PROMAX Premium

Series US220 - Aluminum Alloys & Non-Ferrous Materials

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"
Aluminium	Non-Alloy	1968	1xø	1xø	0.0016	0.0024	0.0031	0.0059	0.0079	0.0089
	Wrought Alloy Non-Hardened	1968	1xø	1xø	0.0016	0.0024	0.0031	0.0059	0.0079	0.0089
	Wrought Alloy Hardened	1968	1xø	1xø	0.0016	0.0024	0.0031	0.0059	0.0079	0.0089
	Casting Alloy < 6% Si	1575	1xø	1xø	0.0016	0.0024	0.0031	0.0059	0.0079	0.0089
	Casting Alloy 6-12% Si	1181	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
	Casting Alloy > 6% Si	787	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
Magnesium	Wrought Alloy	722	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
	Casting Alloy	656	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
Copper	Non-Alloy	558	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Wrought Alloy Non-Hardened	509	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Wrought Alloy Hardened	394	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	CuNi-Alloy	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	CuNiZn-Alloy Long-Chipping	394	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	CuNiZn-Alloy Short-Chipping	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
CuZn (Brass)	Long-Chipping	591	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	787	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
CuSn (Bronze)	Long-Chipping	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	558	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
CuAlFe (Ampco)	Long-Chipping	180	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	230	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055

Series US362 - Aluminum Alloys & Non-Ferrous Materials

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"
Aluminium	Non-Alloy	1968	1xø	1xø	0.0014	0.0024	0.0028	0.0035	0.0047	0.0055
	Wrought Alloy Non-Hardened	1968	1xø	1xø	0.0014	0.0024	0.0028	0.0035	0.0047	0.0055
	Wrought Alloy Hardened	1968	1xø	1xø	0.0014	0.0024	0.0028	0.0035	0.0047	0.0055
	Casting Alloy < 6% Si	1575	1xø	1xø	0.0014	0.0024	0.0028	0.0035	0.0047	0.0055
	Casting Alloy 6-12% Si	1181	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
	Casting Alloy > 6% Si	787	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
Magnesium	Wrought Alloy	722	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
	Casting Alloy	656	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
Copper	Non-Alloy	558	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Wrought Alloy Non-Hardened	509	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Wrought Alloy Hardened	394	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	CuNi-Alloy	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	CuNiZn-Alloy Long-Chipping	394	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	CuNiZn-Alloy Short-Chipping	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
CuZn (Brass)	Long-Chipping	591	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	787	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
CuSn (Bronze)	Long-Chipping	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	558	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
CuAlFe (Ampco)	Long-Chipping	180	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	230	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055

Series 109 - Aluminum Alloys & Non-Ferrous Materials

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"
Aluminium	Non-Alloy	1230	0.05xø	1.4xø	0.0008	0.0016	0.002	0.0041	0.0048	0.0055
	Wrought Alloy Non-Hardened	1230	0.05xø	1.4xø	0.0008	0.0016	0.002	0.0041	0.0048	0.0055
	Wrought Alloy Hardened	1230	0.05xø	1.4xø	0.0008	0.0016	0.002	0.0041	0.0048	0.0055
	Casting Alloy < 6% Si	984	0.05xø	1.4xø	0.0008	0.0016	0.002	0.0041	0.0048	0.0055
	Casting Alloy 6-12% Si	738	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	Casting Alloy > 6% Si	517	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
Magnesium	Wrought Alloy	492	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	Casting Alloy	418	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048

*** 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.

Series 109 - Aluminum Alloys & Non-Ferrous Materials (Continued)

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"
Copper	Non-Alloy	369	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	Wrought Alloy Non-Hardened	344	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	Wrought Alloy Hardened	271	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	CuNi-Alloy	320	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	CuNiZn-Alloy Long-Chipping	271	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	CuNiZn-Alloy Short-Chipping	320	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
CuZn (Brass)	Long-Chipping	369	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	Short-Chipping	517	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
CuSn (Bronze)	Long-Chipping	320	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	Short-Chipping	344	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
CuAlFe (Ampco)	Long-Chipping	148	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	Short-Chipping	172	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048

Series 102 / 119 - Aluminum Alloys & Non-Ferrous Materials

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"
Aluminium	Non-Alloy	1230	1xø	1xø	0.001	0.0017	0.0028	0.0035	0.0047	0.0055
	Wrought Alloy Non-Hardened	1230	1xø	1xø	0.001	0.0017	0.0028	0.0035	0.0047	0.0055
	Wrought Alloy Hardened	1230	1xø	1xø	0.001	0.0017	0.0028	0.0035	0.0047	0.0055
	Casting Alloy < 6% Si	984	1xø	1xø	0.001	0.0017	0.0028	0.0035	0.0047	0.0055
	Casting Alloy 6-12% Si	738	1xø	1xø	0.0008	0.0014	0.0028	0.0047	0.0067	0.0083
	Casting Alloy > 6% Si	517	1xø	1xø	0.0008	0.0014	0.0028	0.0047	0.0067	0.0083
Magnesium	Wrought Alloy	492	1xø	1xø	0.0008	0.0014	0.0028	0.0047	0.0067	0.0083
	Casting Alloy	418	1xø	1xø	0.0008	0.0014	0.0028	0.0047	0.0067	0.0083
Copper	Non-Alloy	369	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	Wrought Alloy Non-Hardened	344	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	Wrought Alloy Hardened	271	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	CuNi-Alloy	320	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	CuNiZn-Alloy Long-Chipping	271	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	CuNiZn-Alloy Short-Chipping	320	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
CuZn (Brass)	Long-Chipping	369	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	517	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
CuSn (Bronze)	Long-Chipping	320	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	344	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
CuAlFe (Ampco)	Long-Chipping	148	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	172	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055

