

Tool Steel Grindability and Grinding Wheel Selection

Grindability groups for the grades used in mold, tool and die work and the wheel properties that go with each group in surface and cylindrical grinding. Printed from the reference page on aobosteel.com. This is a reference summary of published practice and not an Aobo Steel specification.

Reference only. This card is a reference summary of published practice, not an Aobo Steel specification. It gives published wheel selection data for each grindability group. Confirm the wheel, the speeds and the feeds with your grinding wheel supplier and with your own test cuts before running production.

Grindability rating chart for selected grades of steel

Source table 16.1, printed page 118.

Grindability group	Tool steel grades in that group
Easy	W1, W2, L6, 4140, 4150, 8620, O1, O6, A6, S1, S5, S7, H11, H12, H13, H19, H21, A8
Medium	A2, M1, M7
Hard	CPM10V, D2, D3, D7, T1, T5, M1, M2, M3, M4, M7, M42
Difficult	T15

Source table 16.1, printed page 118.

In the source chart M1 and M7 appear in the medium group and the hard group and T5 appears twice in the hard group. Each grade is listed once per group here.

Grinding wheel selection guide for surface grinding

Source table 16.2, printed page 119.

Wheel property	Easy	Medium	Hard	Difficult
Abrasive	Semi-friable	Friable	Friable	Friable
Grit size	36-60	36-60	46-60	80-100
Hardness	H-J	G-H	F-G	F
Bond	Vitrified	Vitrified	Vitrified	Vitrified
Wheel speed	5500-6500	5500-6500	5500-6500	3000
Table speed	50-75 ft (15.2-22.9 m) per minute	50-75 ft (15.2-22.9 m) per minute	MAX.	MAX.
Cross feed	1/32-1/16 in (0.794-1.588 mm)	1/32-1/16 in (0.794-1.588 mm)	1/64-1/32 in (0.397-0.794 mm)	Wheel width
Infeed	0.001-0.005 in (0.0254-0.1270 mm)	0.001-0.003 in (0.0254-0.0762 mm)	0.001-0.005 in (0.0254-0.1270 mm)	0.0005-0.001 in (0.0127-0.0254 mm)

Source table 16.2, printed page 119.

Tool steel grindability and grinding wheel selection, continued

Grinding wheel selection guide for cylindrical grinding, continued

Source table 16.3, printed page 119.

Wheel property	Easy	Medium	Hard	Difficult
Abrasive	Semi-friable	Friable	Friable	Friable
Grit size	60-80	60-80	60-80	80-100
Hardness	K-L	J-K	H-J	F-H
Bond	Vitrified	Vitrified	Vitrified	Vitrified
Wheel speed	5500-6500	5500-6500	5500-6500	3000
Table speed	90-150 ft (27.4-45.7 m) per minute	90-150 ft (27.4-45.7 m) per minute	100-150 ft (30.5-45.7 m) per minute	100-150 ft (30.5-45.7 m) per minute
Cross feed	1/32-1/16 in (0.794-1.588 mm)	1/32-1/16 in (0.794-1.588 mm)	1/32-1/16 in (0.794-1.588 mm)	1/16-1/8 in (1.599-3.175 mm)
Infeed	0.001-0.002 in (0.0254- 0.0508 mm)	0.001-0.002 in (0.0254- 0.0508 mm)	0.001-0.002 in (0.0254- 0.0508 mm)	0.0005-0.001 in (0.0127- 0.0254 mm)

Source table 16.3, printed page 119.

Aobo Steel, tool steel supplier

Aobo Steel supplies tool steel to distributors and mold, tool and die shops, including D2, D3, O1, A2, H13, H11, M2, L6, P20 and 420 stainless. Forged or hot rolled, annealed, cut to your sizes, with test certificates.

Reference data compiled from Heat Treatment, Selection, and Application of Tool Steels (William E. Bryson, 2nd edition, Hanser), tables 16.1, 16.2 and 16.3, printed pages 118 and 119.

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