



Application recommendations thread milling cutters and micro-thread milling cutters

ISO	Material group	Hardness	Example materials	Material no.
P	P1	Structural/free-cutting steels, Unalloyed heat-treatable/- case hardened steels	S235JR C1 115MnPB30 S355J2	1.0037 1.0401 1.0718 1.0577
	P2	Free-cutting steels, Unalloyed case hardened steels, nitriding steels	C60 31CrMo12 42CrMo4	1.0601 1.8515 1.7225
	P3	Alloyed heat-treatable steels, heat-treatable steels, high speed steels	36CrNiMo4 X36CrMo17 HS 6-5-2	1.6511 1.2316 1.3343
M	M1	Stainless steel sulfured, austenitic	X5CrNi18-10 X6CrNiTi18-10 X8CrNiS18-9	1.4301 1.4571 1.4305
	M2	Stainless and acid-resit. steel steels, martensitic	X17CrNi16-2 X90CrMoV18 X2CrTi12	1.4057 1.4112 1.4512
M	M3	duplex and super duplex	X2CrNiMoN22-5-3 X2CrNiMoN25-7-4 X2CrNiMoCuWn25-7-4	1.4462 1.441 1.4501
	K1	cast iron	EN-GJL-150 EN-GJL-250 EN-GJL-300	0.6015 0.6025 0.6030
K	K2	Spher. graph. iron and mall. cast iron	EN-GJS-400-15 EN-GJS-600-3 EN-GJS-700-2	0.704 0.706 0.707
	K3	ADI, GGV	EN-GJS1000-5 EN-GJV250 EN-GJV400	0.6025 0.6030 0.6035
N	N1	Aluminium and wrought alloys	A199.5H AlMgSi1 AlZn4.5Mg GD-ALSiCu1Mg	3.025 3.2315 3.4335 3.2134
	N2	Aluminium- cast alloys	GD-ALSi8Cu3 G-ALSi9Mg G-ALSi12	3.2162 3.2373 3.2581
N	N3	Magnesium alloys	GD-MgAlZn1 CuZn20	3.5812.08 2.025
	N4	Copper and copper alloys	CuZn37Pb0.5 short-chipping CuZn33Pb2	2.0332 2.038 2.041
N	N5	Copper special alloys	Ampco	2.0250
	N6	Plastics [thermoplastics, duroplastics]	PMMA, POM,PVC short-chipping	2.461
S	S1	Titanium und titanium alloys	Titanium TiAlSiN2 TiAlSiV4	3.7025 3.7115 3.7165
	S2	Nickel, cobalt, iron alloys	Hastelloy C4 Inconel 718 Nimonic	2.461 2.4668 2.4634
H	H1 H2	High tensile steels, hardened steels	Hardox PM30	2.4668 2.4634

Application recommendations drill thread milling cutters 1.5xD, 2xD, 2.5xD

ISO	Material group	Hardness	Example materials	Material no.
K	K1	cast iron	EN-GJL-150 EN-GJL-250 EN-GJL-300	0.6015 0.6025 0.6030
	K2	Spher. graph. iron and mall. cast iron	EN-GJS-400-15 EN-GJS-600-3 EN-GJS-700-2	0.7040 0.7060 0.7070
	K3	ADI, GGV	EN-GJS1000-5 EN-GJV250 EN-GJV400	0.6025 0.6030 0.6035
N	N1	Aluminium and wrought alloys	A199.5H AlMgSi1 AlZn4.5Mg GD-ALSiCu1Mg	3.0250 3.2315 3.4335 3.2134
	N2	Aluminium- cast alloys	GD-ALSi8Cu3 G-ALSi9Mg G-ALSi12	3.2162 3.2373 3.2581
N	N3	Magnesium alloys	GD-MgAlZn1 CuZn20	3.5812.08 2.0250
	N4	Copper and copper alloys	CuZn37Pb0.5 short-chipping CuZn39Pb2 CuZn33Pb2	2.0332 2.0380 2.0410
N	N5	Copper special alloys	Ampco	2.0250
	N6	Plastics [thermoplastics, duroplastics]	PMMA, POM,PVC Pertinax	2.461

Please note:
The cutting values specified in the respective columns are guide values, they have to be adapted according to application conditions (material, lubrication, tool clamping, machine etc.)
Depending on the machining task the optimal cutting values can differ from those in the table by up to +/- 30%!