Series US376 - Aluminum Alloys & Non-Ferrous Materials

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"
Aluminium	Non-Alloy	1640	0.05xø	2xø	0.0008	0.0016	0.0020	0.0024	0.0028	0.0031
	Wrought Alloy Non-Hardened	1640	0.05xø	2xø	0.0008	0.0016	0.0020	0.0024	0.0028	0.0031
	Wrought Alloy Hardened	1640	0.05xø	2xø	0.0008	0.0016	0.0020	0.0024	0.0028	0.0031
	Casting Alloy < 6% Si	1312	0.05xø	2xø	0.0008	0.0016	0.0020	0.0024	0.0028	0.0031
	Casting Alloy 6-12% Si	984	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	Casting Alloy > 6% Si	689	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
Magnesium	Wrought Alloy	656	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	Casting Alloy	558	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
Copper	Non-Alloy	492	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	Wrought Alloy Non-Hardened	459	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	Wrought Alloy Hardened	361	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	CuNi-Alloy	427	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	CuNiZn-Alloy Long-Chipping	361	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	CuNiZn-Alloy Short-Chipping	427	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
CuZn (Brass)	Long-Chipping	492	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	Short-Chipping	689	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
CuSn (Bronze)	Long-Chipping	427	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	Short-Chipping	459	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
CuAlFe (Ampco)	Long-Chipping	197	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	Short-Chipping	230	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	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.

PROMAX Premium

Series 113 - Steels, High-Temp Alloys & Titanium

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/mm²	968	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 500 N/mm²	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
Construction Steel	Non-Alloy < 500 N/mm²	968	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy > 500 N/mm²	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy	640	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Spring Steel	Annealed < 250 HB	853	0.04xø	0.05xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Natural Hardened 250-350 HB	755	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	Spring Hardened 1200-1600 N/mm²	509	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Cementation Steel	< 150 HB	919	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	150-200 HB	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 200 HB	656	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
Nitriding Steel	< 1000 N/mm²	771	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 1000 N/mm²	574	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy 800-1000 N/mm²	689	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy < 800 N/mm²	574	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy 800-1000 N/mm²	640	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy 1000-1300 N/mm²	574	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	Alloy 1300-1600 N/mm²	476	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Cast Iron	Non-Alloy	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Low-Alloy	541	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	High-Alloy	377	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	1001	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy > 180 HB	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy	755	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	High Alloy	541	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Spheroidal Cast Iron	Non-Alloy < 180 HB	1001	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy > 180 HB	853	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062

Series 117 - Steels, High-Temp Alloys & Titanium

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/mm²	164	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	> 500 N/mm²	115	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Construction Steel	Non-Alloy < 500 N/mm²	164	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Non-Alloy > 500 N/mm²	115	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Alloy	98	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Spring Steel	Annealed < 250 HB	98	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Cementation Steel	< 150 HB	156	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	150-200 HB	123	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 200 HB	98	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Nitriding Steel	< 1000 N/mm²	115	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 1000 N/mm²	90	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	131	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Non-Alloy 800-1000 N/mm²	115	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy < 800 N/mm²	115	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 800-1000 N/mm²	98	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 1000-1300 N/mm²	90	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Cast Iron	Non-Alloy	328	0.8xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low-Alloy	262	0.8xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High-Alloy	197	0.8xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	197	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Non-Alloy > 180 HB	164	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Alloy	131	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	High Alloy	115	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Spheroidal Cast Iron	Non-Alloy < 180 HB	197	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Non-Alloy > 180 HB	164	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Alloy	131	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
White Malleable Cast Iron	< 180 HB	197	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	> 180 HB	164	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Black Malleable Cast Iron	< 180 HB	197	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	> 180 HB	164	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039

*** 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.

Series US007 - Steels, High-Temp Alloys & Titanium

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/mm²	853	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	> 500 N/mm²	787	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Construction Steel	Non-Alloy < 500 N/mm²	820	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Non-Alloy > 500 N/mm²	755	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Alloy	722	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Cementation Steel	< 150 HB	689	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	150-200 HB	656	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	> 200 HB	623	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
Nitriding Steel	< 1000 N/mm²	623	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	> 1000 N/mm²	558	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	656	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Non-Alloy 800-1000 N/mm²	623	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Alloy < 800 N/mm²	623	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Alloy 800-1000 N/mm²	591	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Alloy 1000-1300 N/mm²	558	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
	Alloy 1300-1600 N/mm²	492	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
Non-Alloy Tool Steel	General	607	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	591	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Low Alloy < 1200 N/mm²	558	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Low Alloy < 1500 N/mm²	492	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
	High Alloy Annealed < 1000 N/mm²	525	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	High Alloy Hardened < 1300 N/mm²	459	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	656	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Low Alloy < 1500 N/mm²	591	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
	High Alloy Annealed < 1000 N/mm²	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	High Alloy Hardened < 1300 N/mm²	459	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	High Alloy Hardened < 1600 N/mm²	427	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
Stainless Steel	Ferric	328	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
	Martensitic	262	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
	Austenitic A5 < 40%	328	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
	Austenitic A5 > 40%	328	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
	Sulphured	361	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
High Temperature Alloy	Fe-Alloy	98	1xø	0.5xø	0.0004	0.0008	0.0012	0.0016	0.0020	0.0024
	Ni-Alloy not hardened	98	1xø	0.5xø	0.0004	0.0008	0.0012	0.0016	0.0020	0.0024
	Ni-Alloy hardened	98	1xø	0.5xø	0.0004	0.0008	0.0012	0.0016	0.0020	0.0024
	Co-Alloy	98	1xø	0.5xø	0.0004	0.0008	0.0012	0.0016	0.0020	0.0024
Cast Iron	Non-Alloy	656	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Low-Alloy	525	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	High-Alloy	394	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Stainless Cast Steel	Ferric/Martensitic	328	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
	Austenitic	328	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	656	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Non-Alloy > 180 HB	591	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Alloy	525	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	High Alloy	394	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Spheroidal Cast Iron	Non-Alloy < 180 HB	623	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Non-Alloy > 180 HB	558	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Alloy	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
White Malleable Cast Iron	< 180 HB	591	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	> 180 HB	525	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Black Malleable Cast Iron	< 180 HB	591	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	> 180 HB	525	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Copper	Non-Alloy	919	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Wrought Alloy Non-Hardened	787	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Wrought Alloy Hardened	656	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	CuNi-Alloy	787	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	CuNiZn-Alloy Long-Chipping	656	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	CuNiZn-Alloy Short-Chipping	787	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
CuZn (Brass)	Long-Chipping	984	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Short-Chipping	1148	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
CuSn (Bronze)	Long-Chipping	787	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Short-Chipping	919	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
CuAlFe (Ampco)	Long-Chipping	459	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Short-Chipping	525	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
Titanium	Non-Alloy	295	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Alloyed-Annealed	262	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
	Alloyed-Hardened	164	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035

