

CBN Grinding Wheels

(A quick primer) by Bob Roehrig

CBN (Cubic Boron Nitride) has been around in industry for a long time. It was developed in 1957 by General Electric. In 1969 GE adopted the name Borazon as its trademark for the material. Borazon (CBN) is a crystal created by heating equal quantities of Boron and nitrogen at temperatures greater than 1,800 degrees F. Colors range from black to brown and gold. It is one of the worlds hardest materials along with various forms of diamond.

Prior to the production of Borazon, diamond was the preferred abrasive used for grinding very hard super alloy's. Problem was that it could not be used effectively on steels because carbon tends to dissolve in iron at high temperatures. Aluminum Oxide was thus the conventional abrasive used on hardened steel tools.

Borazon or CBN replaced Aluminum Oxide for grinding hardened steels due to its far superior abrasive properties. CBN can withstand temperature greater than 2,000 degrees Fahrenheit, much higher than that of pure diamond at 1,600 degrees Fahrenheit. CBN wheels can grind more material, to a higher degree of accuracy than any other abrasive. CBN wheels consist of a metal body which is coated in an electro galvanic process with a layer of CBN grain.

An excellent article written by Bill Neddow appears in the April 2011 issue of American Woodturner Magazine put out by the AAW (American Association of Woodturners). I highly recommend one to read this article. Bill not only talks about CBN wheels, but also discusses and compares other types such as Diamond and Aluminum Oxide. Other very pertinent information to grinding is also covered in this article.

Why CBN?

Below is a list of advantages of CBN wheels vs. Aluminum Oxide. Please also note: wheels are made in different countries of origin. These include China, Japan, Austria, South Korea, Taiwan and the United States. Always ask the manufacturing origin.

- SAFETY: wheels cannot blow or burst
- Side of wheel is safe to use
- No dressing of wheel required thus wheel stays the same diameter forever.
- Do not have to measure for wheel wear thus no changes in bevel concave.
- CBN removes more heat from your tool so is less likely to burn or blue your tool.
- No balancing.....always runs true

Wheel Costs

Wheels can cost anywhere from \$238.50 for one to \$249.50 for a pair. Shop around