

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"
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
Tool Steel for Warm Processing	High Alloy Hardened < 1300 N/mm ²	230	0.5xØ	1xØ	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	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
Stainless Steel	High Alloy Hardened < 1600 N/mm ²	213	0.5xØ	1xØ	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Ferric	328	0.5xØ	1xØ	0.0005	0.0010	0.0016	0.0020	0.0028	0.0045
	Martensitic	262	0.5xØ	1xØ	0.0005	0.0010	0.0016	0.0020	0.0028	0.0045
	Austenitic A5 < 40%	328	0.5xØ	1xØ	0.0005	0.0010	0.0016	0.0020	0.0028	0.0045
High Temperature Alloy	Austenitic A5 > 40%	328	0.5xØ	1xØ	0.0005	0.0010	0.0016	0.0020	0.0028	0.0045
	Sulphured	361	0.5xØ	1xØ	0.0005	0.0010	0.0016	0.0020	0.0028	0.0045
	Fe-Alloy	180	0.5xØ	1xØ	0.0008	0.0016	0.0020	0.0024	0.0028	0.0035
	Ni-Alloy not hardened	180	0.5xØ	1xØ	0.0008	0.0016	0.0020	0.0024	0.0028	0.0035
Stainless Cast Steel	Ni-Alloy hardened	180	0.5xØ	1xØ	0.0008	0.0016	0.0020	0.0024	0.0028	0.0035
	Co-Alloy	180	0.5xØ	1xØ	0.0008	0.0016	0.0020	0.0024	0.0028	0.0035
	Ferric/Martensitic	328	0.5xØ	1xØ	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
Titanium	Austenitic	328	0.5xØ	1xØ	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
	Non-Alloy	394	0.5xØ	1xØ	0.0010	0.0018	0.0028	0.0039	0.0047	0.0050
Tool Steel for Cold Processing	Alloyed-Annealed	328	0.5xØ	1xØ	0.0008	0.0016	0.0024	0.0031	0.0039	0.0040
	Alloyed-Hardened	262	0.5xØ	1xØ	0.0006	0.0012	0.0020	0.0024	0.0031	0.0035

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					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	287	1xØ	0.7xØ	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	> 500 N/mm ²	246	1xØ	0.7xØ	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Construction Steel	Non-Alloy < 500 N/mm ²	287	1xØ	0.7xØ	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Non-Alloy > 500 N/mm ²	246	1xØ	0.7xØ	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Alloy	246	1xØ	0.7xØ	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Spring Steel	Annealed < 250 HB	246	1xØ	0.7xØ	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Cementation Steel	< 150 HB	287	1xØ	0.7xØ	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	150-200 HB	246	1xØ	0.7xØ	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 200 HB	246	1xØ	0.7xØ	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Nitriding Steel	< 1000 N/mm ²	246	1xØ	0.7xØ	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 1000 N/mm ²	230	1xØ	0.7xØ	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Quenched & Tempered Steel	Non-Alloy < 800 N/mm ²	246	1xØ	0.7xØ	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Non-Alloy 800-1000 N/mm ²	246	1xØ	0.7xØ	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy < 800 N/mm ²	246	1xØ	0.7xØ	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 800-1000 N/mm ²	246	1xØ	0.7xØ	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 1000-1300 N/mm ²	230	1xØ	0.7xØ	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Non-Alloy Tool Steel	General	246	1xØ	0.7xØ	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm ²	230	1xØ	0.7xØ	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Low Alloy < 1200 N/mm ²	230	1xØ	0.7xØ	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	High Alloy Annealed < 1000 N/mm ²	230	1xØ	0.7xØ	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Tool Steel for Warm Processing	High Alloy Annealed < 1000 N/mm ²	230	1xØ	0.7xØ	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019

* 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.