

■ **ABRASIVE:** Recommended applications and grain size

Abrasive		Bond	Vitrified (V)	Resinoid (B)	Metallic (M)	Electroplated (P)
Diamond	D		Cemented carbide, ceramic, gem, stone, crystal, ferrite etc. (#80 ~ #400)	Non-ferrous metal, cemented carbide, ceramic, glass, quartz, ferrite, etc. (#80 ~ #400)	Non-ferrous metal, cemented carbide, optical lens. (#60 ~ #2000)	Medium-soft materials gem, stone, carbon, glass, rubber, plastic, asbestos FRP, ferrite and dental tools, etc. (#40 ~ #400)
	2D		—	Pure cemented carbide or ceramic wet grinding (#80 ~ #200) (#500 ~ #20000)	Medium-soft materials stone, concrete etc. in drilling, sawing, grinding and polishing. (#20 ~ #60)	Cemented carbide, hard materials gem stone, ceramic, glass, sculpturing tools, etc. (#60 ~ #2000)
	3D		Precision grinding of ceramic (#60 ~ #2000)	For combination grinding when 1/3 or more steel is combined with the carbide. (#80 ~ #170)	Medium-hard materials stone, concrete, refractories in drilling, sawing, grinding and polishing (#20 ~ #60)	Surface, cylindrical, form grinding of stone, ceramic, refractories, glass edging, lens grinding, truing and dressing of conventional wheels (#60 ~ #100)
	4D		—	—	Hard materials stone, concrete, refractories in drilling, sawing, grinding and polishing (#20 ~ #60)	Form or surface grinding of stone, truing and dressing for conventional wheels (#20 ~ #60)
CBN	B		Precision grinding and thread grinding for the difficult to grind ferrous materials. (#60 ~ #1800)			
	2B		Precision grinding in applications which require exceptional wheel life in both hardened and soft ferrous materials. (#20 ~ #140)			

■ **GRAIN SIZE**

Coarse	Medium	Fine	Very Fine
16, 18, 20, 25, 30, 40, 50, 60, 80.	100, 120, 140, 170, 200, 230, 270.	325, 400, 500, 600, 800.	1000, 1500, 2000, 3000.

Finer grain for better finishing request.

(Rmax. • μm)

Grain size	Surface roughness		
	Cemented Carbide	Steel	Ceramic
#100 ~ #140	2 ~ 3 μm	3 ~ 4 μm	6 ~ 8 μm
#200 ~ #230	1.5 ~ 2 μm	2 ~ 3 μm	4 ~ 6 μm
#270 ~ #400	~ 1 μm		2 ~ 4 μm

■ **HARDNESS OF WHEEL (GRADE)**

The grinding wheel may be further adjusted to a particular task by varying the wheel's hardness. Softer grinding wheels are more suitable for heat-sensitive workpieces. Harder grinding wheels are chosen, among other reasons, when a high degree of form retention is required. Grade indicates the relative strength of the bond which hold the abrasive grains in place.

Soft	Medium	Hard
H I J K L	M N O P	Q R S T

■ **CONCENTRATION:**

Essentially the selection of the most suitable concentration is determined by the size of the contact surface between grinding wheel and workpiece. The following may be considered as general rules:

Small contact surface and coarse grit size : high concentration

Large contact surface and fine grit : low concentration

Concentration	25	50	75	100	125	150	200
Volume % of Grain	6.25	12.5	18.75	25	31.25	37.5	50
cts/cm ³	1.1	2.2	3.3	4.4	5.5	6.6	8.8

■ **BOND TYPE & CHARACTERISTICS:**

Vitrified (V)	Resinoid (B)	Metallic (M)	Electroplated (P)
Can be porous good to keep crystal protrusion. Very good crystal retention for long wheel life. Can provide the highest performance and quality grinding of massproduction especially for auto industry, as cam-lobe grinding or CVUJ grinding.	Easiest to apply with good wheel sharpness. Easy to true and dress, high abrasive pop-out. For better surface finish of HSS cutting tool grinding.	Good crystal retention for longer wheel life. Tend to be dull when applied to difficult materials. Difficult to true and dress. Mostly for glass or easy-to-grind brittle material.	Complexed formed wheel with shaped metal core. Very rough and very precise application (gear etc.) Good grinding efficiency.