*** 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.

PROMAX Premium

Series 155 / 156 - Steels, High-Temp Alloys & Titanium

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/mm²	427	1xø	1.1xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	> 500 N/mm²	394	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Construction Steel	Non-Alloy < 500 N/mm²	410	1xø	1.1xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Non-Alloy > 500 N/mm²	377	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy	361	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Spring Steel	Annealed < 250 HB	213	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Natural Hardened 250-350 HB	197	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Spring Hardened 1200-1600 N/mm²	180	1xø	1.1xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
Cementation Steel	< 150 HB	344	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	150-200 HB	328	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 200 HB	312	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Nitriding Steel	< 1000 N/mm²	312	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 1000 N/mm²	279	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	328	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy 800-1000 N/mm²	312	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy < 800 N/mm²	312	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 800-1000 N/mm²	295	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 1000-1300 N/mm²	279	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Alloy 1300-1600 N/mm²	246	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Non-Alloy Tool Steel	General	303	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	295	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1200 N/mm²	279	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	246	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	262	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	230	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	328	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	295	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	246	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	230	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1600 N/mm²	213	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Stainless Steel	Ferric	164	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Martensitic	131	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic A5 < 40%	164	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic A5 > 40%	164	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Sulphured	180	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
High Temperature Alloy	Fe-Alloy	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy not hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Co-Alloy	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Cast Iron	Non-Alloy	328	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low-Alloy	262	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High-Alloy	197	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Stainless Cast Steel	Ferric/Martensitic	197	1xø	1.1xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic	197	1xø	1.1xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	328	1xø	1.1xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Non-Alloy > 180 HB	295	1xø	1.1xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloy	262	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy	197	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Spheroidal Cast Iron	Non-Alloy < 180 HB	312	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy > 180 HB	279	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy	246	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
White Malleable Cast Iron	< 180 HB	295	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	262	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Black Malleable Cast Iron	< 180 HB	295	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	262	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Titanium	Non-Alloy	197	1xø	0.4xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloyed-Annealed	164	1xø	0.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloyed-Hardened	131	1xø	0.4xø	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.

Series 157 - Steels, High-Temp Alloys & Titanium

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/mm²	968	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 500 N/mm²	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
Construction Steel	Non-Alloy < 500 N/mm²	968	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy > 500 N/mm²	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy	640	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Spring Steel	Annealed < 250 HB	853	0.04xø	0.05xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Natural Hardened 250-350 HB	755	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	Spring Hardened 1200-1600 N/mm²	509	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Cementation Steel	< 150 HB	919	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	150-200 HB	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 200 HB	656	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Nitriding Steel	< 1000 N/mm²	771	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 1000 N/mm²	574	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy 800-1000 N/mm²	689	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy < 800 N/mm²	574	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy 800-1000 N/mm²	640	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy 1000-1300 N/mm²	574	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	Alloy 1300-1600 N/mm²	476	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Non-Alloy Tool Steel	General	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	640	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Low Alloy < 1200 N/mm²	541	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	Low Alloy < 1500 N/mm²	427	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	High Alloy Annealed < 1000 N/mm²	541	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	High Alloy Hardened < 1300 N/mm²	377	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	543	0.04xø	0.05xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Low Alloy < 1500 N/mm²	427	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	High Alloy Annealed < 1000 N/mm²	541	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	High Alloy Hardened < 1300 N/mm²	377	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	High Alloy Hardened < 1600 N/mm²	344	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Stainless Steel	Ferric	82	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Martensitic	66	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 < 40%	82	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 > 40%	66	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Sulphured	98	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
High Temperature Alloy	Fe-Alloy	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy not hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Co-Alloy	9 0	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Cast Iron	Non-Alloy	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Low-Alloy	541	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	High-Alloy	377	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	1001	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy > 180 HB	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy	755	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	High Alloy	541	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Spheroidal Cast Iron	Non-Alloy < 180 HB	1001	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy > 180 HB	853	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	Alloy	705	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
White Malleable Cast Iron	< 180 HB	1001	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 180 HB	853	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Black Malleable Cast Iron	< 180 HB	1001	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 180 HB	853	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Copper	Non-Alloy	1394	0.1xø	0.15xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Wrought Alloy Non-Hardened	1181	0.1xø	0.15xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Wrought Alloy Hardened	968	0.1xø	0.15xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039

