



Coating width:

The greater the contact area is, the smaller the abrasive coating width should be. If it is too wide, it will cause excessive grinding heat and thus reduce the rate of abrasion resulting in longer grinding time. Besides, an abrasive coating that is too wide can rarely be used to its full extent.

The coating should be used over its entire width. In mechanical grinding, this is achieved by the feed movement of the work piece or of the grinding wheel. In cup and dish grinding, narrow coatings permit quicker and cooler grinding. In offhand grinding with a support, a wider coating is better as it enables better guiding.

2.1. Coating specification

As with conventional grinding wheels, the specification contains the necessary data regarding grain type (diamond, CBN), grain size, concentration and bond.

e.g. D 46 – C3 – SN
B126 – C4 – SN

If the specification is not known, the following questions must be answered:

- **What will be ground?**
What material and workpiece..
- **How will grinding be performed.**
Details of the grinding process, e.g. tool grinding, internal or external cylindrical grinding, surface grinding, dry or wet grinding. Machine / workpiece, speeds ect.
- **Which requirements will be made?**
Details regarding surface finish, dimensional accuracy, grinding time, etc.

3. MATERIALS AND CHOICE OF ABRASIVES

- **With diamond:**
Carbide Metals(Tungsten Carbide)
Natural and artificial stone
Gems and semi-precious stones
Glass, porcelain, quartz
Silicon Carbide
Graphite carbon
Plastics, fibre-glass-reinforced plastics
- **With boron nitride (CBN)**
High-speed steel tools (HSS), Tool steels
High-alloy tool steels
Chromium steels (12% Cr)
Stellite
Chilled cast iron

4. Selection criteria for finding the correct wheel specification.

4.1 Choice of grain quality

In addition to natural diamond – long known as the hardest abrasive – synthetic diamond is used in most cases today. This type of diamond has different grinding characteristics depending on the manufacturing process and its crystalline structure.

Cubic Boron Nitride (CBN) is the next hardest abrasive. It should be noted that it is not affected by temperatures up to approx. 1200 C unlike diamond. Owing to these characteristics and the fact that its thermal conductivity is also high, CBN has high stock removal capacity with short grinding times combined with a long working life.

4.2 Choice of grain size

The size of the grain determines stock removal capacity of diamond and CBN wheels as well as the surface finish of the work piece that can be attained. Coarser grains enable greater grinding performance, finer grains increase the finish quality, but decrease the stock removal capacity.