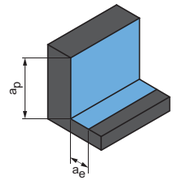
Cutting data recommendations for corner radius milling cutters

Feed and cutting speed

Roughing



Plunge angle
1.0° - 3.0°

Next page:
Finishing (3D, face milling)

OptiMill-3D-CR-Alu | MCR119, 120

MMG*			Workpiece material	Strength/hardness [N/mm²] [HRC]	Cooling			a_p [mm]	a_e [mm]	v_c [m/min]	f_z [mm] Diameter of milling cutter [mm]									
					Dry	Air/MQL	KSS				2.00	3.00	4.00	5.00	6.00	8.00	10.00	12.00	16.00	20.00
N	N1	N1.1	Aluminium, unalloyed and alloyed < 3% Si				✓	0.15xD	0.6xD	**400-600**	0.038	0.057	0.062	0.082	0.090	0.102	0.120	0.155	0.180	0.205
		N1.2	Aluminium, alloyed ≤ 7% Si				✓	0.15xD	0.6xD	**380-580**	0.042	0.063	0.068	0.090	0.099	0.112	0.132	0.171	0.198	0.226
		N1.3	Aluminium, alloyed > 7 - 12% Si				✓	0.15xD	0.6xD	**340-540**	0.046	0.068	0.074	0.098	0.108	0.122	0.144	0.186	0.216	0.246
		N1.4	Aluminium, alloyed > 12% Si				✓	0.15xD	0.6xD	**300-500**	0.049	0.074	0.081	0.107	0.117	0.133	0.156	0.202	0.234	0.267
	N2	N2.1	Copper, unalloyed and low alloyed	< 300			✓	0.15xD	0.6xD	**400-500**	0.038	0.057	0.062	0.082	0.090	0.102	0.120	0.155	0.180	0.205
		N2.2	Copper, alloyed	> 300			✓	0.15xD	0.6xD	**300-400**	0.038	0.057	0.062	0.082	0.090	0.102	0.120	0.155	0.180	0.205
		N2.3	Brass, bronze, gunmetal	< 1,200	✓	✓	✓	0.15xD	0.6xD	**400-500**	0.046	0.068	0.074	0.098	0.108	0.122	0.144	0.186	0.216	0.246

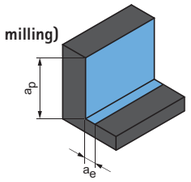
* MAPAL machining groups

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

Cutting data recommendations for corner radius milling cutters

Feed and cutting speed

Finishing (3D, face milling)

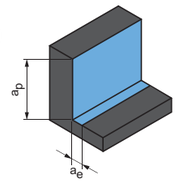


OptiMill-3D-CR-Alu | MCR119, 120

MMG*		Workpiece material	Strength/hardness [N/mm²] [HRC]	Cooling			a_p [mm]	a_e [mm]	v_c [m/min]	f_z [mm]									
										Diameter of milling cutter [mm]									
				Dry	Air/MQL	KSS				2.00	3.00	4.00	5.00	6.00	8.00	10.00	12.00	16.00	20.00
N	N1	N1.1	Aluminium, unalloyed and alloyed < 3% Si			✓	0.015xD	0.025xD	**400-600**	0.038	0.057	0.062	0.082	0.090	0.102	0.120	0.155	0.180	0.205
		N1.2	Aluminium, alloyed ≤ 7% Si			✓	0.015xD	0.025xD	**380-580**	0.042	0.063	0.068	0.090	0.099	0.112	0.132	0.171	0.198	0.226
		N1.3	Aluminium, alloyed > 7 - 12% Si			✓	0.015xD	0.025xD	**340-540**	0.046	0.068	0.074	0.098	0.108	0.122	0.144	0.186	0.216	0.246
		N1.4	Aluminium, alloyed > 12% Si			✓	0.015xD	0.025xD	**300-500**	0.049	0.074	0.081	0.107	0.117	0.133	0.156	0.202	0.234	0.267
	N2	N2.1	Copper, unalloyed and low alloyed	< 300		✓	0.015xD	0.025xD	**400-500**	0.038	0.057	0.062	0.082	0.090	0.102	0.120	0.155	0.180	0.205
		N2.2	Copper, alloyed	> 300		✓	0.015xD	0.025xD	**300-400**	0.038	0.057	0.062	0.082	0.090	0.102	0.120	0.155	0.180	0.205
		N2.3	Brass, bronze, gunmetal	< 1,200	✓	✓	✓	0.015xD	0.025xD	**400-500**	0.046	0.068	0.074	0.098	0.108	0.122	0.144	0.186	0.216	0.246

