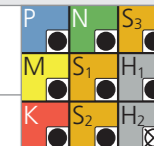
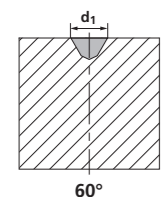
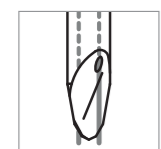


CrazyDrill Twicenter 60° / 90°

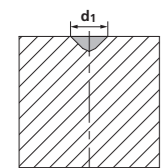
RECOMMENDATION FOR USE
● Excellent | ● Good | ○ Acceptable | ☒ Not recommended



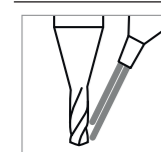
CENTERING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW



60°



90°



Note:
In case of external cooling reduce v_c and f of 20%

Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	v_c [m/min] [SFM]	f [mm/rev] [IPR]												
						ϕd_1												
						0.3 mm .012"	0.5 mm .020"	1.0 mm .039"	1.5 mm .059"	2.0 mm .079"	3.0 mm .118"	4.0 mm .158"	6.0 mm .236"					
P	Unalloyed carbon steel $R_m < 800 \text{ N/mm}^2$	1.0301	C10	AISI 1010	120 394	●	●	●	●	●	●	●	●	●	●	●	●	
		1.0401	C15	AISI 1015														
		1.1191	C45E/CK45	AISI 1045														
		1.0044	S275JR	AISI 1020														
		1.0715	11SMn30	AISI 1215														
	Low alloyed steel $R_m > 900 \text{ N/mm}^2$	1.5752	15NiCr13	ASTM 3415 / AISI 3310	80 262	●	●	●	●	●	●	●	●	●	●	●	●	●
		1.7131	16MnCr5	AISI 5115														
		1.3505	100Cr6	AISI 52100														
		1.7225	42CrMo4	AISI 4140														
		1.2842	90MnCrV8	AISI O2														
	High alloyed tool steel $R_m < 1200 \text{ N/mm}^2$	1.2379	X153CrMoV12	AISI D2	60 197	●	●	●	●	●	●	●	●	●	●	●	●	●
		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	50 164	●	●	●	●	●	●	●	●	●	●	●	●	
		1.4105	X6CrMoS17	AISI 430F														
	Stainless steel martensitic	1.4034	X46Cr13	AISI 420C	60 197	●	●	●	●	●	●	●	●	●	●	●	●	
		1.4112	X90CrMoV18	AISI 440B														
	Stainless steel martensitic – PH	1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH	50 164	●	●	●	●	●	●	●	●	●	●	●	●	
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH														
	Stainless steel austenitic	1.4301	X5CrNi 18-10	AISI 304	50 164	●	●	●	●	●	●	●	●	●	●	●	●	●
		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	100 328	●	●	●	●	●	●	●	●	●	●	●	●	
		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	150 492	●	●	●	●	●	●	●	●	●	●	●	●	
		3.4365	AlZnMgCu1.5	ASTM 7075														
	Aluminium alloy cast	3.2163	GD-AlSi9Cu3	ASTM A380	100 328	●	●	●	●	●	●	●	●	●	●	●	●	
		3.2381	GD-AlSi10Mg	UNS A03590														
	Copper	2.004	Cu-OF / CW008A	UNS C10100	100 328	●	●	●	●	●	●	●	●	●	●	●	●	
		2.0065	Cu-ETP / CW004A	UNS C11000														
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400	80 262	●	●	●	●	●	●	●	●	●	●	●	●	
		2.036	CuZn40 CW509L	UNS C28000														
	Brass, Bronze $R_m < 400 \text{ N/mm}^2$	2.0401	CuZn39Pb3 / CW614N	UNS C38500	100 328	●	●	●	●	●	●	●	●	●	●	●	●	
		2.102	CuSn6	UNS C51900														
Bronze $R_m < 600 \text{ N/mm}^2$	2.0966	CuAl10Ni5Fe4	UNS C63000	80 262	●	●	●	●	●	●	●	●	●	●	●	●		
	2.096	CuAl9Mn2	UNS C63200															
S ₁	Super alloys	2.4856		Inconel 625	10 – 30 33 – 98	●	●	●	●	●	●	●	●	●	●	●	●	
		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	25 82	●	●	●	●	●	●	●	●	●	●	●		
		3.7065	Gr.4	ASTM B348 / F68														
S ₃	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136	25 82	●	●	●	●	●	●	●	●	●	●	●		
		9.9367	TiAl6Nb7	ASTM F1295														
H ₁	Hardened steel < 55 HRC	2.4964	CoCr20W15Ni	Haynes 25	40 – 50 131 – 164	●	●	●	●	●	●	●	●	●	●	●		
			CrCoMo28	ASTM F1537														
H ₂	Hardened steel ≥ 55 HRC	1.2510	100MnCrMoW4	AISI O1	40 131	●	●	●	●	●	●	●	●	●	●	●		
		1.2379	X153CrMoV12	AISI D2														