

Mono

Monodite MCC 110

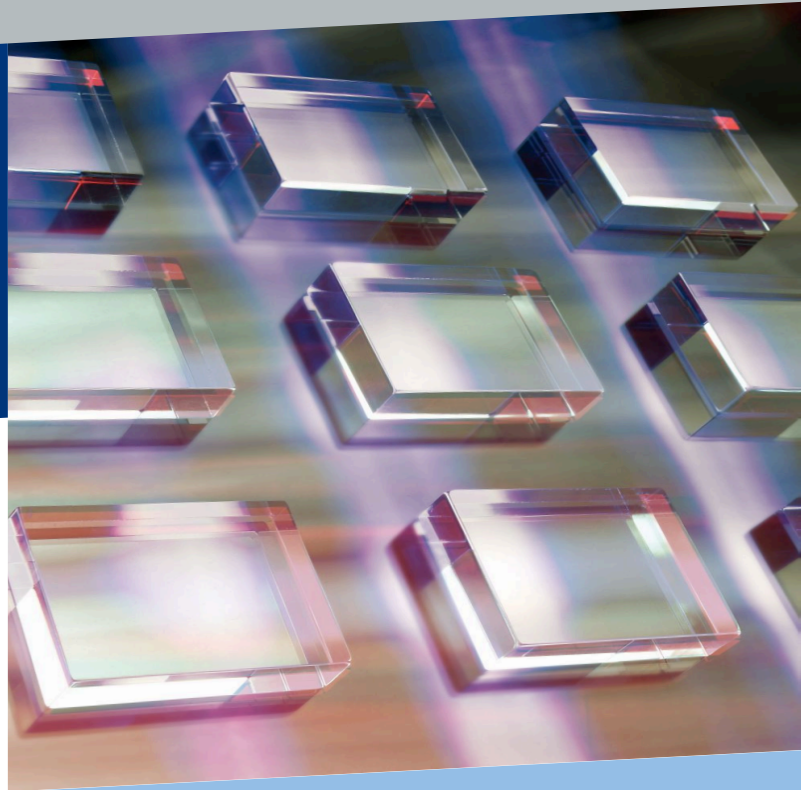
Element Six announces the availability of single crystal CVD diamond cutting tool blanks, Monodite MCC 110.

Element Six introduces a new premium product to the Mono range of synthetic single crystal diamond products for cutting applications. The unique combination of wear resistance, chip resistance and high thermal conductivity gives Monodite MCC 110 the ability to generate high quality surface finishes on abrasive workpiece materials.

Monodite MCC is produced by a chemical vapour deposition (CVD) process from an energised mixture of hydrogen and carbon gases and is available in rectangular shapes to a maximum cutting edge length of 4.5 mm.

PROCESSING

As with any single crystal material from the Mono range, diamond products from the Monodite series can be processed using standard manufacturing technologies such as laser cutting, polishing, brazing and grinding. Being an engineered single crystal diamond material, Monodite MCC can be produced with a consistent nett size which will considerably reduce fabrication times in tool production. The high chemical purity and consistency in terms of its mechanical properties provide potential advantages in processing this material.



Advantages

- Superior edge quality for ultra-precision machining applications.
- Extreme wear resistance in abrasive applications.
- Improved ease of fabrication.
- Excellent chip resistance.
- Highly consistent material properties.
- Available in two-point crystal orientation.
- High thermal conductivity.
- Low thermal expansion.
- High chemical purity.

ORIENTATION

Standard products are rectangular plates of diamond sawn in the two point crystal orientation. These plates have one edge polished on the four point plane parallel to the two point direction (Fig 1.). The material can be supplied on request in other shapes cut from plates with either two point or four point orientation.

APPLICATIONS

Applications for MCC include the machining of highly abrasive workpieces such as MMC's, GRP's and high Si-Al's. It is also suitable for precision machining applications where a high tolerance and surface finish are required (oxygen-free Cu, electroless Ni, Al) as well as the machining of ceramics and polycarbonates.

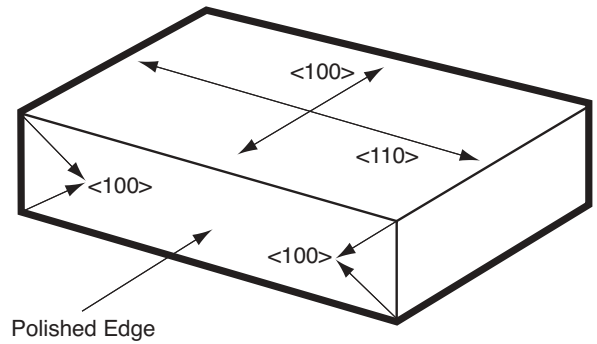


Fig. 1 The standard orientation of MCC 110.

PERFORMANCE

Fig. 2 shows that, because of its high purity, MCC has superior chip resistance and abrasion resistance compared to other single crystal diamond products. This expands the window of operation for single crystal diamond and allows for higher material removal rates to be achieved in application.

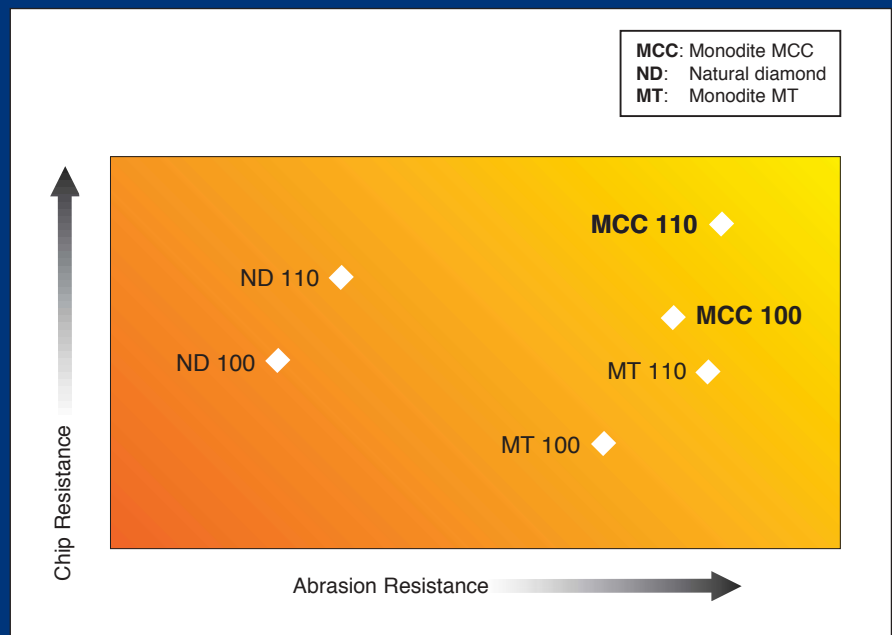


Fig. 2 Chip resistance versus abrasion resistance.