Next table:
Finishing (flat areas)

Finishing (flat areas)



Plunge angle
0.5° - 1.0°

OptiMill-3D-CR-Alu | MCR119, 120

MMG*		Workpiece material	Strength/hardness [N/mm²] [HRC]	Cooling			a_p [mm]	a_e [mm]	v_c [m/min]	f_z [mm]									
										Diameter of milling cutter [mm]									
				Dry	Air/MQL	KSS				2.00	3.00	4.00	5.00	6.00	8.00	10.00	12.00	16.00	20.00
N	N1	N1.1	Aluminium, unalloyed and alloyed < 3% Si			✓	0.015xD	0.6xD	**400-600**	0.038	0.057	0.062	0.082	0.090	0.102	0.120	0.155	0.180	0.205
		N1.2	Aluminium, alloyed ≤ 7% Si			✓	0.015xD	0.6xD	**380-580**	0.042	0.063	0.068	0.090	0.099	0.112	0.132	0.171	0.198	0.226
		N1.3	Aluminium, alloyed > 7 - 12% Si			✓	0.015xD	0.6xD	**340-540**	0.046	0.068	0.074	0.098	0.108	0.122	0.144	0.186	0.216	0.246
		N1.4	Aluminium, alloyed > 12% Si			✓	0.015xD	0.6xD	**300-500**	0.049	0.074	0.081	0.107	0.117	0.133	0.156	0.202	0.234	0.267
	N2	N2.1	Copper, unalloyed and low alloyed	< 300		✓	0.015xD	0.6xD	**400-500**	0.038	0.057	0.062	0.082	0.090	0.102	0.120	0.155	0.180	0.205
		N2.2	Copper, alloyed	> 300		✓	0.015xD	0.6xD	**300-400**	0.038	0.057	0.062	0.082	0.090	0.102	0.120	0.155	0.180	0.205
		N2.3	Brass, bronze, gunmetal	< 1,200	✓	✓	✓	0.015xD	0.6xD	**400-500**	0.046	0.068	0.074	0.098	0.108	0.122	0.144	0.186	0.216	0.246

Working depth correction factor – k_{AT}

AT	k_{AT}		
	a_p	n	v_f
≤ 3xD	1,00	1,00	1,00
≤ 5xD	0,80	0,90	0,90
≤ 6xD	0,70	0,85	0,85
≤ 8xD	0,60	0,75	0,75
≤ 10xD	0,50	0,70	0,70
≤ 12xD	0,45**	0,65	0,65
≤ 15xD	0,40**	0,60	0,60
≤ 20xD	0,35**	0,60	0,60
≤ 25xD	0,35**	0,50	0,50
≤ 30xD	0,30**	0,50	0,50
≤ 35xD	0,30**	0,50	0,50

Cone angle correction factor – k_{KW}

φ [°]	k_{KW}		
	a_p	n	v_f
0	1,00	1,00	1,00
0,5	1,01	1,01	1,01
1	1,02	1,02	1,02
1,5	1,03	1,03	1,03
3	1,06	1,06	1,06

Note:
To determine cutting data, please observe the notes on page 548-551.

* MAPAL machining groups
** Consultation with a MAPAL application engineer.

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