	0.1	130
PCDE- 34X12X6X130°XR0.2	34	12	6	0.2	130

@Other size can be customized



PCD special-shaped shovel tool

- Precision PCD special-shaped shove tool for Acrylic aluminum with fine surface.
- Innovative cutting-edge design reduces vibrations, leading to smoother operations and improved workpiece quality.

Application	Shovel and mill
Workpiece Material	Cast Aluminum, Aluminum-Silicon Alloy, Aluminum, PVC Acrylic
Tolerance	0.01-0.02mm



PCD Carving tools

- Special design for engraving machine.
- Extended edges, large depths, and axial spiral ensure reduced resistance and higher productivity.

Process	Chamfering, Carving and Milling together
Suitable Materials	Wood, PVC, Acrylic and Marble
Customizable	Yes



PCD forming tools

- Unified cutting-edge enhances stability and performance in the forming and profiling machining.
- Excelling with graphite, high-hardness composites, and pre-sintered ceramics, Acrylic, ensuring reduced tool changes.

Process	Forming, Profile Milling
Suitable Materials	Graphite, High-Hardness Composites, Pre-Sintered Ceramics, Wood, PVC, Acrylic
Specifications	According to the customer's requirement
Customizable	Yes



PCD Tipped Slotting Tool

- Customizable PCD slotting with R3, 4, 5, 6, 8, 10 tailored to individual client needs.
- Versatile slotting profile options, ideal for internal slot machining, with carbide or high-speed steel shank options.

Application	Internal and External Slot Milling, Form Milling
Suitable Materials	Aluminum, Aluminum-Silicon Alloy, Copper, Graphite, and other non-ferrous materials, Acrylic
Tolerance	0.005-0.01mm



PCD inner hole turning tool

- Long cutting edge and axial helix angle for efficient turning inner holes, optimizes chip evacuation.
- Tailored contour profile, longer tool life

Application	Turning for inner hole
Suitable Materials	Aluminum, Aluminum-Silicon Alloy, Copper, Graphite, and other non-ferrous materials
Tolerance	0.005-0.01mm



PCD flower style tools for glasses machining

- Customizable PCD flower style cutter for glasses industry. Precision-engineered with solid PCD welding to produce
- sharp finishing machining for glasses materials

Application	Forming and finishing milling
Suitable Materials	Glasses industry
Tolerance	0.005-0.01mm

Recommended cutting parameters

Material	Cutting Speed VC(m/min)	Feed Rate (fz/mm/u)			Coolant
		∅ 4~6	∅ 7~11	∅ 12~20	
Al-Alloys Si < 1%	150 - 6000	0.02 - 0.15	0.02 - 0.20	0.04 - 0.3	Emulsion
Al-Alloys Si < 12%	150 - 4000	0.02 - 0.15	0.02 - 0.20	0.04 - 0.3	Emulsion
Al-Alloys Si > 12%	150 - 2000	0.02 - 0.15	0.02 - 0.20	0.04 - 0.3	Emulsion
Magnesium Alloys	150 - 6000	0.02 - 0.15	0.02 - 0.20	0.04 - 0.3	Emulsion
Copper Alloys	150 - 5000	0.02 - 0.15	0.02 - 0.20	0.04 - 0.3	Emulsion
Brass Alloys	150 - 4000	0.02 - 0.15	0.02 - 0.20	0.04 - 0.3	Emulsion
Ti-Alloys	50 - 400	0.02 - 0.15	0.02 - 0.20	0.04 - 0.3	Emulsion
Graphite	150 - 3000	0.02 - 0.15	0.02 - 0.20	0.04 - 0.3	Emulsion
GFRP glass fibre composites	150 - 3000	0.02 - 0.15	0.02 - 0.20	0.04 - 0.3	Dry, Air pressure
CFRP carbon fibre composites	150 - 4000	0.02 - 0.15	0.02 - 0.20	0.04 - 0.3	Dry, Air pressure
PTFE	150 - 2000	0.02 - 0.15	0.02 - 0.20	0.04 - 0.3	Dry, Air pressure
Acrylic	150 - 1800	0.02 - 0.15	0.02 - 0.20	0.04 - 0.3	Emulsion
Thermoplastics, Duroplastics	150 - 1800	0.02 - 0.15	0.02 - 0.20	0.04 - 0.3	Emulsion





ToolingBox[®]

ToolingBox(Beijing) Industrial Technology Co.,Ltd
Rm503, Building A, Langting Plaza, No.8 Chaoyang
Road, Chaoyang District, 100024,
Beijing P.R of China

Phone: +86 10 5290 2905
Email: sales@toolingbox.com
Company Web: www.toolingbox.com
Online Store: www.toolingbox.store