Cutting data recommendations for engravers

Feed and cutting speed

OptiMill-Graver | SCM107

MMG*			Workpiece material	Strength/hardness [N/mm²] [HRC]	Cooling				a_p [mm]	v_c [m/min]	f_z [mm]			
											Diameter of milling cutter [mm]			
					Dry	Air/MQL	KSS				3.00	4.00	6.00	8.00
P	P1	P1.1	Structural, machining, case hardened and tempering steels, unalloyed	< 700		✓	✓		0.03xD	**200–230**	0.03	0.05	0.07	0.08
		P1.2	Structural, machining, case hardened and tempering steels, unalloyed	< 1,200		✓	✓		0.03xD	**180–210**	0.024	0.04	0.056	0.064
	P2	P2.1	Nitriding, hardening and tempering steels, alloyed	< 900		✓	✓		0.03xD	**170–200**	0.03	0.05	0.07	0.08
		P2.2	Nitriding, hardening and tempering steels, alloyed	< 1,400		✓	✓		0.03xD	**160–190**	0.024	0.04	0.056	0.064
	P3	P3.1	Tool, bearing, spring and high-speed steels**	< 800		✓	✓		0.03xD	**170–200**	0.03	0.05	0.07	0.08
		P3.2	Tool, bearing, spring and high-speed steels**	< 1,000		✓	✓		0.03xD	**160–190**	0.02	0.03	0.05	0.06
		P3.3	Tool, bearing, spring and high-speed steels**	< 1,500		✓	✓		0.03xD	**140–170**	0.01	0.02	0.03	0.04
	P4	P4.1	Stainless steels, ferritic and martensitic				✓		0.03xD	**140–170**	0.01	0.02	0.03	0.04
	P5	P5.1	Cast steel				✓		0.03xD	**140–170**	0.01	0.02	0.03	0.04
	P6	P6.1	Stainless cast steels, ferritic and martensitic				✓		0.03xD	**150–180**	0.02	0.03	0.04	0.05
M	M1	M1.1	Stainless steels, austenitic	< 700			✓		0.025xD	**180–210**	0.02	0.03	0.04	0.05
		M1.2	Stainless steels, ferritic/austenitic (duplex)	< 1,000			✓		0.025xD	**160–190**	0.01	0.02	0.03	0.04
	M2	M2.1	Stainless cast steel, austenitic	< 700			✓		0.025xD	**180–210**	0.02	0.03	0.04	0.05
	M3	M3.1	Stainless cast steel, ferritic/austenitic (duplex)	< 1,000			✓		0.025xD	**160–190**	0.01	0.02	0.03	0.04
K	K1	K1.1	Cast iron with lamellar graphite (grey cast iron), GJL	< 300		✓	✓		0.03xD	**200–230**	0.03	0.05	0.07	0.08
	K2	K2.1	Cast iron with spheroidal graphite, GJS	< 500		✓	✓		0.03xD	**180–210**	0.024	0.04	0.056	0.064
		K2.2	Cast iron with spheroidal graphite, GJS	≤ 800		✓	✓		0.03xD	**180–210**	0.024	0.04	0.056	0.064
		K2.3	Cast iron with spheroidal graphite, GJS	> 800		✓	✓		0.03xD	**160–190**	0.02	0.03	0.04	0.05
	K3	K3.1	Cast iron with vermicular graphite, GJV; malleable cast iron, GJM	< 500		✓	✓		0.03xD	**200–230**	0.03	0.05	0.07	0.08
		K3.2	Cast iron with vermicular graphite, GJV; malleable cast iron, GJM	> 500		✓	✓		0.03xD	**180–210**	0.024	0.04	0.056	0.064
N	N1	N1.1	Aluminium, unalloyed and alloyed < 3 % Si			✓	✓		0.03xD	**250–300**	0.024	0.04	0.056	0.064
		N1.2	Aluminium, alloyed ≤ 7% Si			✓	✓		0.03xD	**230–280**	0.03	0.05	0.07	0.08
		N1.3	Aluminium, alloyed > 7 - 12% Si			✓	✓		0.03xD	**220–270**	0.03	0.05	0.07	0.08
		N1.4	Aluminium, alloyed > 12% Si			✓	✓		0.03xD	**200–260**	0.03	0.05	0.07	0.08
	N2	N2.1	Copper, unalloyed and low alloyed	< 300		✓	✓		0.03xD	**250–300**	0.024	0.04	0.056	0.064
		N2.2	Copper, alloyed	> 300		✓	✓		0.03xD	**230–280**	0.024	0.04	0.056	0.064
		N2.3	Brass, bronze, gunmetal	< 1,200		✓	✓		0.03xD	**250–300**	0.024	0.04	0.056	0.064
S	S1	S1.1	Titanium, titanium alloys	< 400			✓		0.02xD	**150–170**	0.02	0.03	0.04	0.05
	S2	S2.1	Titanium, titanium alloys	< 1,200			✓		0.02xD	**140–160**	0.02	0.03	0.04	0.05
		S2.2	Titanium, titanium alloys	> 1,200			✓		0.02xD	**130–150**	0.01	0.02	0.03	0.04
H	H1	H1.1	Hardened steel / cast steel	< 44 HRC			✓		0.02xD	**100–125**	0.01	0.02	0.03	0.04
		H1.2	Hardened steel / cast steel	< 55 HRC			✓		0.015xD	**80–100**	0.01	0.02	0.03	0.04
	H2	H2.1	Hardened steel / cast steel	< 60 HRC			✓		0.01xD	**60–80**	0.01	0.02	0.03	0.04

* MAPAL machining groups
** If the alloy parts Cr, Mo, Ni, V, W in total > 8%, then select the next highest MAPAL machining group.

The specified machining values are guide values.
The optimum data for the respective machining task should be determined during the test or machining.