

# S4F Recommended Starting Speeds and Feeds

Material Group		Rc Hardness	Series S2F	Series S4F	frac. dec.	D - Diameter					
			Speed (SFM)	1/4"		3/8"	1/2"	5/8"	3/4"	1"	
		0.250	0.375	0.500	0.625	0.750	1.000				
P	Unalloyed Steel <small>(AISI 1000, 1100, 1200, 1500 Series)</small>	>32	-	200-250	IPT	.0007-.0015	.0010-.0025	.0010-.0025	.0030-.0050	.0030-.0050	.0040-.0060
		<32	-	125-175	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
	Low-alloy Steel <small>(AISI 3000, 4000, 5000, 6000, 8000, 9000 Series)</small>	>32	-	200-250	IPT	.0007-.0015	.0010-.0025	.0010-.0025	.0030-.0050	.0030-.0050	.0040-.0060
		<32	-	125-175	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
High-alloy Steel/Tool Steel <small>(SAE Classes A, D, H, O, S, M, T)</small>	>32	-	150-225	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050	
	<32	-	60-125	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040	
M	Austenitic <small>(AISI 200 &amp; 300 Series)</small>	>32	-	200-250	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	150-200	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
	Marensitic <small>(AISI 400 &amp; 500 Series)</small>	>32	-	150-250	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	125-175	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
Precipitation <small>(PH 15-7 Mo, 15-5 PH, 17-7 PH)</small>	>32	-	150-250	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050	
	<32	-	125-175	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040	
K	Gray Iron GG	-	225-325	250-350	IPT	.0010-.0020	.0015-.0040	.0015-.0040	.0030-.0100	.0030-.0100	.0050-.0100
	Nodular Iron GGG	-	250-350	300-400	IPT	.0010-.0020	.0015-.0040	.0015-.0040	.0030-.0100	.0030-.0100	.0050-.0100
	Malleable Iron GTS/GTW	-	250-350	300-400	IPT	.0010-.0020	.0015-.0040	.0015-.0040	.0030-.0100	.0030-.0100	.0050-.0100
S	HRSA Iron-Based <small>(Incoloy 800/909, A286)</small>	>32	-	175-225	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	125-175	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
	HRSA Cobalt-Based <small>(Stellite, Haynes 21/25/188)</small>	>32	-	175-225	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	125-175	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
HRSA Nickel-Based <small>(Inconel 601/617/625/700/706/718, Hastelloy, Monel, Nimonic, Rene, Udimet, Waspaloy)</small>	>32	-	125-175	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050	
	<32	-	70-115	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040	
Titanium <small>(Pure, ASTM 1/2/3, Ti6Al-4V, Ti6Al-2Sn-4Zr-2Mo-Si)</small>	-	200-300	200-300	IPT	.0007-.0015	.0010-.0025	.0010-.0025	.0030-.0050	.0030-.0050	.0040-.0060	
	-	-	-	-	-	-	-	-	-	-	
N	Aluminum <small>(&lt;10% Si)</small>	-	500 min.	-	IPT	.0010-.0020	.0015-.0040	.0015-.0040	.0030-.0150	.0030-.0150	.0050-.0150
	Aluminum <small>(&gt; or = to 10% Si)</small>	-	500 min.	-	IPT	.0010-.0020	.0015-.0040	.0015-.0040	.0030-.0150	.0030-.0150	.0050-.0150
	Copper / Brass	-	350-500	-	IPT	0.0015	0.0023	0.0031	0.0039	0.0047	0.0055
H	Hardened Steels and Hardened or Chilled Cast Irons <small>(42-48HRc)</small>	-	-	-	-	-	-	-	-	-	

## Note:

- These values are for uncoated tools.
- For coated tools increase SFM: SC-2 = +40%
- For tools with a LOC greater than 3xD lower SFM by no less than 15%
- All values are recommended starting points based on ideal conditions. Adjust parameters accordingly for