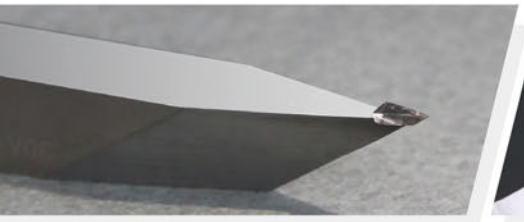
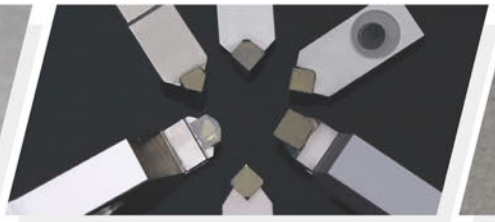
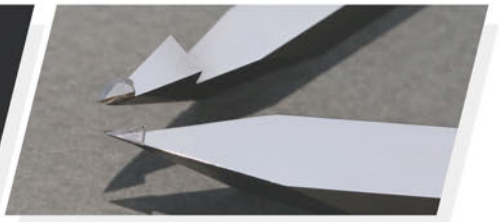
EHWA

Single Crystalline Diamond Cutting Tools SCD

A leading technology of super-precision machining

Electro Optics, Display , Medical (IOL, Contact Lens)

EHWA DIAMOND

Single Crystalline Diamond Cutting Tools

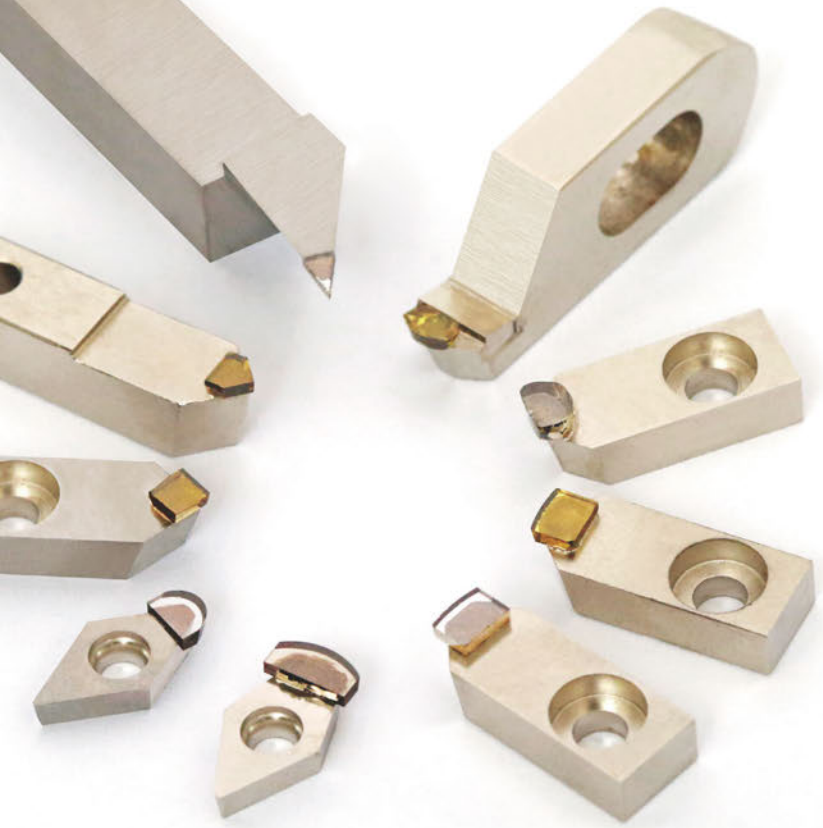
SCD / MCD Tools

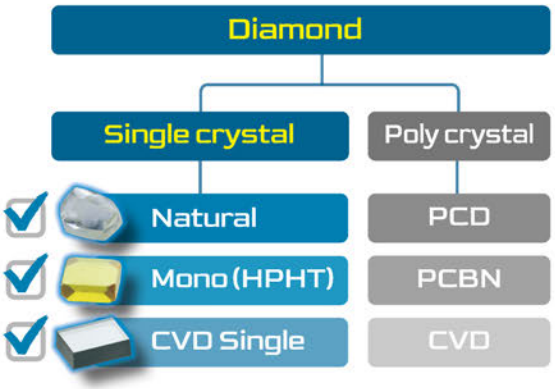
High Precision Cutting Tools with
Single Crystalline (Monocrystalline) Diamonds

