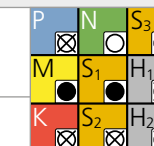
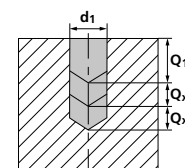
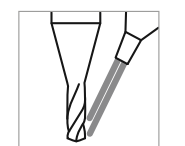


# Type IN 8 x d / 12 x d

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



## DRILLING WITH EXTERNAL COOLING | CUTTING DATA OVERVIEW



Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	v <sub>c</sub>		Q <sub>1</sub>	Q <sub>2</sub>	Q <sub>3</sub>	f [mm/rev]   [IPR]											
					[m/min]   [SFM]					1/64"		1/32"		Ød1		1/16"					
					Mid	High				f	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																	
		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																	
		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																	
1.3355		HS18-0-1	AISI T1 / UNS T12001																		
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000	30   98	40   131	0.5xd1 - 1xd1		0.5xd1	0.010-0.015   .0004-.0006	0.015-0.025   .0006-.0010	0.025-0.030   .0010-.0012	0.030-0.040   .0012-.0016	0.040-0.050   .0016-.0020	0.050-0.060   .0020-.0024						
		1.4105	X6CrMoS17	AISI 430F																	
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	30   98	40   131	0.5xd1 - 1xd1		0.5xd1	0.015-0.020   .0006-.0008	0.020-0.025   .0008-.0010	0.030-0.035   .0012-.0014	0.040-0.050   .0016-.0020	0.050-0.060   .0020-.0024	0.060-0.070   .0024-.0028						
		1.4112	X90CrMoV18	AISI 440B																	
	Stainless steel martensitic - PH	1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH	30   98	40   131	0.5xd1 - 1xd1		0.5xd1	0.010-0.015   .0004-.0006	0.015-0.020   .0006-.0008	0.020-0.030   .0008-.0012	0.030-0.040   .0012-.0016	0.040-0.050   .0016-.0020	0.050-0.060   .0020-.0024						
		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	25   82	30   98	0.5xd1 - 1xd1		0.5xd1	0.010-0.015   .0004-.0006	0.015-0.020   .0006-.0008	0.020-0.030   .0008-.0012	0.030-0.040   .0012-.0016	0.040-0.045   .0016-.0018	0.040-0.060   .0016-.0024						
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																	
		0.7060	GGG60	ASTM 80-60-03																	
N	Aluminium alloy wrought	3.2315	AlMgSi1	ASTM 6351																	
		3.4365	AlZnMgCu1.5	ASTM 7075																	
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380																	
		3.2381	GD-AlSi10Mg	UNS A03590																	
	Copper	2.004	Cu-OF / CW008A	UNS C10100	30   98	100   328	2xd1 - 4xd1		2xd1	0.030-0.060   .0012-.0024	0.040-0.080   .0016-.0031	0.050-0.100   .0020-.0039	0.060-0.120   .0024-.0047	0.070-0.150   .0028-.0059	0.080-0.180   .0031-.0071						
		2.0065	Cu-ETP / CW004A	UNS C11000																	
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400	30   98	100   328	1xd1 - 4xd1		1xd1-2xd1	0.030-0.060   .0012-.0024	0.040-0.080   .0016-.0031	0.050-0.100   .0020-.0039	0.060-0.120   .0024-.0047	0.070-0.150   .0028-.0059	0.080-0.180   .0031-.0071						
		2.036	CuZn40 CW509L	UNS C28000																	
	Brass, Bronze Rm < 400 N/mm²	2.0401	CuZn39Pb3 / CW614N	UNS C38500																	
		2.102	CuSn6	UNS C51900																	
Bronze Rm < 600 N/mm²	2.0966	CuAl10Ni5Fe4	UNS C63000																		
	2.096	CuAl9Mn2	UNS C63200																		
S <sub>1</sub>	Super alloys	2.4856		Inconel 625	15   49	25   82	0.25xd1 - 0.5xd1		0.25xd1	0.005-0.010   .0002-.0004	0.010-0.015   .0004-.0006	0.015-0.020   .0006-.0008	0.020-0.025   .0008-.0010	0.030-0.035   .0012-.0014	0.030-0.040   .0012-.0016						
		2.4668		Inconel 718																	
		2.4617	NiMo28	Hastelloy B-2																	
		2.4665	NiCr22Fe18Mo	Hastelloy X																	
S <sub>2</sub>	Titanium pure	3.7035	Gr.2	ASTM B348 / F67																	
		3.7065	Gr.4	ASTM B348 / F68																	
S <sub>3</sub>	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136																	
		9.9367	TiAl6Nb7	ASTM F1295																	
H <sub>1</sub>	Hardened steel < 55 HRC	2.4964	CoCr20W15Ni	Haynes 25	25   82	35   115	0.5xd1 - 1xd1		0.5xd1	0.015-0.025   .0006-.0010	0.025-0.035   .0010-.0014	0.040-0.050   .0016-.0020	0.050-0.060   .0020-.0024	0.060-0.070   .0024-.0028	0.070-0.080   .0028-.0031						
			CrCoMo28	ASTM F1537																	
H <sub>2</sub>	Hardened steel ≥ 55 HRC	1.2510	100MnCrMoW4	AISI O1																	
		1.2379	X153CrMoV12	AISI D2																	