

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch]					
					1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Machining Steel	< 500 N/mm ²	427	0.5xØ	1xØ	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	> 500 N/mm ²	394	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Construction Steel	Non-Alloy < 500 N/mm ²	410	0.5xØ	1xØ	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Non-Alloy > 500 N/mm ²	377	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy	361	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Cementation Steel	< 150 HB	344	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	150-200 HB	328	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 200 HB	312	0.5xØ	1xØ	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Nitriding Steel	< 1000 N/mm ²	312	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 1000 N/mm ²	279	0.5xØ	1xØ	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Quenched & Tempered Steel	Non-Alloy < 800 N/mm ²	328	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy 800-1000 N/mm ²	312	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy < 800 N/mm ²	312	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 800-1000 N/mm ²	295	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 1000-1300 N/mm ²	279	0.5xØ	1xØ	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Alloy 1300-1600 N/mm ²	246	0.5xØ	1xØ	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Non-Alloy Tool Steel	General	303	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm ²	295	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1200 N/mm ²	279	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm ²	246	0.5xØ	1xØ	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm ²	262	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm ²	230	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm ²	328	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm ²	295	0.5xØ	1xØ	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm ²	246	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm ²	230	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1600 N/mm ²	213	0.5xØ	1xØ	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Stainless Steel	Ferric	164	0.5xØ	1xØ	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Martensitic	131	0.5xØ	1xØ	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic A5 < 40%	164	0.5xØ	1xØ	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic A5 > 40%	164	0.5xØ	1xØ	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Sulphured	180	0.5xØ	1xØ	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
High Temperature Alloy	Fe-Alloy	90	0.5xØ	1xØ	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy not hardened	90	0.5xØ	1xØ	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy hardened	90	0.5xØ	1xØ	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Co-Alloy	90	0.5xØ	1xØ	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Cast Iron	Non-Alloy	328	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low-Alloy	262	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High-Alloy	197	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Stainless Cast Steel	Ferric/Martensitic	164	0.5xØ	1xØ	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic	164	0.5xØ	1xØ	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	328	0.5xØ	1xØ	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Non-Alloy > 180 HB	295	0.5xØ	1xØ	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloy	262	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy	197	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Spheroidal Cast Iron	Non-Alloy < 180 HB	312	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy > 180 HB	279	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy	246	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
White Malleable Cast Iron	< 180 HB	295	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	262	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Black Malleable Cast Iron	< 180 HB	295	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	262	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Titanium	Non-Alloy	197	0.5xØ	1xØ	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloyed-Annealed	164	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloyed-Hardened	131	0.5xØ	1xØ	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028

* Feeds and Speeds are starting points for Overall Lengths of 4" and shorter.
 For End Mills with Overall Lengths over 4" decrease the Feeds and Speeds.