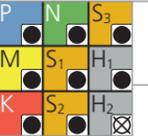


Type N - 4.5 x d - Ball mill - Z4 - Finishing

v_c [m/min]
 f_z [mm]

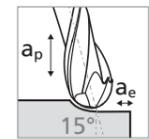
RECOMMENDATION FOR USE
● Excellent | ● Good | ○ Acceptable | ⊗ Not recommended



MILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW

Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	Ød1 1.0 mm		Ød1 1.2 mm		Ød1 1.5 mm		Ød1 1.8 mm		Ød1 2.0 mm		Ød1 2.5 mm		Ød1 3.0 mm		Ød1 4.0 mm		Ød1 5.0 mm		Ød1 6.0 - 8.0 mm			
					v_c	f_z	v_c	f_z	v_c	f_z	v_c	f_z	v_c	f_z	v_c	f_z	v_c	f_z	v_c	f_z	v_c	f_z	v_c	f_z	v_c	f_z
P	Unalloyed carbon steel Rm < 800 N/mm²	1.0301	C10	AISI 1010																						
		1.0401	C15	AISI 1015																						
		1.1191	C45E/CK45	AISI 1045	140	0.015	140	0.017	200	0.024	200	0.026	220	0.034	220	0.036	240	0.035	260	0.044	260	0.044	260	0.047		
		1.0044	S275JR	AISI 1020																						
		1.0715	11SMn30	AISI 1215																						
	Low alloyed steel Rm > 900 N/mm²	1.5752	15NiCr13	ASTM 3415 / AISI 3310																						
		1.7131	16MnCr5	AISI 5115																						
		1.3505	100Cr6	AISI 52100	140	0.014	140	0.016	200	0.022	200	0.024	220	0.032	220	0.034	240	0.033	260	0.042	260	0.042	260	0.045		
		1.7225	42CrMo4	AISI 4140																						
		1.2842	90MnCrV8	AISI O2																						
	High alloyed tool steel Rm < 1200 N/mm²	1.2379	X153CrMoV12	AISI D2																						
		1.2436	X210CrW12	AISI D4/D6																						
1.3343		HS6-5-2C	AISI M2 / UNS T11302	140	0.011	140	0.013	200	0.020	200	0.022	220	0.030	220	0.032	240	0.031	260	0.039	260	0.037	260	0.041			
1.3355		HS18-0-1	AISI T1 / UNS T12001																							
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000	140	0.016	140	0.018	200	0.024	200	0.026	220	0.034	220	0.036	240	0.035	260	0.042	260	0.042	260	0.045		
		1.4105	X6CrMoS17	AISI 430F																						
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	140	0.015	140	0.017	200	0.022	200	0.024	220	0.032	220	0.034	240	0.032	260	0.040	260	0.040	260	0.043		
		1.4112	X90CrMoV18	AISI 440B																						
	Stainless steel martensitic - PH	1.4542	X5CrNiCuNb16-4	AISI 630 / ASTM 17-4 PH	140	0.015	140	0.017	200	0.022	200	0.024	220	0.032	220	0.034	240	0.032	260	0.040	260	0.040	260	0.043		
		1.4545	X5CrNiCuNb15-5	ASTM 15-5 PH																						
	Stainless steel austenitic	1.4301	X5CrNi18-10	AISI 304																						
1.4435		X2CrNiMo18-14-3	AISI 316L	140	0.012	140	0.014	200	0.016	200	0.018	220	0.030	220	0.032	240	0.030	260	0.039	260	0.039	260	0.041			
1.4441		X2CrNiMo18-15-3	AISI 316LM																							
K	Cast iron	0.6020	GG20	ASTM 30																						
		0.6030	GG30	ASTM 40B	120	0.011	120	0.022	140	0.024	140	0.026	160	0.028	160	0.036	180	0.037	200	0.046	200	0.046	200	0.049		
		0.7040	GGG40	ASTM 60-40-18																						
		0.7060	GGG60	ASTM 80-60-03																						
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351	140	0.018	140	0.020	200	0.026	200	0.028	220	0.036	220	0.040	240	0.051	260	0.048	260	0.053	260	0.051		
		3.4365	AlZnMgCu1.5	ASTM 7075																						
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380	140	0.018	140	0.020	200	0.026	200	0.028	220	0.036	220	0.040	240	0.051	260	0.048	260	0.053	260	0.051		
		3.2381	GD-AlSi10Mg	UNS A03590																						
	Copper	2.0040	Cu-OF / CW008A	UNS C10100	140	0.020	140	0.022	200	0.026	200	0.028	220	0.036	220	0.040	240	0.051	260	0.048	260	0.053	260	0.051		
		2.0065	Cu-ETP / CW004A	UNS C11000																						
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400	140	0.020	140	0.022	200	0.026	200	0.028	220	0.036	220	0.040	240	0.051	260	0.048	260	0.053	260	0.051		
		2.0360	CuZn40 CW509L	UNS C28000																						
	Brass, Bronze Rm < 400 N/mm²	2.0401	CuZn39Pb3 / CW614N	UNS C38500	140	0.020	140	0.022	200	0.026	200	0.028	220	0.036	220	0.040	240	0.051	260	0.048	260	0.053	260	0.051		
		2.1020	CuSn6	UNS C51900																						
	Bronze Rm < 600 N/mm²	2.0966	CuAl10Ni5Fe4	UNS C63000	140	0.018	140	0.020	200	0.026	200	0.028	220	0.036	220	0.040	240	0.051	260	0.048	260	0.053	260	0.051		
		2.0960	CuAl9Mn2	UNS C63200																						
S ₁	Super alloys	2.4856		Inconel 625	120	0.007	120	0.008	130	0.009	130	0.010	140	0.010	140	0.012	150	0.013	170	0.018	170	0.018	170	0.019		
		2.4668		Inconel 718																						
		2.4617	NiMo28	Hastelloy B-2																						
		2.4665	NiCr22Fe18Mo	Hastelloy X																						
S ₂	Titanium pure	3.7035	Gr.2	ASTM B348 / F67	120	0.016	120	0.018	130	0.020	130	0.022	140	0.028	140	0.030	150	0.030	170	0.037	170	0.039	170	0.039		
		3.7065	Gr.4	ASTM B348 / F68																						
		3.7165	TiAl6V4	ASTM B348 / F136	120	0.016	120	0.018	130	0.020	130	0.022	140	0.028	140	0.030	150	0.030	170	0.037	170	0.039	170	0.039		
S ₃	Titanium alloys	9.9367	TiAl6Nb7	ASTM F1295																						
		2.4964	CoCr20W15Ni	Haynes 25	140	0.007	140	0.008	180	0.009	180	0.010	200	0.010	200	0.012	220	0.013	240	0.018	240	0.018	240	0.019		
H ₁ H ₂	Hardened steel ≥ 55 HRC	1.2510	100MnCrMoW4	AISI O1	100	0.010	100	0.012	140	0.014	140	0.018	180	0.020	180	0.026	200	0.026	240	0.028	240	0.035	240	0.030		
		1.2379	X153CrMoV12	AISI D2																						

Inclination 15°



■ $a_p = 0.1 \times d_1$
■ $a_e = 0.05 - 0.1 \times d_1$
 $n_{max} = 60'000$ rpm

