

Standard Recommendations of Grinding Wheels

Work-Material- Operation	Abrasive	Grit Size	Grade	Bond	Modification of Bond
Aluminium					
Cylindrical	39C	80	K	V	X530D
Centreless	38A	46	L	V	CNM
Surface (Cups & Cylinders)	37C	24	L	V	K
Surfacing (Disc)	37C	24	H	B	12
Internal	37C	36	L	V	K
Cutting-off	A	46	P	B	L3
Gates & Risers – Cutting-off (Dry)	A	24	R	B	L4R
Asbestos					
Cutting-off	37C	24	T	B	L4R
Axles (Auto)					
Centreless	A	60	M	V	CNM
Ball Bearings					
Grinding O.D. - Centreless	A	80	K	V	CNM, H
Grinding inner races (Plunge cut)	19A/68A	120	N	V	TN
Premium Option	SG/TG	120	N	V	H
Grinding outer races (Plunge cut)	86A/19A	120	L	V	IN TR22
Premium Option	SG/TG	120	L	V	H
Ball Bearings					
Bore Grinding	86A/19A	80	M	V	BETR22/ IN TR22
Premium Option	SG/TG	80	M	V	H
Billets (Alloy & HSS)					
Swing frame	A	12-5/16	U	B	L5, 38
Billets					
Portable grinder	A	16	S	B	L4, X04
Bolts (Screws & Studs)					
Cylindrical	A	60	N	V	CNM
Centreless	A	80	O	V	CNM
Brake Lining					
Surface grinding	39C	46	K	V	

Work-Material-Operation	Abrasive	Grit Size	Grade	Bond	Modification of Bond
Brake Lining (Moulded)					
Surfacing discs (Roughing)	39C	46	K	V	X530D
Surfacing discs (Finishing)	37C	46	J	B	12
Cutting-off (dry)	37C	24	Q	B	L3
Brass / Bronze (Soft)					
Centreless	37C	46	N	V	K
Cylindrical	37C	46	M	V	K
Internal	37C	36	L	V	K
Snagging (Floor stand - low speed)	37C	24	K	V	K
Snagging (Floor stand - high speed)	A	24	P	B	L3
Surfacing (Cups & Cylinders)	37C	24	J	B	L4
Surfacing (Discs)	A	24	R	B	L4
Cutting-off (Gates & Risers - Dry)	A	24	T	B	L4R
Vitrified Refractory – Brick					
Cutting-off (Dry)	37C	24	O	B	L2R
Cutting-off (Wet)	37C	24	P	B	L3R
Cutting-off (Portable saw)	37C	24	T	B	L4R
Floor stand (High speed)	37C	20	R	B	L4
Surfacing (Cups & Cylinders)	37C	20	O	V	K
Surfacing (Discs - Hard)	37C	24	I	B	24
Surfacing (Discs) Refractories	37C	16	J	B	24
Broaches					
Sharpening	86A/38A	46	L	V	TR, H
	86A/38A	60	K	V	TR, H
Bronze (Hard)					
Centreless	A	46	M	V	CNM
Cylindrical	A	46	L	V	CNM
Internal	86A	60	K	V	IN, BE
Snagging (Floor stand) Low speed	A	24	R	V	99
Snagging (Floor stand) High speed	A	24	Q	B	L3
Cutting-off (Dry)	A	36	Q	B	L3R
Reinforced resinoid wheels	A	24	R	B	L4R
Surfacing (Straight wheels)	38A	36	K	V	BE
Surfacing (Discs)	37C	24	H	B	24

Work-Material-Operation	Abrasive	Grit Size	Grade	Bond	Modification of Bond
Cams (Automotive)					
Roughing	A	60	L	V	CNM, H
Finishing	38A	80	K	V	H
Carbon (Soft)					
Cutting-off (Dry)	37C	36	O	B	L2
Cutting-off (Wet)	37C	36	M	B	L2
Carbon (Hard)					
Centreless	37C	36	P	V	K
Cutting-off (Dry)	A	60	O	B	L2
Cutting-off (Wet)	37C	46	L	B	L2
Carding					
Traverse Grinding	25A	54	G	V	CR
Flat Grinding	25A	46	H	V	CR
Full Width	38A	60	G	V	CR
Cast Iron					
Centreless	37C	46	M	V	K
Cutting-off (Dry)	A	36	S	B	L4R
Cylindrical	37C	46	L	V	K
Internal	37C	46	L	V	K
	86A	60	K	V	IN
Surfacing (Cups & Cylinders)	37C	24	J	V	K
Surfacing (Segments)	38A	36	I	V	BE
Surfacing (Discs)	37C	24	J	B	12
Surfacing (Straight Wheels)	37C	46	L	V	K
Snagging (Floor stand)					
Low speed	37C	20	T	V	K
Snagging (Floor stand)					
High speed	37C	24	R	B	L4
Snagging (Swing frame)	37C	16	R	B	L4
Snagging (Portable grinder)	37C	16	S	B	L4
Cemented Carbides					
Single point tools (Off-hand)					
Roughing (Wet and dry)	39C	60	L	V	K
Semi finishing	39C	120	K	V	K
Milling cutters, reamers, etc.					
backing-off cup wheel					
(Roughing)	39C	60	L	V	K
Centreless	39C	60	P	B	24
Chisels (Woodworking)					
Sharpening	86A/38A	60	K	V	H, BE

