

# Speeds and Feeds

2 Flute Uncoated Ball Nose End Mills  
3D Profiling



Material Group	Material Subgroup	Material Description	Composition / Structure / Heat Treatment		Hardness HB	Examples	Recommend	ae	ap	Parameter	Outside Diameter (Ø)						
											1/8	1/4	3/8	1/2	5/8	3/4	1"
N	21	Aluminum-wrought alloy	Not Curable		60	SAE 1000	1st	2D	0.05D	SFM	8000	8000	8000	8000	8000	8000	8000
										RPM	244500	122200	81500	61100	48900	40700	30600
										IPT	.0021	.0055	.0105	.0140	.0150	.0165	.0195
										IPM	1540	2016	2567	2566	2201	2015	1790
	22	Curable	Hardened		100	SAE 7050	1st	2D	0.05D	SFM	8000	8000	8000	8000	8000	8000	8000
										RPM	244500	122200	81500	61100	48900	40700	30600
										IPT	.0021	.0055	.0105	.0140	.0150	.0165	.0195
										IPM	1540	2016	2567	2566	2201	2015	1790
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75	ADC12, G	1st	2D	0.05D	SFM	1200	1200	1200	1200	1200	1200	1200
										RPM	36670	18340	12220	9170	7330	6110	4580
										IPT	.0021	.0055	.0105	.0140	.0150	.0165	.0195
										IPM	231	303	385	385	330	303	268
	24	Curable	Hardened		90	C4BS, G-A	1st	2D	0.05D	SFM	1200	1200	1200	1200	1200	1200	1200
										RPM	36670	18340	12220	9170	7330	6110	4580
										IPT	.0021	.0055	.0105	.0140	.0150	.0165	.0195
										IPM	231	303	385	385	330	303	268
	25	Aluminum-cast, alloyed	> 12% Si, Not Curable		130		2nd	2D	0.05D	SFM	1200	1200	1200	1200	1200	1200	1200
										RPM	36670	18340	12220	9170	7330	6110	4580
										IPT	.0021	.0055	.0105	.0140	.0150	.0165	.0195
										IPM	231	303	385	385	330	303	268
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110	CuZn36Pt	2nd	2D	0.05D	SFM	1850	1850	1850	1850	1850	1850	1850
										RPM	56540	28270	18850	14130	11310	9420	7070
										IPT	.0017	.0045	.0085	.0115	.0130	.0140	.0160
										IPM	288	382	481	488	441	396	339
27	Aluminum-cast, alloyed	CuZn, CuSnZn (Brass)		90	CuZn 15,	2nd	2D	0.05D	SFM	1850	1850	1850	1850	1850	1850	1850	
									RPM	56540	28270	18850	14130	11310	9420	7070	
									IPT	.0017	.0045	.0085	.0115	.0130	.0140	.0160	
									IPM	288	382	481	488	441	396	339	
28	Non Metallic Materials	CuSn, lead-free copper and electrolytic		100	G-CuZn40	2nd	2D	0.05D	SFM	1850	1850	1850	1850	1850	1850	1850	
									RPM	56540	28270	18850	14130	11310	9420	7070	
									IPT	.0017	.0045	.0085	.0115	.0130	.0140	.0160	
									IPM	288	382	481	488	441	396	339	
29.1	Duroplastic	ACRYLIC				2nd	2D	0.05D	SFM	3350	3350	3350	3350	3350	3350	3350	
									RPM	102380	51190	34130	25590	20480	17060	12800	
									IPT	.0034	.0090	.0170	.0230	.0250	.0275	.0320	
									IPM	1044	1382	1740	1766	1536	1408	1229	

## Unit Definitions

Vc = Surface Feet per Minute  
Fz = Inch Per Tooth  
RPM = Revolutions per Minute

Feed = Inch per Minute  
Ae = Width of Cut  
Ap = Depth of Cut

