

END MILL RANGE FEEDS AND SPEEDS

Material Type	Hardness HB	Tensile Strength N/mm2	Recommended Surface Speed in m/min		Recommended feed in mm per tooth for Coated Carbide Roughing End Mills based on 1.0 x D cutting depth with 0.5 x D cutting width. Reduce depth to 0.75 x D for slotting						
			min	max	End Mill Diameter in mm						
					4	6	8	10	12	16	20
03C Solid Carbide 3 Flute Roughing End Mill Regular Length, Knuckle Form, Coarse-pitch for high stock removal, Uncoated (for Aluminium)											
Aluminium wrought alloys	< 100	< 350	500	2000	-	0.066	0.088	0.11	0.132	0.176	0.22
Aluminium cast alloys > 5% Si < 10% Si	< 120	< 400	500	1500	-	0.059	0.079	0.099	0.119	0.158	0.198
03D Solid Carbide 3 Flute Roughing End Mill Regular Length, Flat Crest, Coarse Pitch, X.TREME Coated											
Free Cutting Carbon Steel	< 150	< 540	150	200	-	0.044	0.06	0.072	0.083	0.101	0.114
0.3 to 0.4% Carbon Steel	< 170	< 620	140	190	-	0.044	0.06	0.072	0.083	0.101	0.114
0.3 to 0.4% Carbon Steel	< 248	< 910	120	160	-	0.036	0.05	0.061	0.07	0.087	0.101
Alloy Steel	< 330	< 1150	90	150	-	0.033	0.045	0.054	0.062	0.077	0.088
Hardened Alloy Steel	< 460	-	100	140	-	0.033	0.045	0.054	0.062	0.077	0.088
Stainless Steel - Martensitic (400 Series)	< 248	< 810	60	100	-	0.029	0.04	0.048	0.056	0.07	0.081
Stainless Steel - Austenitic (300 Series)	< 300	< 1000	80	100	-	0.036	0.05	0.061	0.07	0.087	0.101
Grey Cast Irons	110-300	-	120	160	-	0.044	0.06	0.072	0.083	0.101	0.114
Nodular Cast Irons			110	140	-	0.036	0.05	0.061	0.07	0.087	0.101
Malleable Cast Irons			100	130	-	0.029	0.04	0.048	0.056	0.07	0.081
Heat Resisting Alloys	< 350	< 1200	20	40	-	0.019	0.026	0.032	0.037	0.046	0.054
Commercially Pure Titanium	< 275	< 1000	50	80	-	0.029	0.04	0.048	0.056	0.07	0.081
Commercially Alloyed Titanium	< 350	< 1200	45	65	-	0.026	0.037	0.045	0.052	0.064	0.074
03E Solid Carbide Multi-Flute Roughing End Mill Regular Length, Knuckle Form, Fine Pitch, X.TREME Coated											
Free Cutting Carbon Steel	< 150	< 540	150	200	-	0.044	0.06	0.072	0.083	0.101	0.114
0.3 to 0.4% Carbon Steel	< 170	< 620	140	190	-	0.044	0.06	0.072	0.083	0.101	0.114
0.3 to 0.4% Carbon Steel	< 248	< 910	120	160	-	0.036	0.05	0.061	0.07	0.087	0.101
Alloy Steel	< 330	< 1150	90	150	-	0.033	0.045	0.054	0.062	0.077	0.088
Hardened Alloy Steel	< 460	-	100	140	-	0.033	0.045	0.054	0.062	0.077	0.088
Stainless Steel - Martensitic (400 Series)	< 248	< 810	60	100	-	0.029	0.04	0.048	0.056	0.07	0.081
Stainless Steel - Austenitic (300 Series)	< 300	< 1000	80	100	-	0.036	0.05	0.061	0.07	0.087	0.101
Grey Cast Irons	110-300	-	120	160	-	0.044	0.06	0.072	0.083	0.101	0.114
Nodular Cast Irons			110	140	-	0.036	0.05	0.061	0.07	0.087	0.101
Malleable Cast Irons			100	130	-	0.029	0.04	0.048	0.056	0.07	0.081
Heat Resisting Alloys	< 350	< 1200	20	40	-	0.019	0.026	0.032	0.037	0.046	0.054
Commercially Pure Titanium	< 275	< 1000	50	80	-	0.029	0.04	0.048	0.056	0.07	0.081
Commercially Alloyed Titanium	< 350	< 1200	45	65	-	0.026	0.037	0.045	0.052	0.064	0.074
03F Solid Carbide Multi-Flute Roughing End Mill Regular Length, Flat Crest, Fine Pitch, X.TREME Coated											
Free Cutting Carbon Steel	< 150	< 540	150	200	-	0.036	0.049	0.059	0.072	0.087	0.098
0.3 to 0.4% Carbon Steel	< 170	< 620	140	190	-	0.036	0.049	0.059	0.072	0.087	0.098
0.3 to 0.4% Carbon Steel	< 248	< 910	120	160	-	0.03	0.041	0.049	0.061	0.075	0.087
Alloy Steel	< 330	< 1150	90	150	-	0.027	0.037	0.044	0.054	0.066	0.076
Hardened Alloy Steel	< 460	-	80	140	-	0.027	0.037	0.044	0.054	0.066	0.076
Stainless Steel - Martensitic (400 Series)	< 248	< 810	60	100	-	0.024	0.033	0.039	0.049	0.06	0.07
Stainless Steel - Austenitic (300 Series)	< 300	< 1000	80	100	-	0.03	0.041	0.049	0.061	0.075	0.087
Grey Cast Irons	110-300	-	120	160	-	0.036	0.049	0.059	0.072	0.087	0.098
Nodular Cast Irons			110	140	-	0.03	0.041	0.049	0.061	0.075	0.087
Malleable Cast Irons			100	130	-	0.024	0.033	0.039	0.049	0.06	0.07
Commercially Pure Titanium	< 275	< 1000	50	80	-	0.024	0.033	0.039	0.049	0.06	0.07
03G Solid Carbide Multi-Flute Finishing End Mill Regular Length, X.TREME Coated Finisher for hard materials											
Hardened Steels, Irons	<460	-	120	140	-	0.036	0.049	0.059	0.069	0.084	0.107
Hardened Steels, Irons	460-560	-	80	130	-	0.027	0.037	0.044	0.051	0.063	0.078
03I Solid Carbide Ball Nose Finishing End Mill Regular Length, X.TREME Coated Finisher for hard materials											
Hardened Steels, Irons	<460	-	290	406	0.106	0.162	0.221	0.266	0.308	0.379	0.434
Hardened Steels, Irons	460-560	-	203	348	0.08	0.122	0.166	0.199	0.23	0.281	0.32
03J Solid Carbide Multi-Flute Finishing End Mill Regular Length, X.TREME Coated Finisher for hard materials											
Hardened Steels, Irons	<460	-	290	406	0.106	0.162	0.221	0.266	0.308	0.379	0.434
Hardened Steels, Irons	460-560	-	203	348	0.08	0.122	0.166	0.199	0.23	0.281	0.32