Work-Material-Operation	Abrasive	Grit Size	Grade	Bond	Modification of Bond
Chromium Plating (Cylindrical) Commercial finish	38A 37C	60 60	L L	V V	BE K
Commutators Roughing & Finishing wheels	37C	60	M	B	L2
Concrete Cutting-off (Dry)	37C	30	P	B	58RF
Connecting Rods (Automotive) Internal Surfacing (Cups and Cylinders)	86A 86A	60 36	L J	V V	IN BE
Copper Cylindrical Surfacing (Cups & Cylinders)	37C 37C	80 16	K K	V V	K K
Cutting-off Rod (Dry) Rod (Wet) Tubing (Dry) Tubing (Wet)	A A A A	46 60 80 120	P P R Q	B B B B	L3 L3 L4 L3
Crankshafts Petrol Diesel	A A	54-4 60-1	N M	V V	AC, H AC, H
Cylinders - Automotive (Cast Iron) Honing - Commercial finish	37C	120	N	V	K
Dies (Forgings) Off-hand portable grinding. Mounted points & wheels (Coarse) Mounted points & wheel (Fine)		Coarse Fine			
Dies (Drawings) Surfacing - (hardened) Straight wheels (Dry) Cup wheels (Wet) Segments	38A/86A 38A/86A 38A/86A	60 46 46	K H H	V V V	TR, H, BE TR, H, BE TR, H, BE

Work-Material-Operation	Abrasive	Grit Size	Grade	Bond	Modification of Bond	
Drills (Manufacturing)						
Cutting-off (Soft material)	A	36	S	B	L4	
Cutting-off (Hard material)	A	60	P	B	L3	
Bar Centreless (Soft)	A	60	P	V	99	
Cylindrical (Hard material)	A	60	N	V	CNM	
Centreless (Hard material)	A	60	M	V	CNM	
Point Grinding	A	70-4	Q	B	2G, 31	
	86A	100	U	B	31	
Flute Grinding	86A	100	S	B	31	
Clearance Grinding	86A	100	S	B	31	
Drills (Resharpener)						
6 mm and smaller	86A/38A	80	J	V	TR, H	
6 mm - 25 mm	86A/38A	60	K	V	TR, H	
25 mm and larger	86A/38A	46/54	L	V	TR, H	
6 mm - 25 mm (off-hand)	A	60	N	V	CNM	
Ferrotic						
Cylindrical	38A	60	K	V	BE	
Surface	38A	60	I	V	BE	
Internal	38A	60	K	V	BE	
Fibreglass Insulating Board						
Cutting-off	37C	24	P	B	L3	
Fibre						
Cutting-off - Board	37C	36	P	B	L3	
Gauges & Taps (Thread Gdg.)						
Pitch (mm)	TPI					
4	6	38A	100	K	V	BE
3	8	38A	120	L	V	BE
2.25	11	38A	150	L	V	BE
1.75 - 2.0	14	38A	180	M	V	BE
1.5	17	38A	220	M	V	BE
1.25	20	38A	280	N	V	BE
1.0	25	38A	320	N	V	BE
0.8	32	38A	400	N	V	BE
Cylindrical		A	80	K	V	CNM
Gears						
Cleaning between teeth (Off-hand)	A	46	T	B	L4	

