

# Electroplated Bond

Grinding Wheels



# Basics of Electroplated Bond

Normally for electroplated bonds a single layer of abrasive grain is applied. The abrasive grains are usually sprinkled on the wheel body and held in place by a metallic matrix.

Since Nickel Is used as the bonding material, it lends its basic properties to the wheel:

- Hardness
- Toughness
- Adhesive force
- Resistance to wear

These properties can be offered in a wide range of variants by using different metallic and non-metallic additives.

## The advantages of the Electroplated Bond

The numerous grits projecting from the bonding matrix lend a lot of advantages for the electroplated bonded wheels.

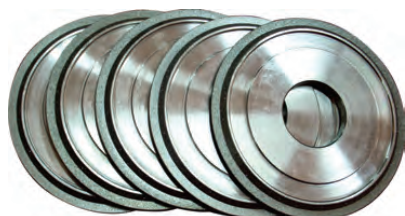
- Ability to grip firmly
- Extremely high grinding performance
- Can grind even strong ductile materials
- Have a tool life of 15 to 100 ground meters depending on grit size and grinding conditions

Often the finished surfaces are somewhat rougher than those ground with the same grit size In bonds such as resin bond, metal bond or vitrified bond.

An improvement of the surface comes gradually with the microcrystalline wear of the grit points and the increase of cutting edges so that the electroplated grinding tool is always characterized by the variation of the achievable surface quality over the total service life.

## Characteristic of the Electroplated Bond

- Single grit layer in an extremely stable bond
- High geometric and proportion precision
- Extremely high grinding performance
- High abrasiveness due to high grit protrusion
- Very good dressing behavior
- Body can be re-plated several times
- Long tool life
- High geometric stability
- No dressing procedure necessary
- Statistic grit arrangement on the steel body.



# Electroplated Bond - Surface Finish and Material Removal Rate (Q') & Tool Life (Z')

Grit Size	Layer Thickness mm	Rz		Flank Error mm +/-	Performance	
		non crushed μ	crushed μ		Q'W mm <sup>3</sup> /mm*s	tool life Z' mm <sup>3</sup> /mm*1000
B35	0.040	6	2	0.002	0.8...1,5	25...40
B46	0.050	8	2	0.002	1,0...1,75	30...45
B54	0.065	9	3	0.002	1,5...2,75	35...55
B64	0.075	10	4	0.002	1,75...3,25	40...60
B76	0.085	12	5	0.003	2,0...4,75	50...90
B91	0.100	14	6	0.003	3,0...4,75	60...120
B107	0.120	16	8	0.004	3,25...5,0	80...160
B126	0.145	20	10	0.005	3,5...6,5	120...250
B151	0.180	23	14	0.007	4,0...8,0	200...400
B181	0.220	25	16	0.008	4,75...9,0	250...500
B213	0.250	27	18	0.010	5,25...9,5	320...650
B252	0.315	30	20	0.012	5,5...10	400...750

## Cases where Electroplated Wheels are ideal

- In case of small and complex profiles
- If a high precision profile geometry is demanded
- If a stable profile geometry is demanded over a long period of time
- If there is no dressing possibility on the machine

These electroplated grinding wheels are convenient for both roughing and finishing of grinding profiles.

## How to get the best out of Electroplated Wheels

- Medium or high in feed rates and grinding speed
- With cooling under enough pressure
- Machines should be very rigid and robust



## CBN tools for ferrous grindings in Automotive and Aerospace Industries

- Internal grinding
- Slot grinding
- Profile grinding
- General pre-grinding

Industry	Application
Carbide	Grinding green and sintered tungsten carbide
Ceramic	Grinding ceramics like SiC, Al <sub>2</sub> O <sub>3</sub> , ZrO <sub>2</sub> etc.
Automotive	Grinding brake liners and cutting re-enforced rubber mouldings
Pharmaceutical	Grinding facititious knee joint
Dental	Profiling rubber bonded grinding pins
Ferrite	Grinding magnetic parts
Chemical	Grinding laboratory glass
Graphite	Grinding graphite parts
Food	Cutting frozen food
Glass	Grinding tubes, automotive components etc
Oral Hygiene	Rounding of tooth brush bristles

## Range of Electroplated Wheels

- Grinding wheels up to diameter of 650mm
- Precision grindingwheels up to diameter of 450mm
- Diamond grit sizes from MD10 to D1182
- Different types of Diamond grits like natural and synthetic, friable and blocky etc.
- CBN grit sizes from B20 to B601
- Different types of CBN grits like friable, blocky etc.
- Surface qualities from Rz  $\geq$  2



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