Natural diamond

Mono diamond

CVD Single Crystal





Features

- High precision in cutting edge
- Suitable for machining non-ferrous materials
- Chipping-free cutting edge
- Consistent tool life & cutting ability
- Longer tool life than PCD and PCBN cutting tools
- Sharp cutting edge to enable burr-free machining
- Optimal design for every application

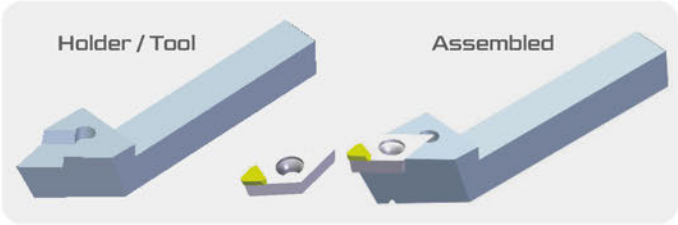
Precision Tooling For

Medical Industry

Contact Lens

SCD tools are the best choice to achieve excellent surface roughness on both outer and inner surfaces of contact lens by mirror surface finishing process.

EHWA's contact lens machining tools are free from scratches and burrs on the contact lens that may occur during finishing process. Customers can save cost by EHWA's re-grinding(re-lapping) service and prompt action.



Features

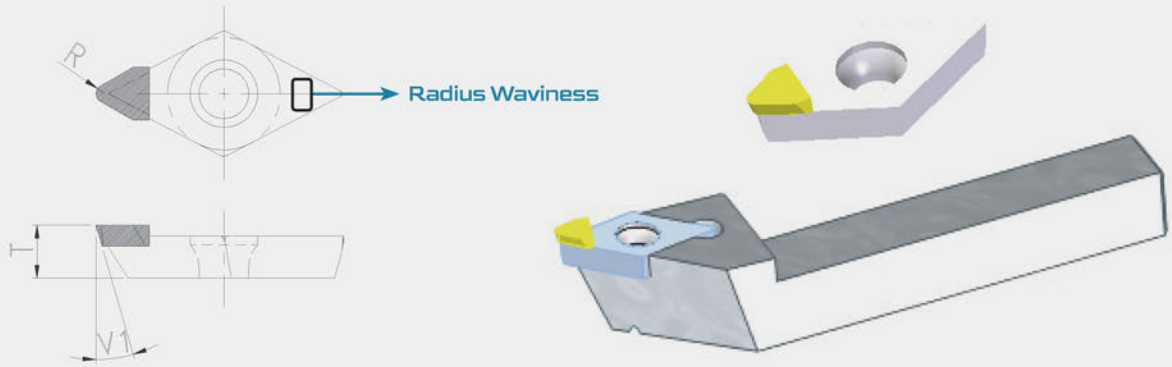
- Chipping-free at x1,000 microscope
- Consistent quality
- Longer tool life
- High vacuum brazed diamond tip

Spec.	Option
Diamond	Natural, Synthetic
Tool Type	Insert type, Solid type
Waviness	Controlled, Non-controlled
Clearance Angle (1st)	Cylindrical, Conical

Precision Tooling For

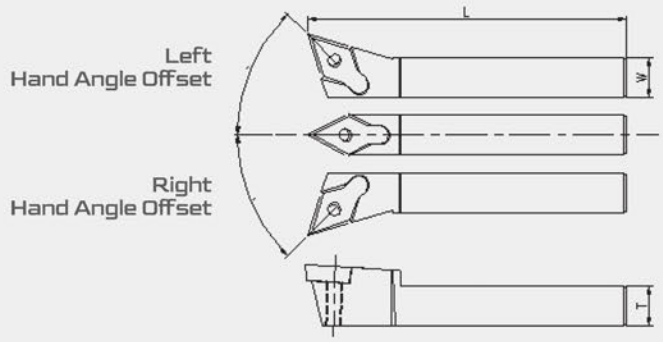
Medical Industry

Specification Of
Contact Lens Tool



Material	Insert Type	Radius	Clearance Angle	Clearance Type	Contour (Waviness, ㎛)
EN : Natural EM : Mono(HPHT) EV : Mono(CVD)	D : 55° DCGW0702 DCMW11T3 V : 35° VCGW1103	R025 : R0.25 R03 : R0.3 R05 : R0.5	CA10 : 10° CA12 : 12° CA15 : 15° CA16 : 16° CA18 : 18°	CO : Conical CY : Cylindrical	Controlled W005 : ≤0.05 W01 : ≤0.1 W02 : ≤0.2 W03 : ≤0.3 W05 : ≤0.5
Single Crystalline (110) 2pt diamond	Special	0.1~1.0 available for contact lens tool	CA01~20 available for contact lens tool		Non-controlled Depending on radius & clearance type

