



## MCD – Monocrystalline Diamond

Developed using HPHT technology (high pressure, high temperature), the manufacture of synthetic monocrystalline diamond is achieved by combining a mixture of carbon and transitional metals at very high pressures and temperatures.

Properties: Excellent thermal conductivity and good wear resistance & repeatability of chemical, physical and thermal characteristics.

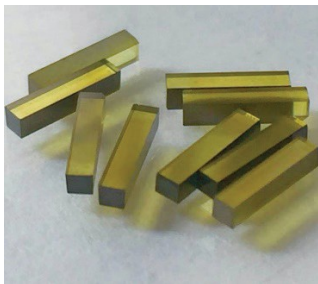
Shapes available: Topped octahedron shapes, rhombic-dodecahedron shape or simply plate like crystals.

Color: Yellow

Qualities: The rough synthetic stones are carefully sorted into various qualities and grades. Each grade reflects either our grade 1 flawless crystal or grade 2 & 3 with various levels of internal inclusions

### Chemical and physical properties

Hardness	10,000 kg/mm <sup>2</sup>
Density	3.51 g/cm <sup>3</sup>
Young's modulus	1.22 Gpa
Index of refraction at 650 nm	2.41
Thermal conductivity	1200 W/mK
Optical transmissivity at 650 nm	65%
Wear resistance	up to 15% higher than natural diamond
Complete impurity absorption	450-500 nm



Above are Typical MCD products from our range.

Dimensions available are all sizes up to 8mm x 8 mm x 1.60-1.70 mm Our MCD is supplied in 100 orientation (4-point diamond)

The required dimensions always depend on the customer's application. In general EID delivers diamonds with diameters up to 5 mm. The weight is shown in carats.



## Types of Mono Crystal Diamond Cutting Tools



Above are some typical mono crystal cutting tools.

### **Mono crystal diamond cutting tools are suitable for processing many materials:**

Including gold, silver, copper, copper alloys, aluminum, aluminum alloys, beryllium alloys, oxygen-free copper (OFC), electroless nickel, graphite, glass, plastic, ceramics, un-sintered cemented carbide, Various fiber and particle reinforced composite materials, rubber and various wear-resistant wood (especially solid wood and plywood, MDF and other composite materials)

### **Advantages of MCD Cutting Tools**

- High hardness and wear resistance
- High efficiency and low cost
- High surface finish can be obtained on your workpiece

Mono-crystal diamond tools are often used for machining high - precision parts with mirror finish. The mono-crystal diamond tools can achieve excellent cutting edge by grinding. The surface finish can reach 0.025 micron or higher.

### **Applications of Mono Crystal Diamond Tools**

**Optical industry:** Optical lenses, (aspheric) spherical lenses, optical glass, optical molds, mirrors, etc.

**Printing industry:** roller mold.

**Automotive industry:** night driving optical system, projection lights, aluminum alloy wheels.

**3D industry:** mobile phone outer mirror/button mirror/torch outer mirror, computer hard disk substrate.

**Electronic appliances:** computer hard disk substrate.

**Defense industry / aerospace:** navigation gyro for missiles.

**New materials:** ceramics, engineering plastics.

**Medical equipment:** contact lenses, accelerator electron guns.