HERTEL™
Production Grade Tooling Since 1947

TECHNICAL INFORMATION

Suggested Speed & Feed Data for High Speed Steel End Mills

Material	Slot Milling				Peripheral Milling			
	Surface Speed (Ft./min.)		Feed per Tooth Chip Load		Surface Speed (Ft./min.)		Feed per Tooth Chip Load	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Aluminum Alloys								
Wrought, Solution Treated, Aged	250	280	0.003	0.004	600	800	0.007	0.010
As Cast	300	350	0.004	0.005	800	1000	0.007	0.010
Magnesium Alloys	450	500	0.004	0.005	800	1000	0.008	0.011
Brass	165	185	0.004	0.005	275	350	0.006	0.008
Cast Iron								
Gray, As Cast, A48 Class 30, 35, 40, Pearlitic	55	60	0.002	0.003	90	125	0.004	0.005
Steel								
Soft Carbon Steel, 1029, Also Leaded	100	110	0.0025	0.003	160	210	0.005	0.006
AISI 1030-1055 Rc 32, 102,000 psi, 275-325 BHN	60	70	0.002	0.0025	70	90	0.004	0.005
AISI 1060-1095 Rc 42, 136,000 psi, 325-375 BHN	35	45	0.002	0.0025	60	70	0.004	0.005
Medium and High Carbon, Rc 49, 168,000 psi	25	30	0.0005	0.001	45	55	0.001	0.0015
Tool Steels								
S1-S7, L2, L3, L6 Annealed, 175-225 BHN	50	65	0.002	0.0025	85	110	0.004	0.005
A2-A10, 01-07 Annealed, 200-250 BHN	45	50	0.0015	0.002	75	90	0.003	0.004
D2-D7 Annealed, 200-250 BHN	35	40	0.0015	0.002	55	65	0.003	0.004
Titanium Alloys								
Commercially Pure, 140-200 BHN	85	95	0.005	0.006	140	170	0.006	0.007
5A1-2.5Sn, Annealed	50	55	0.004	0.005	100	110	0.005	0.006
6A1-4V Annealed, 310-350 BHN	55	60	0.004	0.005	90	100	0.005	0.006
6A1-4V Solution Treated, 320-380 BHN	45	50	0.004	0.005	75	90	0.004	0.006
6A1-4V-2Sn, Solution Treated, 375-420 BHN	45	50	0.004	0.005	70	80	0.004	0.006
High Temp. Alloys								
Hastelloy X, Inconel Nickel Based, Wrought, Cold Drawn	13	15	0.003	0.004	20	30	0.002	0.004
Inconel X, 718	7	8	0.002	0.003	12	15	0.002	0.003
Monel, Nickel, Wrought and Cast, 115-240 BHN	30	33	0.004	0.005	65	85	0.004	0.005
Stainless Steel								
Free Machining, Annealed or Cold Drawn	75	85	0.002	0.0025	125	160	0.004	0.005
300 Series, Cold Drawn Austenitic 225-275 BHN	65	75	0.002	0.0025	110	145	0.004	0.005
17-4 PH, Annealed, 150-200 BHN	55	60	0.0015	0.002	90	100	0.003	0.004
17-4 PH, Hardened, 325-375 BHN	40	45	0.0015	0.002	65	80	0.002	0.003

- TiN Coated End Mills: Increase speed by 25%
- TiCN Coated End Mills: Increase speed by 25-50%
- TiAlN Coated End Mills: Increase speed by 50-75%
- Uncoated Cobalt End Mills: Increase speed by 25%
- For Lighter Radial Depths-of-Cut: Higher range of recommended surface speeds should be used
- For Greater Radial Depths-of-Cut: Lower range of recommended surface speeds should be used
- For Slotting Applications: Speeds (SFM) should be reduced approximately 20% of lowest range value

Above recommendations are to be used when axial depth-of-cut does not exceed 1½ times the cutter diameter. When using long and extra-long end mills, reduce feed per tooth 50%.

All recommendations should be considered only as a starting point, with possible variations to achieve optimum results.