EX) EV-D-R03-CA15-CO-W03
: MONO CVD, DCGW0702 INSERT, R0.3, Clearance Angle 15°, Conical Type, Waviness 0.3㎛



Holder System (Center / Right / left)

- ✔ Available for both solid and insert type
- ✔ Available in adjusting body length and thickness
- ✔ Tungsten Carbide shank

Precision Tooling For

Medical Industry

Specification Of
IOL-Intraocular Lens

For years, EHWA has developed the cutting tools for IOL machining to meet various requirements.

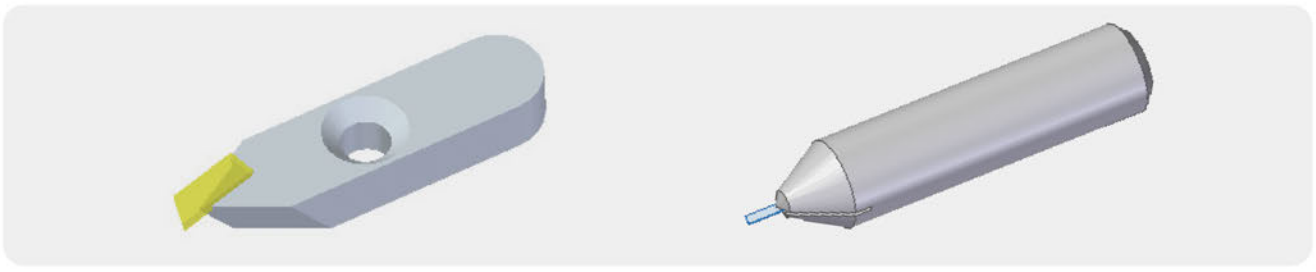
EHWA's SCD tools for IOL machining provide:

· Turning solution for machining aspheric surface
· Endmilling solution for machining step-shape surface
- Highly precise machining by meticulous location of diamond

Features

- Chipping-free at x1,000 microscope
- Consistent quality
- Optimal accuracy in size
- High vacuum brazed diamond tip

Spec.	Option
Diamond	Natural, Synthetic
Shank	Insert type, Solid type
Processing	Turning, Milling
Clearance Type	Cylindrical, Conical

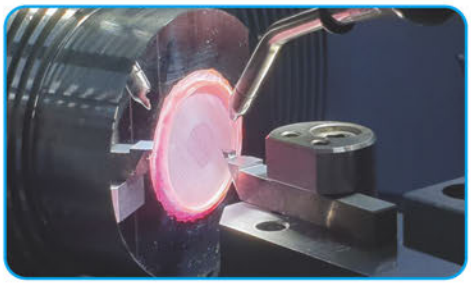


Precision Tooling For

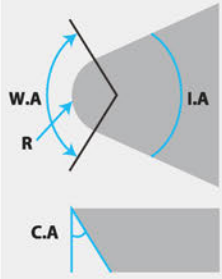
Electro Optics Industry

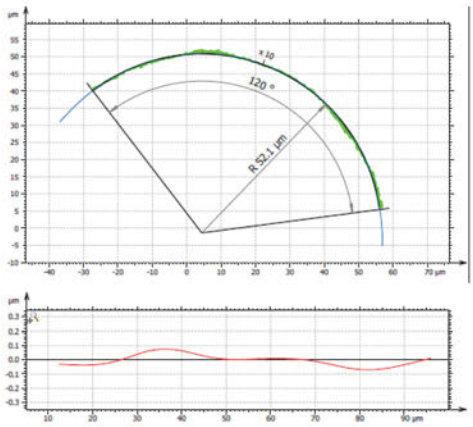
Plastic Aspheric Lens

SPC (Super-Precision Cutting tools) maximize the property of single crystal diamond, and are widely used in electro optics industry.
EHWA can meet Nose R waviness less than 50nm for highly accurate contour of super-precision lens mold for plastic aspheric lens.