*** 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.

PROMAX Premium

Series 190 / 191 - Steels, High-Temp Alloys & Titanium

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"
Nitriding Steel	< 1000 N/mm²	98	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 1000 N/mm²	74	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	115	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Non-Alloy 800-1000 N/mm²	98	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy < 800 N/mm²	98	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 800-1000 N/mm²	82	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 1000-1300 N/mm²	74	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 1300-1600 N/mm²	66	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Stainless Steel	Ferric	82	0.5xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Martensitic	66	0.5xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 < 40%	57	0.5xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 > 40%	82	0.5xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Sulphured	98	0.5xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
High Temperature Alloy	Fe-Alloy	49	1xø	0.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Ni-Alloy not hardened	49	1xø	0.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Ni-Alloy hardened	49	1xø	0.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Co-Alloy	49	1xø	0.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
Cast Iron	Non-Alloy	328	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low-Alloy	262	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High-Alloy	197	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Stainless Cast Steel	Ferric/Martensitic	164	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic	164	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	328	1xø	0.7xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Non-Alloy > 180 HB	295	1xø	0.7xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloy	262	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy	197	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Spheroidal Cast Iron	Non-Alloy < 180 HB	312	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy > 180 HB	279	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy	246	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
White Malleable Cast Iron	< 180 HB	295	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	262	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Black Malleable Cast Iron	< 180 HB	295	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	262	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Titanium	Non-Alloy	148	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloyed-Annealed	131	1xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Alloyed-Hardened	82	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025

Series 120 - Steels, High-Temp Alloys & Titanium

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/mm²	295	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	> 500 N/mm²	213	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Construction Steel	Non-Alloy < 500 N/mm²	295	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Non-Alloy > 500 N/mm²	213	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Alloy	180	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Spring Steel	Annealed < 250 HB	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Cementation Steel	< 150 HB	279	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	150-200 HB	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 200 HB	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Nitriding Steel	< 1000 N/mm²	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 1000 N/mm²	164	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Non-Alloy 800-1000 N/mm²	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy < 800 N/mm²	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 800-1000 N/mm²	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 1000-1300 N/mm²	148	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Non-Alloy Tool Steel	General	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	164	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Low Alloy < 1200 N/mm²	131	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	High Alloy Annealed < 1000 N/mm²	131	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/mm²	131	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.

Series 120 - Steels, High-Temp Alloys & Titanium (Continued)

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"
Stainless Steel	Ferric	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Martensitic	131	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 < 40%	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 > 40%	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Sulphured	180	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
High Temperature Alloy	Fe-Alloy	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy not hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Co-Alloy	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Cast Iron	Non-Alloy	295	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Low-Alloy	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Stainless Cast Steel	Ferric/Martensitic	131	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	361	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Non-Alloy > 180 HB	312	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Alloy	262	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	High Alloy	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Spheroidal Cast Iron	Non-Alloy < 180 HB	361	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Non-Alloy > 180 HB	312	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Alloy	262	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
White Malleable Cast Iron	< 180 HB	361	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	> 180 HB	312	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Black Malleable Cast Iron	< 180 HB	361	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	> 180 HB	312	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Titanium	Non-Alloy	197	1xø	0.4xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloyed-Annealed	164	1xø	0.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloyed-Hardened	131	1xø	0.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028

Series US556 - Steels, High-Temp Alloys & Titanium

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/mm²	328	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy 800-1000 N/mm²	312	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy < 800 N/mm²	312	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 800-1000 N/mm²	295	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 1000-1300 N/mm²	279	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Alloy 1300-1600 N/mm²	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/mm²	295	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1200 N/mm²	279	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	246	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	262	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	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/mm²	328	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	295	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	246	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	230	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1600 N/mm²	213	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Stainless Steel	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
	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
High Temperature Alloy	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
	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
Stainless Cast Steel	Ferric/Martensitic	328	0.5xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
	Austenitic	328	0.5xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
Titanium	Non-Alloy	394	0.5xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0050
	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

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

PROMAX Premium

Series 158 / 159 - Steels, High-Temp Alloys & Titanium

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/mm²	427	0.5xø	1xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	> 500 N/mm²	394	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Construction Steel	Non-Alloy < 500 N/mm²	410	0.5xø	1xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Non-Alloy > 500 N/mm²	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/mm²	312	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 1000 N/mm²	279	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	328	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy 800-1000 N/mm²	312	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy < 800 N/mm²	312	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 800-1000 N/mm²	295	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 1000-1300 N/mm²	279	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Alloy 1300-1600 N/mm²	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/mm²	295	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1200 N/mm²	279	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	246	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	262	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	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/mm²	328	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	295	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	246	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	230	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1600 N/mm²	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.

Series 121 - Steels, High-Temp Alloys & Titanium

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/mm²	287	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	> 500 N/mm²	246	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Construction Steel	Non-Alloy < 500 N/mm²	287	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Non-Alloy > 500 N/mm²	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/mm²	246	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 1000 N/mm²	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	246	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Non-Alloy 800-1000 N/mm²	246	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy < 800 N/mm²	246	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 800-1000 N/mm²	246	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 1000-1300 N/mm²	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/mm²	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Low Alloy < 1200 N/mm²	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	High Alloy Annealed < 1000 N/mm²	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/mm²	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Machining Steel	< 500 N/mm²	533	0.05xø	1.4xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	> 500 N/mm²	492	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Construction Steel	Non-Alloy < 500 N/mm²	509	0.05xø	1.4xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Non-Alloy > 500 N/mm²	476	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy	459	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Spring Steel	Annealed < 250 HB	262	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Natural Hardened 250-350 HB	246	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Spring Hardened 1200-1600 N/mm²	230	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
Cementation Steel	< 150 HB	427	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	150-200 HB	410	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 200 HB	377	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Nitriding Steel	< 1000 N/mm²	377	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 1000 N/mm²	344	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	410	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy 800-1000 N/mm²	377	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy < 800 N/mm²	377	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 800-1000 N/mm²	361	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 1000-1300 N/mm²	344	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Alloy 1300-1600 N/mm²	312	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Non-Alloy Tool Steel	General	377	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	361	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1200 N/mm²	344	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	303	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	328	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	287	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	336	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	303	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	303	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	287	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1600 N/mm²	262	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Stainless Steel	Ferric	197	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Martensitic	164	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic A5 < 40%	197	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic A5 > 40%	197	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Sulphured	213	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
High Temperature Alloy	Fe-Alloy	66	0.05xø	1.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Ni-Alloy not hardened	66	0.05xø	1.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Ni-Alloy hardened	66	0.05xø	1.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Co-Alloy	66	0.05xø	1.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
Cast Iron	Non-Alloy	410	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low-Alloy	328	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High-Alloy	246	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Stainless Cast Steel	Ferric/Martensitic	197	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic	197	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025

