



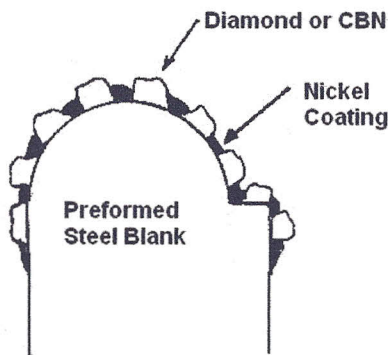
Diamond and CBN Electroplated Tooling

Tech Sheet # 15

Are They The Right Choice for You?

What is Electroplated Diamond and CBN Tooling?

Electroplated diamond and CBN tools are unique, in that unlike other bonding systems, (resin or metal bonded), there is only a single layer of abrasive on its cutting or grinding edge. The abrasive is held in place on a preformed steel blank using a hard nickel electroplating process. During manufacture, this nickel plating is built up around the crystal, to approximately 50% of the crystals' height. This high exposure of the diamond or CBN abrasive offers some very real advantages over more typical bonding methods.



When to Use Electroplated Tooling — The Advantages

Since there isn't any bond to clear away to expose new cutting crystals, plated superabrasive tools are ideally suited for difficult to work with materials. Diamond plated tools are commonly used on fiberglass, aerospace composites, friction material, glass, carbon, carbide, natural and synthetic marble. CBN plated tools are successfully used on tough steels such as D2, stainless, Inconel, Stellite and Hastelloy, to name just a few.

With the abrasive fully exposed and ready to work, plated tools are extremely fast and free-cutting. The result—high material removal rates with no wheel dressing required.

A second advantage of the plated bonding system is its' ability to maintain a consistent form and diameter. Once the form has been machined into the tool blank, and then coated with abrasive, it keeps its' same dimensions throughout the life of the tool. Tight tolerances, including complex forms can be maintained, even after thousands of parts ground.

Substantial savings can be achieved by recycling your exhausted wheel blank.

In most cases, it can be returned to your supplier to be stripped and re-coated with a fresh layer of abrasive. In addition you may choose to manufacture your own tool blank for abrasive coating.

When Not to Use Plated Tooling

Electroplated diamond and CBN tooling is not the choice when surface finish is critical. Typically the best finish available is in the range of 12-15 RMS. There is minimal edge breakdown of the superabrasive crystal under use, so while this gives the tool its long life and form holding ability, it doesn't allow fine finishes to be realized.

The user of a plated tool must also ensure that their grinding spindles are in good shape, with minimal runout. With only a single layer of abrasive, plated tools cannot be dressed to run true.

In conclusion, electroplated superabrasive tooling is not intended to replace other bonding systems in every application. It should be considered when an aggressive cutting or grinding action is required on difficult to grind materials, or when precise forms are required.

Used correctly, a single layer of abrasive goes a long way.

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