



Depending on the contact conditions and the size of the surface to be machined, we recommend the following grains:

Rough grinding	D126 – D181
Finish grinding	D107 – D76
Fine and precision grinding	D54 – 20 mic

4.3 Choice of bond

The bond has a important influence on grinding performance but also on the life of the wheel. The bond determines whether a diamond or CBN wheel grinds cool, with a good grip, with a high stock removal rate and low contact pressure, but with a shorter useful life or harder, with increased heat, with a lower stock removal rate and high contact pressure, but with a longer useful life.

Recommendations for bond selection:

- a) hard bond:** narrow grinding coatings
long working life
requiring a specific profile
wet grinding
- b) soft bond:** wide grinding coatings
work pieces sensitive to heat
dry grinding

A bond which ensures an economical ratio between wear and stock removal is the most suitable for the job.

Influences of the bond on the diamond or cubic boron nitride wheel surface:		
Grains protrude from out of the bond – large chip clearances – ideal conditions.	Wear of bond too great, grains pull out too early. Causes: bond too soft, grain too fine, concentration too low.	Wear of bond too low, insufficient stock removal. Causes: bond too hard, grain too coarse, concentration too high.

Choice of concentration.

The efficiency of diamond and cubic boron nitride wheels depends on the concentration. The concentration figure specifies the proportion of diamond or CBN in the abrasive layer.

High concentration (100 to 125) if:

- profile grinding, form holding, slitting.
- coarse grit (D252)
- small contact areas
- hard bond

Standard concentration (50 to 75) if:

- surface grinding, cylindrical grinding, tool grinding, internal grinding.
- finer grit (D76)
- higher coating widths

Low concentration (less than 50) if:

- polishing
- special process, large contact areas
- extremely fine grits (30 micron and finer)

Concentration	Diamond Carats / cm ² of bond	CBN carats / cm ² of bond
50	2.2	2.09
75	3.3	3.13
100	4.4	4.18
125	5.5	5.22

GUIDELINES FOR THE USE OF RESINOID BONDED DIAMOND AND CBN GRINDING WHEELS

To ensure efficient and economical performance, diamond and CBN wheels must not only be of the correct shape and specification, but also be used correctly.

1. Machine and grinding wheel:

Results may differ from machine to machine. Machine vibration affect the surface quality and reduces the performance and the working life of the wheel.