*** 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.

PROMAX Premium

Series 160 / 161 - Steels, High-Temp Alloys & Titanium

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"
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	410	0.05xø	1.4xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Non-Alloy > 180 HB	361	0.05xø	1.4xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloy	328	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy	246	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Spheroidal Cast Iron	Non-Alloy < 180 HB	377	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy > 180 HB	344	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy	303	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
White Malleable Cast Iron	< 180 HB	361	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	328	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Black Malleable Cast Iron	< 180 HB	361	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	328	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Titanium	Non-Alloy	328	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloyed-Annealed	287	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Alloyed-Hardened	205	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025

Series 100 - Steels, High-Temp Alloys & Titanium

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/mm²	295	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	> 500 N/mm²	213	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Construction Steel	Non-Alloy < 500 N/mm²	295	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Non-Alloy > 500 N/mm²	213	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Alloy	180	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Spring Steel	Annealed < 250 HB	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Cementation Steel	< 150 HB	279	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	150-200 HB	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 200 HB	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Nitriding Steel	< 1000 N/mm²	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 1000 N/mm²	164	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Non-Alloy 800-1000 N/mm²	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy < 800 N/mm²	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 800-1000 N/mm²	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 1000-1300 N/mm²	148	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Non-Alloy Tool Steel	General	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	164	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Low Alloy < 1200 N/mm²	131	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	High Alloy Annealed < 1000 N/mm²	131	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/mm²	131	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Stainless Steel	Ferric	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Martensitic	131	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 < 40%	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 > 40%	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Sulphured	180	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
Cast Iron	Non-Alloy	295	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Low-Alloy	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Stainless Cast Steel	Ferric/Martensitic	131	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	361	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Non-Alloy > 180 HB	312	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Alloy	262	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	High Alloy	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Spheroidal Cast Iron	Non-Alloy < 180 HB	361	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Non-Alloy > 180 HB	312	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Alloy	262	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
White Malleable Cast Iron	< 180 HB	361	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	> 180 HB	312	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Black Malleable Cast Iron	< 180 HB	361	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	> 180 HB	312	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039

*** 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.

Series 101 - Steels, High-Temp Alloys & Titanium

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"
Non-Alloy Tool Steel	General	303	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	295	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Low Alloy < 1200 N/mm²	279	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Low Alloy < 1500 N/mm²	246	0.8xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	High Alloy Annealed < 1000 N/mm²	262	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Hardened < 1300 N/mm²	230	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	328	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Low Alloy < 1500 N/mm²	295	0.8xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	High Alloy Annealed < 1000 N/mm²	246	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Hardened < 1300 N/mm²	230	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Hardened < 1600 N/mm²	213	0.8xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
Stainless Steel	Ferric	164	0.8xø	0.7xø	0.0004	0.0006	0.0008	0.0014	0.0017	0.0019
	Martensitic	131	0.8xø	0.7xø	0.0004	0.0006	0.0008	0.0014	0.0017	0.0019
	Austenitic A5 < 40%	164	0.8xø	0.7xø	0.0004	0.0006	0.0008	0.0014	0.0017	0.0019
	Austenitic A5 > 40%	164	0.8xø	0.7xø	0.0004	0.0006	0.0008	0.0014	0.0017	0.0019
	Sulphured	180	0.8xø	0.7xø	0.0004	0.0006	0.0008	0.0014	0.0017	0.0019
High Temperature Alloy	Fe-Alloy	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy not hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Co-Alloy	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Titanium	Non-Alloy	197	1xø	0.4xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloyed-Annealed	164	1xø	0.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloyed-Hardened	131	1xø	0.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028

Series 250 - Die & Mold

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4"	3/8"	1/2"
Machining Steel	< 500 N/mm²	968	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	> 500 N/mm²	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
Construction Steel	Non-Alloy < 500 N/mm²	968	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	Non-Alloy > 500 N/mm²	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	Alloy	640	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041
Spring Steel	Annealed < 250 HB	853	0.04xø	0.05xø	0.0011	0.0022	0.0033	0.0055
	Natural Hardened 250-350 HB	755	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041
	Spring Hardened 1200-1600 N/mm²	509	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025
Cementation Steel	< 150 HB	919	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	150-200 HB	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	> 200 HB	656	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
Nitriding Steel	< 1000 N/mm²	771	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	> 1000 N/mm²	574	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	Non-Alloy 800-1000 N/mm²	689	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	Alloy < 800 N/mm²	574	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	Alloy 800-1000 N/mm²	640	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	Alloy 1000-1300 N/mm²	574	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041
	Alloy 1300-1600 N/mm²	476	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025
Non-Alloy Tool Steel	General	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	640	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	Low Alloy < 1200 N/mm²	541	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041
	Low Alloy < 1500 N/mm²	427	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025
	High Alloy Annealed < 1000 N/mm²	541	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041
	High Alloy Hardened < 1300 N/mm²	377	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	541	0.04xø	0.05xø	0.0011	0.0022	0.0033	0.0055
	Low Alloy < 1500 N/mm²	427	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041
	High Alloy Annealed < 1000 N/mm²	541	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041
	High Alloy Hardened < 1300 N/mm²	377	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025
	High Alloy Hardened < 1600 N/mm²	344	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025
Stainless Steel	Ferric	82	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011
	Martensitic	66	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011
	Austenitic A5 < 40%	82	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011
	Austenitic A5 > 40%	66	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011
	Sulphured	98	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011

