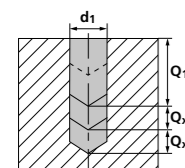
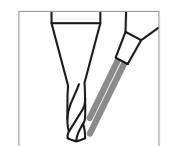


Steel - 20 x d - uncoated

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



DRILLING WITH EXTERNAL COOLING | CUTTING DATA OVERVIEW



Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	vc [m/min]				Q1	Q2	f [mm/rev]									
					Ød1 ≤ 0.4		Ød1 > 0.4				0.1 mm	0.2 mm	0.3 mm	Ød1						
					Mid	High	Mid	High			f	f	f	f	f	f	f			
P	Unalloyed carbon steel Rm < 800 N/mm²	1.0301	C10	AISI 1010																
		1.0401	C15	AISI 1015																
		1.1191	C45E/CK45	AISI 1045		5	40	40	60											
		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		5	25	25	50											
		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		5	20	20	35												
1.3355		HS18-0-1	AISI T1 / UNS T12001																	
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000																
		1.4105	X6CrMoS17	AISI 430F																
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C																
		1.4112	X90CrMoV18	AISI 440B																
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH																
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH																
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304																
1.4435		X2CrNiMo 18-14-3	AISI 316L																	
1.4441		X2CrNiMo 18-15-3	AISI 316LM																	
		1.4539	X1NiCrMoCu 25-20-5	AISI 904L																
K	Cast iron	0.6020	GG20	ASTM 30																
		0.6030	GG30	ASTM 40B																
		0.7040	GGG40	ASTM 60-40-18		5	40	50	100											
		0.7060	GGG60	ASTM 80-60-03				40	80											
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351																
		3.4365	AlZnMgCu1.5	ASTM 7075		5	40	60	120											
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380																
		3.2381	GD-AlSi10Mg	UNS A03590		5	40	50	80											
	Copper	2.004	Cu-OF / CW008A	UNS C10100																
		2.0065	Cu-ETP / CW004A	UNS C11000																
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400																
		2.036	CuZn40 CW509L	UNS C28000																
	Brass, Bronze Rm < 400 N/mm²	2.0401	CuZn39Pb3 / CW614N	UNS C38500																
		2.102	CuSn6	UNS C51900		5	40	60	100											
Bronze Rm < 600 N/mm²	2.0966	CuAl10Ni5Fe4	UNS C63000																	
	2.096	CuAl9Mn2	UNS C63200		5	20	20	40												
S1	Super alloys	2.4856		Inconel 625																
		2.4668		Inconel 718																
		2.4617	NiMo28	Hastelloy B-2																
		2.4665	NiCr22Fe18Mo	Hastelloy X																
S2	Titanium pure	3.7035	Gr.2	ASTM B348 / F67																
		3.7065	Gr.4	ASTM B348 / F68																
S3	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136																
		9.9367	TiAl6Nb7	ASTM F1295																
H1	Hardened steel < 55 HRC	1.2510	100MnCrMoW4	AISI O1																
		1.2379	X153CrMoV12	AISI D2																