SPC (Super-Precision Cutting tools) Specification

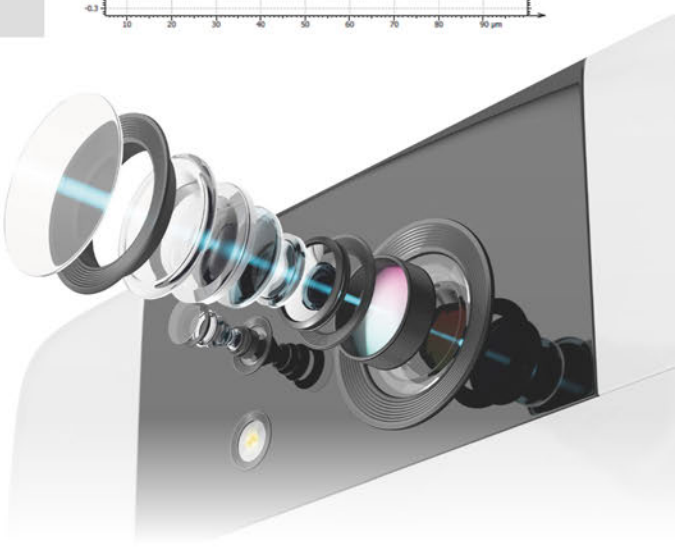
Shape	Spec.	Standard	Special
	Radius	0.01~1.0mm	<0.01mm
	I.A : Included Angle	≥30°	<30°
	W.A : Window Angle (or Effective Angle)	≤100°	>100°
	C.A : Clearance Angle (or Relief Angle)	≤15°	>15°
	Waviness (Contour Accuracy)	≤0.3㎛ (300㎚)	≤0.1㎛ (100㎚)
	Clearance Type	Cylindrical or Conical	



* Please contact separately for customized design.

Features

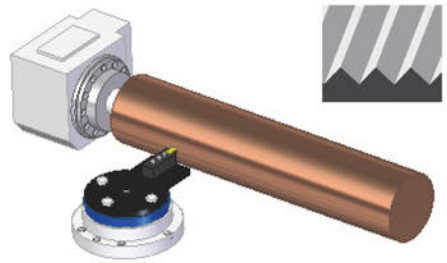
- Performing mirror surface
- Chipping free at x1,000 microscope
- Waviness of cutting edge less than 50 nm available
- Consistent quality
- Longer tool life
- High vacuum brazed diamond tip



Precision Tooling For

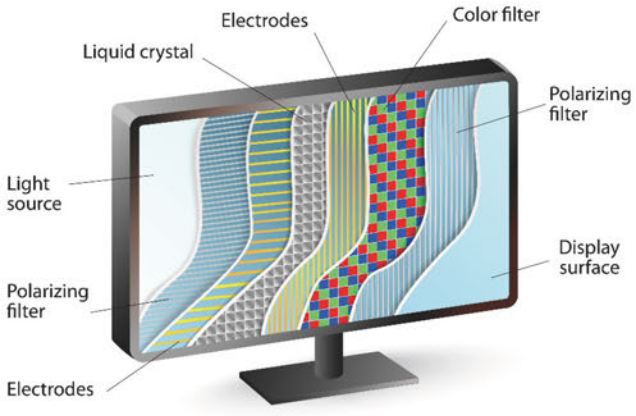
Display Industry

Light Guide Panel / Polarizing Film / Prism Pattern Film



EHWA has developed cutting tools for machining LCD display films (LGP, Polarizing, Pattern film), which are the most important components in LCD monitor.

EHWA's SCD tools are the best choice to achieve mirror surface and to machine large copper rolls for pattern films



Features

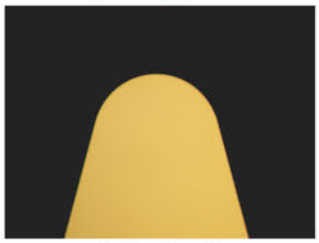
- Chipping-free at x1,000 microscope
- Ideal design considering diamond orientation
- Mirror surface finish and burr-free
- Consistent quality
- Longer tool life
- High vacuum brazed diamond tip

Precision Tooling For

Pattern Machining Industry

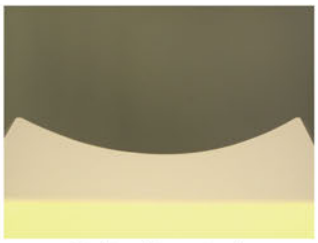
EHWA's SCD TOOL can supply custom-made special tools that can be pattern-machined to the shape the customer requires. It is largely classified into Shaping, Grooving, Imprinting tools, etc., and can implement all shapes related to patterning.