*** 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.

PROMAX Premium

Series 251 / 252 / 253 / 254 - Die & Mold

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/32" 3/32" 1/8"	Chip Load Per Tooth [inch] 3/16"
Machining Steel	< 500 N/mm²	213	1xø	0.04xø	0.0011	0.0017
	> 500 N/mm²	189	1xø	0.04xø	0.0011	0.0017
Construction Steel	Non-Alloy < 500 N/mm²	213	1xø	0.04xø	0.0011	0.0017
	Non-Alloy > 500 N/mm²	189	1xø	0.04xø	0.0011	0.0017
	Alloy	148	1xø	0.04xø	0.0011	0.0017
Spring Steel	Annealed < 250 HB	189	1xø	0.04xø	0.0011	0.0017
	Natural Hardened 250-350 HB	148	1xø	0.04xø	0.0011	0.0017
	Spring Hardened 1200-1600 N/mm²	115	1xø	0.03xø	0.0010	0.0017
Cementation Steel	< 150 HB	213	1xø	0.04xø	0.0011	0.0017
	150-200 HB	189	1xø	0.04xø	0.0011	0.0017
	> 200 HB	148	1xø	0.04xø	0.0011	0.0017
Nitriding Steel	< 1000 N/mm²	148	1xø	0.04xø	0.0011	0.0017
	> 1000 N/mm²	148	1xø	0.04xø	0.0011	0.0017
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	189	1xø	0.04xø	0.0011	0.0017
	Non-Alloy 800-1000 N/mm²	148	1xø	0.04xø	0.0011	0.0017
	Alloy < 800 N/mm²	189	1xø	0.04xø	0.0011	0.0017
	Alloy 800-1000 N/mm²	148	1xø	0.04xø	0.0011	0.0017
	Alloy 1000-1300 N/mm²	115	1xø	0.03xø	0.0010	0.0017
	Alloy 1300-1600 N/mm²	98	1xø	0.03xø	0.0010	0.0017
Non-Alloy Tool Steel	General	148	1xø	0.04xø	0.0011	0.0017
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	148	1xø	0.04xø	0.0011	0.0017
	Low Alloy < 1200 N/mm²	115	1xø	0.03xø	0.0010	0.0017
	Low Alloy < 1500 N/mm²	98	1xø	0.03xø	0.0010	0.0017
	High Alloy Annealed < 1000 N/mm²	148	1xø	0.04xø	0.0011	0.0017
	High Alloy Hardened < 1300 N/mm²	115	1xø	0.03xø	0.0010	0.0017
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	115	1xø	0.03xø	0.0010	0.0017
	Low Alloy < 1500 N/mm²	98	1xø	0.03xø	0.0010	0.0017
	High Alloy Annealed < 1000 N/mm²	148	1xø	0.04xø	0.0011	0.0017
	High Alloy Hardened < 1300 N/mm²	115	1xø	0.03xø	0.0010	0.0017
	High Alloy Hardened < 1600 N/mm²	98	1xø	0.03xø	0.0010	0.0017
Stainless Steel	Ferric	82	0.05xø	0.08xø	0.0003	0.0006
	Martensitic	66	0.05xø	0.08xø	0.0003	0.0006
	Austenitic A5 < 40%	82	0.05xø	0.08xø	0.0003	0.0006
	Austenitic A5 > 40%	66	0.05xø	0.08xø	0.0003	0.0006
	Sulphured	98	0.05xø	0.08xø	0.0003	0.0006

