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Finishing & Roughing Feeds & Speeds for High Speed Steel

Instructions

1. Locate SFM & FPT for material, (Table A)
2. Find RPM at Intersection of SFM line & Diameter Column, (Table B)
3. Calculate Feed IPM = FPT X (No. of Flutes) X RPM

Explanation of Symbols:

SFM = Surface Feet Per Minute (Cutting Speed)
 RPM = Revolutions Per Minute (Spindle Speed)
 FPT = Feed Per Tooth
 IPM = Inches Per Minute

High Speed Steel								
MATERIAL TO BE CUT	CONDITION	FEED PER TOOTH (FTP)						SFM
		1/8" & under	1/4"	3/8"	1/2"	3/4"	1"	
Aluminum 2024, 6061, 7075	150 Bhn	.0006	.0012	.0020	.0040	.0064	.0080	400-800
Magnesium AM60A	90 Bhn	.0007	.0014	.0023	.0045	.0072	.0090	500-1000
Bronze / Brass	81 RF	.0004	.0008	.0013	.0025	.0040	.0050	75-120
Copper 834, 934, 978	150 Bhn	.0005	.0009	.0015	.0030	.0048	.0060	275-450
Inconel 625, 718	300 Bhn	.0002	.0005	.0008	.0015	.0024	.0030	10-20
Hastelloy Alloy B	220 Bhn	.0002	.0005	.0008	.0015	.0024	.0030	15-30
Stainless Steel 304	185 Bhn	.0004	.0008	.0013	.0025	.0040	.0050	60-110
Stainless Steel 17-4PH	375 Bhn	.0002	.0003	.0005	.0010	.0016	.0020	45-80
Steel 4140 / 4340	350 Bhn	.0003	.0006	.0010	.0020	.0032	.0040	40-70
Steel 1020	150 Bhn	.0004	.0008	.0013	.0025	.0040	.0050	100-165
Tool Steel A2	250 Bhn	.0002	.0005	.0008	.0015	.0024	.0030	50-90
Tool Steel D2	250 Bhn	.0002	.0005	.0008	.0015	.0024	.0030	35-65
Tool Steel H13	200 Bhn	.0002	.0005	.0008	.0015	.0024	.0030	60-100
Titanium 6Al-4V	325 Bhn	.0002	.0005	.0008	.0015	.0024	.0030	30-90
Titanium 6Al-6V-2Sn	370 Bhn	.0002	.0005	.0008	.0015	.0024	.0030	30-90
Cast Iron (Ductile)	190 Bhn	.0005	.0009	.0015	.0030	.0048	.0060	75-125
Cast Iron (Gray)	220 Bhn	.0003	.0006	.0010	.0020	.0032	.0040	75-125

These are based on a RADIAL Depth of Cut equal to the Tool Diameter divided by 4.

These Starting Points are Based on Maximum Axial Depth of 1.5 X the Cutting Diameter.

Speeds May be Increased When Using: TiN +25% TiCN +30% TiAlN +35%.

When Slotting Reduce Feed per Tooth 20% and if the Slot Depth is Greater than 1/2 of the Tool Diameter Reduce by 50%.

Roughing End Mills Increase Feed per Tooth by 20%.