Shaping - Radius



Radius (Small)

Radius (Large)



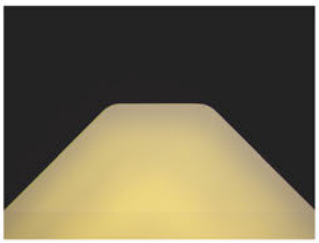
Radius (Engraving)

Grooving - Anglewise

V-shaped

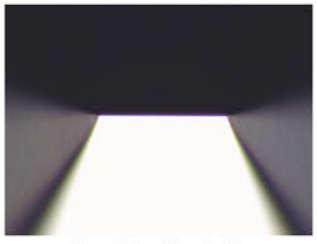
Groove (Micro)

Groove chamfer



Chamfer with radius edge

Imprinting



Punching (Angled)

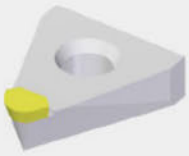
Punching (Cone)

Precision Tooling For

Optic Lens Industry

The representative item of EHWA SCD TOOL is the glasses lens tool. We are supplying quality products to all parts of the world, and we can meet the capa your customers require. It is offered at a competitive price, and additional competitiveness can be secured through the re-grab service.

Equipment used (Satisloh)

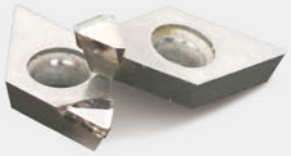
			
Machine	Satisloh VFT	Satisloh	Satisloh
Part Number	92-007-626	92-06-3012	Single crystalkine insert
Description 1	Single crystalline insert	Single crystalline insert	R2.0 (Twin hole)
Description 2	R 2.0	R 2.0	120° window abgle

Equipment used (Schneider)

		
Machine	Schneider	Schneider
Part Number	DB-07-2003	DB-07-2003
Description 1	Single crystalline insert	Single crystalline insert
Description 2	R 2.0	R 2.0
Description 3	120° Window angle	90° Window angle

SCD Tool Design

Diamond Material / Geometry / Shank Type

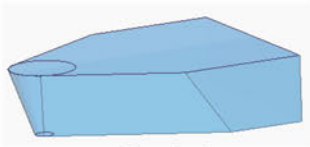


N	R003	IA30	CA15	CY	WV01	D

Diamond	Radius	Included Angle	Clearance Angle	Clearance Type	Waviness
Natural	Standard : 0.1≤R≤10	Standard : 30°≤I.A.≤180°	0°≤C.A.≤25°	CY : Cylindrical	≤0.05㎛ (50㎚)
Mono					≤0.1㎛ (100㎚)
SCVD	Special : 0.0005≤R<0.1	Special : I.A.<30°		CO : Conical	≤0.3㎛ (300㎚)
					≤1.0㎛
					≤2.0㎛

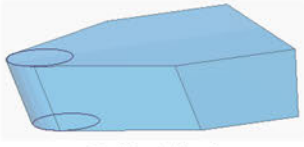
Symbol	Shape
C	80°
D	55°
S	90°
T	60°
V	35°
X	Special

Clearance Type



Conical

- ✔ Highly precise contour by true circular shape
- ✔ Relatively weaker geometric structure
- ✔ Re-grinding reduces radius



Cylindrical

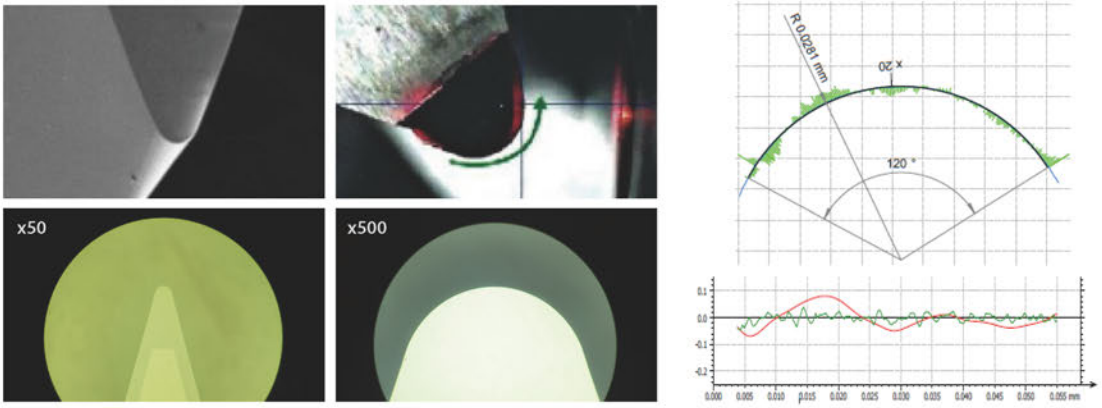
- ✔ Elliptical effect
- ✔ Relatively stronger geometric structure
- ✔ Consistent radius after re-grinding