Work-Material-Operation	Abrasive	Grit Size	Grade	Bond	Modification of Bond	
Gears (Hardened Steel)						
Teeth - Multirib					38A B Mod. PA DEG SS/DS	
Teeth - Generative Precision Grinding	86A	46	K	V	H, BE	
	86A	60	K	V	H, BE	
Internal	86A	60	L	V	H, BE	
Surfacing (Cups & Cylinders)	86A/38A	36	J	V	H, BE	
Surfacing (Segments)	86A/38A	36	I	V	H, BE	
Surfacing (Straight wheels)	86A/38A	46	J	V	H, BE	
Gear Specifications						
Module	D.P.					
Below 1.49	Over 16.93	38A	220	K9	V	H, BE
1.5-1.99	16.92-12.69	38A	180	J8	V	H, BE
2.00-2.99	12.68-8.45	38A	150	J8	V	H, BE
3.00-3.99	8.44-6.34	38A	120	J8	V	H, BE
4.00-5.99	6.33-4.22	38A	100	J8	V	H, BE
6.00-6.99	4.21-3.62	38A	80	J8	V	H, BE
Over 7.00	Below 3.61	38A	60	J8	V	H, BE
Glass (Circular Mirrors)						
Rough Bevelling (Automatic)	37C	80	I	V	K	
Rough & Final Bevelling (Automatic)	38A	120	K	V	BE	
Glass (Cut Glass)						
Mitering (Deep)	38A	120	K	V	BE	
(Medium)	38A	220	N	V	BE	
(Fine)	38A	320	P	V	BE	
Puntying (leaves, grapes, etc.)	38A	120	O	V	BE	
Concaving bottoms of tumblers	38A	80	L	V	BE	
Edging	38A	220	N	V	BE	
Glass (Plate)						
Square edging	37C	120	N	V	K	
Pencil edging	38A	120	M	V	BE	
Glass (Tubing)						
Cutting-off (Low speed)	37C	120	M	B	L2	
Cylindrical	37C	46	K	V	K	
Internal	37C	80	I	V	K	

Work-Material-Operation	Abrasive	Grit Size	Grade	Bond	Modification of Bond
Malleable Castings (Annealed)					
Floor stands - (Low speed)	A	24	R	V	N
Floor stands - (High speed)	A	16	S	B	L4
Swing frame	A	16	R	B	L4
Portable grinders	A	16	S	B	L4
Malleable Castings (Unannealed)					
Floor stands - (Low speed)	37C	24	S	V	K
Floor stands - (High speed)	37C	16	R	B	L4
Molybdenum					
Cylindrical	38A	60	K	V	BE
Surfacing	38A	46	H	V	BE
Needles					
Pointing (Sewing)	A	46	T	V	99
Surgical (Hypodermic)	39C	600	I	B	PKN5
Nickel Rods & Bars					
Cutting-off	A	36	S	B	L4
Nylon					
Centreless	37C	46	M	V	K
Surfacing	37C	36	L	V	K
Pipe (Soft Steel)					
Cutting-off	A	36	S	B	L4
Pistons (Aluminium)					
Cylindrical	37C	46	K	V	K
	38A	46	J	V	BE
Centreless	39C	46	I	V	X53OD
Pistons (Cast Iron)					
Cylindrical	37C	46	L	V	K
Centreless	37C	46	M	V	K
Piston Pins					
Extra Rough	A	46	N	V	CNM
Roughing	A	60	M	V	CNM
Semi-finishing	A	80	M	V	CNM
Pre-Lapping	19A	220	O	V	N
Lapping	37C	320	M	B	
End Grinding (Disc)	A	60	E	B	24

Work-Material-Operation	Abrasive	Grit Size	Grade	Bond	Modification of Bond	
Piston Rings (Cast Iron)						
Cut-Off (Cylinders)	A	30	T	B	27/58	
Disc Wheel (Rough)	37C	36	I	B	24	
	39C	80	F	B	24	
	37C	150/180	F	B	24	
Gap Sizing		Polynet Wheels				
	A	60	T	B	25	
Key Stone						
Grinding (Steel Rings)						
	(Rough)	86A	46/54	K	V	BE
	(Finish)	86A	80	J	V	BE
Premium Option	SGP	80	K	V	H	
Ring Snagging	37C	24	S	V	K	
Plastics						
Cutting-off (Dry)	37C	60	P	B	L3	
Cutting-off (Wet)	37C	60	P	B	L3	
Porcelain						
Cutting-off (Dry)	37C	100	P	B	L3	
Cylindrical	37C	60	L	V	K	
Removing imperfections (Bricks)	38A	80	L	V	BE	
Centreless	37C	36	L	V	K	
Reamers						
Backing off	86A/38A	60	K	V	BE	
Cylindrical	A	60	M	V	CNM	
Rollers for Bearings						
Centreless - Roughing	A	80	N	V	CNM	
Rolls (Aluminium Foil)						
For dark reflective finish (Roughing)	A	80	K	V	CNM	
Semi-finishing	37C	320	I	B		
For Satin finish						
Roughing	A	80	K	V	N	
Semi-finishing	A	180	H	B	24	
Finishing	37C	320	I	B	24	
Superfinishing	39C	600	I	B	X453	
Rolls (Brass or Copper)						
Cylindrical - Roughing	37C	46	J	B	24	
Finishing	37C	120	H	B	24	