Cutting speed V _c (m/min)	Milling part diameter [d1] / feed per tooth [fz] [conventional milling]															Type	TM	TMC	TMU	MTM3	MTM1	MTMH3
	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø12	Ø14	Ø16	Ø18	Ø20							
90	0.01	0.02	0.02	0.025	0.03	0.035	0.045	0.05	0.055	0.06	0.06	0.065	0.065	0.07	0.08	●	●	●	●	●	●	○
80	0.01	0.02	0.02	0.025	0.03	0.035	0.045	0.05	0.055	0.06	0.06	0.065	0.065	0.07	0.08	●	●	●	●	●	●	○
70	0.01	0.02	0.02	0.025	0.03	0.035	0.045	0.05	0.055	0.06	0.06	0.065	0.065	0.07	0.08	●	●	●	●	●	●	●
55	0.01	0.02	0.025	0.03	0.03	0.035	0.04	0.05	0.055	0.06	0.065	0.065	0.07	0.075	●	●	●	●	●	●	○	
50	0.01	0.02	0.025	0.03	0.03	0.035	0.04	0.05	0.055	0.06	0.065	0.065	0.07	0.075	●	●	●	●	●	●	○	
45	0.01	0.02	0.025	0.03	0.03	0.035	0.04	0.05	0.055	0.06	0.065	0.065	0.07	0.075	●	●	●	●	●	●	○	
120	0.01	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06	0.065	0.07	0.08	0.09	0.1	0.12	●	●	●	●	●	●	○
100	0.01	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06	0.065	0.07	0.08	0.09	0.1	0.12	●	●	●	●	●	●	○
80	0.01	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.06	0.065	0.07	0.08	0.09	0.1	0.12	●	●	●	●	●	●	●
250	0.02	0.03	0.035	0.04	0.045	0.05	0.055	0.06	0.065	0.07	0.08	0.085	0.09	0.1	0.12	●	●	●	●	●	●	○
230	0.02	0.03	0.035	0.04	0.045	0.05	0.055	0.06	0.065	0.07	0.08	0.085	0.09	0.1	0.12	●	●	●	●	●	●	○
180	0.02	0.03	0.035	0.04	0.045	0.05	0.055	0.06	0.065	0.07	0.08	0.085	0.09	0.1	0.12	●	●	●	●	●	●	○
130	0.01	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.055	0.06	0.065	0.07	0.075	0.08	0.09	●	●	●	●	●	●	○
160	0.01	0.02	0.025	0.03	0.035	0.04	0.045	0.05	0.055	0.06	0.06	0.065	0.07	0.075	0.08	●	●	●	●	●	●	○
300	0.02	0.03	0.04	0.045	0.05	0.055	0.06	0.07	0.08	0.09	0.09	0.1	0.12	0.13	0.15	●	●	●	●	●	●	○
40	x	0.01	0.015	0.02	0.025	0.03	0.03	0.035	0.04	0.045	0.05	0.055	0.06	0.065	0.07	●	●	●	●	●	●	○
45	x	0.01	0.015	0.02	0.025	0.03	0.03	0.035	0.04	0.045	0.05	0.055	0.06	0.065	0.07	●	●	●	●	●	●	○
40	x	0.01	0.015	0.02	0.025	0.03	0.03	0.035	0.04	0.045	0.05	0.055	0.06	0.065	0.07	●	●	●	●	●	●	○

Cutting speed V _c (m/min)	Thread size / drill feed [fb] / feed per tooth [fz] 1.5xD, 2xD / 2.5xD [conventional milling]																Type	DTMC	DTMC	
	M3		M4		M5		M6		M8		M10		M12		M14					M16
110	fb	fz	fb	fz	fb	fz	fb	fz	fb	fz	fb	fz	fb	fz	fb	fz	fb	fz	●	●
90	0.060	0.010	0.060	0.015	0.070	0.020	0.080	0.025	0.100	0.035	0.120	0.040	0.130	0.050	0.150	0.060	0.180	0.070	●	●
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	○	○
250	0.060	0.015	0.070	0.025	0.080	0.025	0.100	0.035	0.110	0.040	0.120	0.055	0.150	0.065	0.170	0.070	0.200	0.085	●	●
230	0.060	0.015	0.070	0.025	0.080	0.025	0.100	0.035	0.110	0.040	0.120	0.055	0.150	0.065	0.170	0.070	0.200	0.085	●	●
180	0.060	0.015	0.070	0.025	0.080	0.025	0.100	0.035	0.110	0.040	0.120	0.055	0.150	0.065	0.170	0.070	0.200	0.085	●	●
130	0.05	0.01	0.06	0.01	0.07	0.02	0.08	0.03	0.09	0.04	0.10	0.05	0.11	0.06	0.12	0.06	0.13	0.07	●	●
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	○	○
300	0.07	0.02	0.08	0.03	0.09	0.04	0.1	0.05	0.11	0.06	0.12	0.07	0.13	0.08	0.14	0.09	0.15	0.1	●	○

General recommendation:
1.) From 2.5xD [thread depth] thread Ø should be programmed in 2 passes. [2/3-1/3 in the conventional milling]
2.) Generally in VA and in hard machining from > HRC40 it is recommended thread Ø is programmed in 2 passes. [2/3-1/3 in the conventional milling]

● optimally suited
● suited
○ not suitable