Inspection System

Microscope / SEM / 3D Roughness Measurement

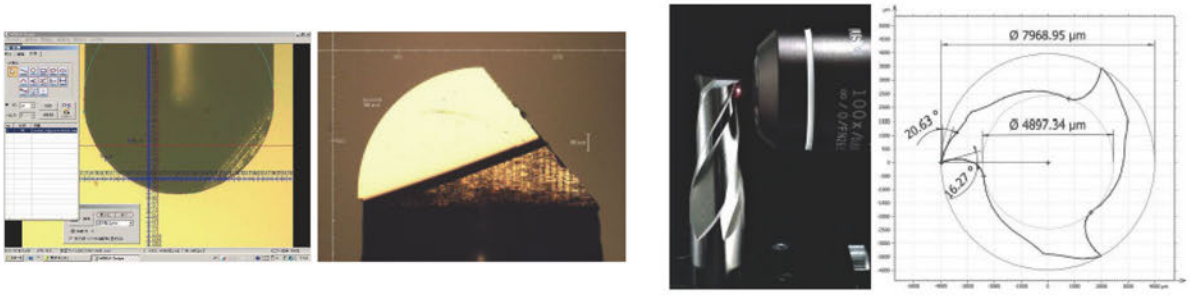
EHWA provide multi-function measurement such as contour accuracy, roughness, precise profile and other dimensions

Cutting Edge Inspection and Measurement System



Measuring and analyzing the waviness of cutting edge with SEM and 3D measuring machine

Rotating Tool Inspection and Measurement System



Precise analysis of profile by 3D measuring machine

Test Data

EHWA SCD Cutting tool TEST Information

Custormer		End_user	
Workpiece	Part name	Hardness	HRc / HRb / HB
	Material *	Roughness	Ra / Rz / Rmax
Work figure Drawing			
Machine	M.C.T ☐	C.N.C turnig / milling ☐	
	Manual ☐	Machine maker	

Cutting data

Speed (V)		(m/min)
RPM (N)		(rev/min)
Feed (F)		(mm/rev)
		(mm/min)
D.O.C * (Depth of cut)		(pass)
		(mm)

Cutting condition

Continuous *	Continuous ●	☐
Interrupt *	Light ●	☐
	Medium ●	☐
	Heavy ●	☐
Coolant*	Dry	☐
	Wet (Inner/Out)	☐

Tool Information

Tool material *	SCD Natural	☐
	SCD SCVD	☐
	SCD Mono	☐
	PCD	☐
	PCBN	☐
	CVD	☐
	Others	☐
Shank *	Tungsten Carbide (T.C)	☐
	STEEL	☐
	T.C+STEEL	☐
	SUS	☐
	Titanium (Ti)	☐
	Others	☐

SPEC *		
Competitor *		
Tool life		(time)
		(EA)
Operation *	Turning	☐
	Milling	☐
	Boring	☐
	Grooving / Cutting	☐
	Reaming	☐
	Endmilling	☐
	Drilling	☐
	Wearless	☐
Need to be determined *		☐

GLOBAL NETWORK

EHWA diamond tools serve as a promoter of globalization

Since 1975, EHWA DIAMOND has been growing by developing long-term partnerships with customers worldwide and across the industries. EHWA is tirelessly striving to provide the very best customer satisfaction through continuous product innovation and world class service.

Korea


Osan (HQ)


Osan 2


Dongtan (R&D)


Pyeongtaek


Seocheon


Cheongju

Global location


China (Shanghai)


China (Weihai)


China (Fujian)


Indonesia (Jakarta)


Vietnam (Bac Ninh)


Vietnam (Hai Duong)


USA (Irvine) (Affiliate)


USA (Alabama)


Japan (Nagoya)

Thailand (Bangkok)

Germany (Frankfurt)


India (Chennai)


Mexico (Monterrey)

Italy (Massa)

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Printed by Ehwa diamond / 2024. 07