Work-Material- Operation	Abrasive	Grit Size	Grade	Bond	Modification of Bond
Rolls (Cast Iron)					
Cylindrical - Roughing	37C	36	K	B	24
	37C	36	L	V	K
Cylindrical - Finishing	37C	80	J	B	24
Rolls Hot Mill (Chilled & Alloy)					
Regrinding	37C	30	J	B	24
New Rolls - Roughing	39C	46	J	B	24
Finishing	37C	46	K	B	24
Rolls Cold Mill (Hardened Steel)					
Regrinding Tandem Mill Rolls					
First stands	A	46	L	V	CNM
Other stands	A	80	K	B	24
	A	80	J	B	24
Regrind Temper Mill or 'Skin pass' Mill Rolls					
Back stands	A	80	G	B	24
Front stands	37C	120	I	B	24
Mirror finish					
Regrinding	A	320	H	B	
Roll necks, bevels, Radii, Excess Grooves (All Rolls)	A	60	L	V	CNM
Back-up Rolls (Steel)	A	46	L	V	CNM
Rolls Paper Mill (Two wheel grinder)					
Regrinding					
Cast Iron, Granite, Rubber-covered Press Rolls	37C	46	H	B	24
Steel	A	46	J	B	24
All-purpose wheel for all rolls	37C	46	H	B	24
For coarser finish papers	37C	46	F	B	24
Rubber Rolls					
Soft Rubber (Dry grind)	39C	150	H	V	X530D
Cots & Apron	39C	150	H	V	X530D
Typewriter & Printer	39C	100	J	V	X530D
Textile Blankets	39C	60	F	V	X530D
Hard Rubber/Ebonite	39C	100	J	V	X530D

Work-Material-Operation	Abrasive	Grit Size	Grade	Bond	Modification of Bond
Rotors (Laminated)					
Cylindrical					
Roughing	A	60	M	V	CNM
Finishing	37C	320	L	B	24
Rubber (Hose)					
Cutting-off (Dry)	37C	24	R	B	L4
Cutting-off (Dry) (Steel mesh)	A	36	S	B	L4
Saws					
Wood cutting	A	60		Saw Gumming	
Metal cutters	38A	46	M	V	BE
Scissors					
Off-hand sharpening	A	80	R	V	N
Shear Blade (Power Metal Shears)					
Sharpening (Segments & Cylinders)	86A/38A	36	F	V	BEP
Slate					
Cutting-off (Portable)	37C	24	T	B	L4
Sprayed Metal					
Cylindrical	39C	80	I	V	K
Springs (Leaf)					
Grinding Eyes	A	24	P	V	N
Chamfering	A	24	S	V	N
Steel Casing (Low Carbon)					
Swing frames	A	16	S	B	L4/38
Floor stands - (Low speed)	A	24	R	V	N
Floor stands - (High speed)	A	16	R	B	L4
Portable grinder	A	16	S	B	L4
Steel Castings (Manganese)					
<i>See also Forge & Switches</i>					
Swing frame					
Floor stands - (Low speed)	A	16	R	B	L4/38
Floor stands - (High speed)	A	24	R	V	N
Portable grinder	A	16	R	B	27
Internal rough grinding	A	24	R	V	N