*** 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.**

Series US501 / US503 - Micro

Hardness: ≤ 28 Rc													
Material Designation			Chip Load - IPT			Depth of Cut		Chip Load - IPT				Depth of Cut	
		SFM	0.005 - 0.015	0.015 - 0.031	0.031 - 0.047	Radial	Axial	0.047 - 0.062	0.062 - 0.078	0.078 - 0.093	0.093 - 0.120	Radial	Axial
Aluminum Alloys	Castings	750	0.00015	0.00031	0.00047	.13xDia.	3xDia.	0.00055	0.00069	0.00082	0.00110	.25xDia.	3xDia.
	Wrought	1000	0.00015	0.00031	0.00047	.13xDia.	3xDia.	0.00055	0.00069	0.00082	0.00110	.25xDia.	3xDia.
Copper Alloys	Coppers	225	0.00012	0.00025	0.00038	.13xDia.	3xDia.	0.00044	0.00055	0.00065	0.00088	.13xDia.	3xDia.
	Brass	500	0.00012	0.00025	0.00038	.13xDia.	3xDia.	0.00044	0.00055	0.00065	0.00088	.13xDia.	3xDia.
	Bronze	225	0.00012	0.00025	0.00038	.13xDia.	3xDia.	0.00044	0.00055	0.00065	0.00088	.13xDia.	3xDia.
	Aluminum Bronze	500	0.00012	0.00025	0.00038	.13xDia.	3xDia.	0.00044	0.00055	0.00065	0.00088	.13xDia.	3xDia.
	Nickel	225	0.00012	0.00025	0.00038	.13xDia.	3xDia.	0.00044	0.00055	0.00065	0.00088	.13xDia.	3xDia.
	Copper Alloys	550	0.00012	0.00025	0.00038	.13xDia.	3xDia.	0.00044	0.00055	0.00065	0.00088	.13xDia.	3xDia.
Cast Iron	Ductile	300	0.00005	0.00010	0.00015	.13xDia.	3xDia.	0.00017	0.00021	0.00025	0.00034	.13xDia.	3xDia.
	Gray	400	0.00005	0.00010	0.00015	.13xDia.	3xDia.	0.00017	0.00021	0.00025	0.00034	.13xDia.	3xDia.
	Malleable	250	0.00005	0.00010	0.00015	.13xDia.	3xDia.	0.00017	0.00021	0.00025	0.00034	.13xDia.	3xDia.
Magnesium Alloys	General	1500	0.00015	0.00031	0.00048	.13xDia.	3xDia.	0.00055	0.00069	0.00082	0.00110	.13xDia.	3xDia.
Zinc Alloys	General	800	0.00015	0.00031	0.00048	.13xDia.	3xDia.	0.00055	0.00069	0.00082	0.00110	.13xDia.	3xDia.
Carbon Steel	Low Carbon	600	0.00005	0.00010	0.00015	.13xDia.	3xDia.	0.00170	0.00021	0.00025	0.00034	.25xDia.	3xDia.
	Medium Carbon	200	0.00004	0.00009	0.00013	.13xDia.	3xDia.	0.00020	0.00025	0.00030	0.00040	.25xDia.	3xDia.
Stainless Steels	Martensitic\ Ferritic	450	0.00005	0.00010	0.00015	.13xDia.	3xDia.	0.00017	0.00021	0.00025	0.00034	.25xDia.	3xDia.
	Austenitic	200	0.00004	0.00009	0.00013	.13xDia.	3xDia.	0.00015	0.00019	0.00023	0.00031	.25xDia.	3xDia.
Tool Steels	Low Alloy	200	0.00004	0.00009	0.00013	.13xDia.	3xDia.	0.00015	0.00019	0.00023	0.00031	.25xDia.	3xDia.
	High Alloy	150	0.00003	0.00006	0.00008	.13xDia.	3xDia.	0.00010	0.00012	0.00014	0.00019	.25xDia.	3xDia.
Titanium Alloys	General	150	0.00003	0.00006	0.00008	.13xDia.	3xDia.	0.00010	0.00012	0.00014	0.00019	.25xDia.	3xDia.
High Temp Alloys	Iron Alloy	70	0.00003	0.00006	0.00009	.13xDia.	3xDia.	0.00010	0.00012	0.00014	0.00019	.25xDia.	3xDia.
	Nickel Alloy	70	0.00003	0.00006	0.00009	.13xDia.	3xDia.	0.00010	0.00012	0.00014	0.00019	.25xDia.	3xDia.
	Hardened Nickel Alloy	70	0.00003	0.00006	0.00009	.13xDia.	3xDia.	0.00010	0.00012	0.00014	0.00019	.25xDia.	3xDia.
	Cobalt Alloy	70	0.00003	0.00006	0.00009	.13xDia.	3xDia.	0.00010	0.00012	0.00014	0.00019	.25xDia.	3xDia.

Hardness: 38- 45 Rc													
Material Designation			Chip Load - IPT			Depth of Cut		Chip Load - IPT				Depth of Cut	
		SFM	0.005 - 0.015	0.015 - 0.031	0.031 - 0.047	Radial	Axial	0.047 - 0.062	0.062 - 0.078	0.078 - 0.093	0.093 - 0.120	Radial	Axial
Stainless Steels	Austenitic	100	0.00002	0.00004	0.00007	.13xDia.	3xDia.	0.00008	0.00100	0.00012	0.00016	.25xDia.	3xDia.
Tool Steels	Low Alloy	100	0.00002	0.00004	0.00007	.13xDia.	3xDia.	0.00008	0.00100	0.00012	0.00016	.25xDia.	3xDia.
	High Alloy	90	0.00001	0.00003	0.00004	.13xDia.	3xDia.	0.00005	0.00006	0.00007	0.00010	.25xDia.	3xDia.
Titanium Alloys	General	75	0.00001	0.00003	0.00004	.13xDia.	3xDia.	0.00005	0.00006	0.00007	0.00010	.25xDia.	3xDia.
High Temp Alloys	Iron Alloy	50	0.00001	0.00003	0.00004	.13xDia.	3xDia.	0.00005	0.00006	0.00007	0.00010	.25xDia.	3xDia.
	Nickel Alloy	50	0.00001	0.00003	0.00004	.13xDia.	3xDia.	0.00005	0.00006	0.00007	0.00010	.25xDia.	3xDia.
	Hardened Nickel Alloy	50	0.00001	0.00003	0.00004	.13xDia.	3xDia.	0.00005	0.00006	0.00007	0.00010	.25xDia.	3xDia.
	Cobalt Alloy	50	0.00001	0.00003	0.00004	.13xDia.	3xDia.	0.00005	0.00006	0.00007	0.00010	.25xDia.	3xDia.