Work-Material- Operation	Abrasive	Grit Size	Grade	Bond	Modification of Bond
Steel (Hard)					
Centreless (Comm. finish)	A	60	M	V	CN
	A	80	Q	R	BF
Centreless (Feed wheel)	A	120	S	B	L4
Cylindrical (Smaller wheels)	A	60	M	V	CNM
Cylindrical (Larger wheels)	A	60	K	V	CNM
Internal	86A	60	M	V	IN
	86A/38A	60	M	V	BE
Surfacing (Straight wheels)	86A/38A	46	J	V	BE
	86A/38A	60	K	V	BE
Surfacing (Cups & Cylinders)	86A/38A	46	H	V	BE
Surfacing (Segments)	86A/38A	36	I	V	BE
Cutting-off	A	60	P	B	L3
Billet grinding	A	12-5	U	B	L5/38
Steel (Stainless-300 series)					
Centreless	A	46	L	V	CNM
Centreless (Comm. finish)	37C	60	N	V	K
Cylindrical	38A	46	L	V	BE
Internal	38A	60	K	V	IN
Surfacing (Straight wheels)	38A	46	J	V	BE
Surfacing (Cups & Cylinders)	38A	36	I	V	BE
Surfacing (Segments)	38A	36	I	V	BE
Cutting-off (Dry)	A	36	S	B	L4
Steel (High speed)					
Centreless (Comm. finish)	A	60	L	V	CNM
Cylindrical (Small wheels)	A	60	M	V	CNM
Cylindrical (Large wheels)	A	60	K	V	CNM
Internal	86A	60	K	V	IN
Surfacing (Straight wheels)	86A/38A	46	J	V	H, BE
	86A/38A	60	K	V	H, BE
Surfacing (Cups & Cylinders)	86A/38A	46	H	V	H, BE
Surfacing (Segments)	86A/38A	46	H	V	H, BE
Cutting-off (Soft)	A	36	S	B	L4
Cutting-off (Hard)	A	60	P	B	L3
Billets & Slabs :					
Portable Grinders -	A	16	S	B	L4

Work-Material-Operation	Abrasive	Grit Size	Grade	Bond	Modification of Bond
Steel (Stainless - 400 Series hardened)					
Centreless (Comm. finish)	A	60	L	V	CNM
Cylindrical (Small wheels)	A	60	M	V	CNM
Cylindrical (Large wheels)	A	60	K	V	CNM
Internal	86A	60	K	V	BE
Surfacing (Straight wheels)	38A	46	I	V	BE
Surfacing (Cups & Cylinders)	38A	36	H	V	BE
Surfacing (Segments)	38A	36	H	V	BE
Cutting-off	A	60	P	B	L3
Tile					
Cutting-off	37C	24	P	B	L3
Titanium					
Centreless	37C	54	L	V	K
Centreless	37C	54	P	B	34
Cylindrical	37C	80	J	V	K
Internal	TG, 86A	60	K	V	IN
Surface	39C	60	J	V	K
Tools (Lathe & Planer)					
Carbon & High Speed Steel Off-hand grinding Bench & Pedestal Grinders					
Coarse	A	36	Q	V	N
Fine	A	60	P	V	N
Tool (Regrinding)					
Carbon H.S.S. Offhand/Bench/Pedestal					
Brazed Tools	A 39C	60 80	P L	V V	N K
Tubing Steel					
Centreless	A	60	M	V	CNM
Tungsten Carbide Valves (Automotives)					
Refacing	37C	80	N	V	K
Stems :					
Cylindrical	A	80	K	V	CNM
Centreless	A	80	N	V	CNM
Cutting-off (Dry)	A	36	S	B	L4

Work-Material-Operation	Abrasive	Grit Size	Grade	Bond	Modification of Bond
Tungsten					
Surface	39C	60	J	V	K
Tungsten Rolled					
Cylindrical	86A	54	L	V	BE
Tungsten Sintered					
Cylindrical	37C	60	K	V	K
Valve Seat Inserts - Regrinding					
Roughing - Cast Iron	37C	80	N	V	K
Alloy Steel	38A	60	M	V	BE
Stellite	38A	60	M	V	BE
Finishing					
All seats	37C	120	L	V	K
Valve					
Bar Cut-Off	A	30	T	B	27F
Bar Centreless	A	60	Q	V	N
Guide Bushing	37C	60	N	V	K
Centreless - Roughing	A	46	N	V	CNM
Intermediate	A	60	M	V	CNM
Finishing	A	100	J	V	N
Lapping	38A	220	I	V	H, BE
Seat Grinding	86A	90	O	V	H, BE
End Chamfering	A	60	R	V	99
End Grinding	A	60	T	V	N
Valve					
Profile Grinding					
Upto 150	38A	60-320	K, M	V	BE
Above 150	39C	60-150	L, N	V	K
Welds					
Carbon alloy steel :					
Portable grinders	A	16	S	B	X04, L4
Stainless steel :					
Portable grinders	A	16	Q	B	L3
Wrenches					
Floor stands (Low speed)	A	24	4	V	N
Wrought Iron					
Floor stands (Low speed)	A	24	R	V	N