PROMAX Premium

Series US504 / US506 - Micro

Hardness: ≤ 28 Rc													
Material Designation			Chip Load - IPT			Depth of Cut		Chip Load - IPT				Depth of Cut	
		SFM	0.005 - 0.015	0.015 - 0.031	0.031 - 0.047	Radial	Axial	0.047 - 0.062	0.062 - 0.078	0.078 - 0.093	0.093 - 0.120	Radial	Axial
Aluminum Alloys	Castings	750	0.00022	0.00045	0.00068	.30xDia.	1xDia	0.00780	0.00099	0.00118	0.00158	.60xDia.	1xDia.
	Wrought	1000	0.00022	0.00045	0.00068	.30xDia.	1xDia	0.00780	0.00099	0.00118	0.00158	.60xDia.	1xDia.
Copper Alloys	Coppers	225	0.00017	0.00036	0.00055	.30xDia.	1xDia	0.00063	0.00079	0.00094	0.00127	.60xDia.	1xDia.
	Brass	500	0.00017	0.00036	0.00055	.30xDia.	1xDia	0.00063	0.00079	0.00094	0.00127	.60xDia.	1xDia.
	Bronze	225	0.00017	0.00036	0.00055	.30xDia.	1xDia	0.00063	0.00079	0.00094	0.00127	.60xDia.	1xDia.
	Aluminum Bronze	500	0.00017	0.00036	0.00055	.30xDia.	1xDia	0.00063	0.00079	0.00094	0.00127	.60xDia.	1xDia.
	Nickel	225	0.00017	0.00036	0.00055	.30xDia.	1xDia	0.00063	0.00079	0.00094	0.00127	.60xDia.	1xDia.
	Copper Alloys	550	0.00017	0.00036	0.00055	.30xDia.	1xDia	0.00063	0.00079	0.00094	0.00127	.60xDia.	1xDia.
Cast Iron	Ductile	300	0.00007	0.00014	0.00021	.30xDia.	1xDia	0.00024	0.00031	0.00036	0.00049	.60xDia.	1xDia.
	Gray	400	0.00007	0.00014	0.00021	.30xDia.	1xDia	0.00024	0.00031	0.00036	0.00049	.60xDia.	1xDia.
	Malleable	250	0.00007	0.00014	0.00021	.30xDia.	1xDia	0.00024	0.00031	0.00036	0.00049	.60xDia.	1xDia.
Magnesium Alloys	General	1500	0.00022	0.00045	0.00068	.30xDia.	1xDia	0.00078	0.00099	0.00118	0.00158	.60xDia.	1xDia.
Zinc Alloys	General	800	0.00022	0.00045	0.00068	.30xDia.	1xDia	0.00078	0.00099	0.00118	0.00158	.60xDia.	1xDia.

Hardness: 29 - 37 Rc													
Material Designation			Chip Load - IPT			Depth of Cut		Chip Load - IPT				Depth of Cut	
		SFM	0.005 - 0.015	0.015 - 0.031	0.031 - 0.047	Radial	Axial	0.047 - 0.062	0.062 - 0.078	0.078 - 0.093	0.093 - 0.120	Radial	Axial
Carbon Steel	Low Carbon	600	0.00007	0.00014	0.00021	.30xDia.	1xDia	0.00024	0.00031	0.00036	0.00049	.60xDia.	1xDia.
	Medium Carbon	200	0.00006	0.00013	0.00019	.30xDia.	1xDia	0.00022	0.00028	0.00033	0.00045	.60xDia.	1xDia.
Stainless Steels	Martensitic\ Ferritic	450	0.00007	0.00014	0.00021	.30xDia.	1xDia	0.00024	0.00031	0.00036	0.00049	.60xDia.	1xDia.
	Austenitic	200	0.00006	0.00013	0.00019	.30xDia.	1xDia	0.00022	0.00028	0.00033	0.00045	.60xDia.	1xDia.
Tool Steels	Low Alloy	200	0.00006	0.00013	0.00019	.30xDia.	1xDia	0.00022	0.00028	0.00033	0.00045	.60xDia.	1xDia.
	High Alloy	150	0.00004	0.00008	0.00012	.30xDia.	1xDia	0.00014	0.00017	0.00021	0.00028	.60xDia.	1xDia.
Titanium Alloys	General	150	0.00004	0.00008	0.00012	.30xDia.	1xDia	0.00014	0.00017	0.00021	0.00028	.60xDia.	1xDia
High Temp Alloys	Iron Alloy	70	0.00004	0.00008	0.00012	.30xDia.	1xDia	0.00014	0.00017	0.00021	0.00028	.60xDia.	1xDia.
	Nickel Alloy	70	0.00004	0.00008	0.00012	.30xDia.	1xDia	0.00014	0.00017	0.00021	0.00028	.60xDia.	1xDia.
	Hardened Nickel Alloy	70	0.00004	0.00008	0.00012	.30xDia.	1xDia	0.00014	0.00017	0.00021	0.00028	.60xDia.	1xDia.
	Cobalt Alloy	70	0.00004	0.00008	0.00012	.30xDia.	1xDia	0.00014	0.00017	0.00021	0.00028	.60xDia.	1xDia.

Hardness: 38- 45 Rc													
Material Designation			Chip Load - IPT			Depth of Cut		Chip Load - IPT				Depth of Cut	
		SFM	0.005 - 0.015	0.015 - 0.031	0.031 - 0.047	Radial	Axial	0.047 - 0.062	0.062 - 0.078	0.078 - 0.093	0.093 - 0.120	Radial	Axial
Stainless Steels	Austenitic	100	0.00003	0.00006	0.00010	.30xDia.	1xDia	0.00011	0.00014	0.00017	0.00022	.60xDia.	1xDia.
Tool Steels	Low Alloy	100	0.00003	0.00006	0.00010	.30xDia.	1xDia	0.00011	0.00014	0.00017	0.00022	.60xDia.	1xDia.
	High Alloy	90	0.00002	0.00004	0.00006	.30xDia.	1xDia	0.00007	0.00009	0.00012	0.00018	.60xDia.	1xDia.
Titanium Alloys	General	75	0.00002	0.00004	0.00006	.30xDia.	1xDia	0.00007	0.00009	0.00012	0.00018	.60xDia.	1xDia.
High Temp Alloys	Iron Alloy	50	0.00002	0.00004	0.00006	.30xDia.	1xDia	0.00007	0.00009	0.00012	0.00018	.60xDia.	1xDia.
	Nickel Alloy	50	0.00002	0.00004	0.00006	.30xDia.	1xDia	0.00007	0.00009	0.00012	0.00018	.60xDia.	1xDia.
	Hardened Nickel Alloy	50	0.00002	0.00004	0.00006	.30xDia.	1xDia	0.00007	0.00009	0.00012	0.00018	.60xDia.	1xDia.
	Cobalt Alloy	50	0.00002	0.00004	0.00006	.30xDia.	1xDia	0.00007	0.00009	0.00012	0.00018	.60xDia.	1xDia.