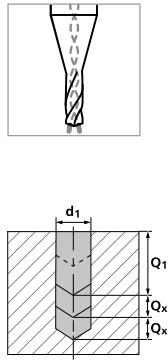


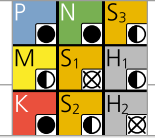
# CrazyDrill Cool XL 20 x d

## DRILLING WITH INTERNAL COOLING | CUTTING DATA OVERVIEW

Materials group	Material	Mat. no.	DIN	AISI/ASTM/UNS	$v_c$ [m/min]   [SFM]	$Q_1$	$Q_x$				
 <p><b>P</b></p>	Unalloyed carbon steel Rm < 800 N/mm <sup>2</sup>	1.0301	C10	AISI 1010	50–100   <b>164–328</b>	20xd1	–				
		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/mm <sup>2</sup>	1.5752	15NiCr13	ASTM 3415 / AISI 3310	50–100   <b>164–328</b>	20xd1	–				
		1.7131	16MnCr5	AISI 5115							
		1.3505	100Cr6	AISI 52100							
		1.7225	42CrMo4	AISI 4140							
	High alloyed tool steel Rm < 1200 N/mm <sup>2</sup>	1.2842	90MnCrV8	AISI O2	40–80   <b>131–262</b>	20xd1	–				
		1.2379	X153CrMoV12	AISI D2							
		1.2436	X210CrW12	AISI D4/D6							
1.3343		H56-5-2C	AISI M2 / UNS T11302								
<p><b>M</b></p>	Stainless steel ferritic	1.3355	H518-0-1	AISI T1 / UNS T12001	40–80   <b>131–262</b>	20xd1	–				
		Stainless steel martensitic	1.4016	X6Cr17				AISI 430 / UNS S43000	30–60   <b>98–197</b>	20xd1	–
			1.4105	X6CrMoS17				AISI 430F			
	Stainless steel martensitic – PH	1.4034	X46Cr13	AISI 420C	40–80   <b>131–262</b>	20xd1	–				
		1.4112	X90CrMoV18	AISI 440B							
	Stainless steel austenitic	1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH	30–60   <b>98–197</b>	5xd1	2xd1				
		1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH							
		1.4301	X5CrNi 18-10	AISI 304							
1.4435		X2CrNiMo 18-14-3	AISI 316L								
1.4441		X2CrNiMo 18-15-3	AISI 316LM								
<p><b>K</b></p>	Cast iron	1.4539	X1NiCrMoCu 25-20-5	AISI 904L	100–200   <b>328–656</b>	20xd1	–				
		0.6020	GG20	ASTM 30							
		0.6030	GG30	ASTM 40B							
		0.7040	GGG40	ASTM 60-40-18							
<p><b>N</b></p>	Aluminium alloy wrought	0.7060	GGG60	ASTM 80-60-03	100–200   <b>328–656</b>	20xd1	–				
		3.2315	AlMgSi1	ASTM 6351							
	Aluminium alloy cast	3.4365	AlZnMgCu1.5	ASTM 7075	80–150   <b>262–492</b>	20xd1	–				
		3.2163	GD-AlSi9Cu3	ASTM A380							
	Copper	3.2381	GD-AlSi10Mg	UNS A03590	40–80   <b>131–262</b>	2xd1	2xd1				
		2.004	Cu-OF / CW008A	UNS C10100							
	Brass lead free	2.0065	Cu-ETP / CW004A	UNS C11000	40–80   <b>131–262</b>	2xd1	2xd1				
		2.0321	CuZn37 CW508L	UNS C27400							
	Brass, Bronze Rm < 400 N/mm <sup>2</sup>	2.036	CuZn40 CW509L	UNS C28000	50–120   <b>164–394</b>	20xd1	–				
		2.0401	CuZn39Pb3 / CW614N	UNS C38500							
		2.102	CuSn6	UNS C51900							
	Bronze Rm < 600 N/mm <sup>2</sup>	2.0966	CuAl10Ni5Fe4	UNS C63000	40–80   <b>131–262</b>	20xd1	–				
2.096		CuAl9Mn2	UNS C63200								
<p><b>S<sub>1</sub></b></p>	Super alloys	2.4856		Inconel 625	25–50   <b>82–164</b>	3xd1	1xd1				
		2.4668		Inconel 718							
		2.4617	NiMo28	Hastelloy B-2							
		2.4665	NiCr22Fe18Mo	Hastelloy X							
<p><b>S<sub>2</sub></b></p>	Titanium pure	3.7035	Gr.2	ASTM B348 / F67	20–40   <b>66–131</b>	5xd1	1xd1				
		3.7065	Gr.4	ASTM B348 / F68							
<p><b>S<sub>3</sub></b></p>	Titanium alloys	3.7165	TiAl6V4	ASTM B348 / F136	20–40   <b>66–131</b>	5xd1	1xd1				
		9.9367	TiAl6Nb7	ASTM F1295							
<p><b>H<sub>1</sub></b></p>	CrCo alloys	2.4964	CoCr20W15Ni	Haynes 25	30–60   <b>98–197</b>	5xd1	1xd1				
			CrCoMo28	ASTM F1537							
<p><b>H<sub>2</sub></b></p>	Hardened steel < 55 HRC	1.2510	100MnCrMoW4	AISI O1	30–60   <b>98–197</b>	5xd1	1xd1				
	Hardened steel ≥ 55 HRC	1.2379	X153CrMoV12	AISI D2							

RECOMMENDATION FOR USE

● Excellent | ● Good | ○ Acceptable | ⊗ Not recommended



f [mm/rev] | [IPR]

Ød1 1.00 mm   .039" f	Ød1 1.25 mm   .049" f	Ød1 1.50 mm   .059" f	Ød1 2.00 mm   .079" f	Ød1 2.50 mm   .098" f	Ød1 3.00 mm   .118" f	Ød1 4.00 mm   .158" f	Ød1 5.00 mm   .197" f	Ød1 6.00 mm   .236" f
0.060   .0024	0.060   .0024	0.080   .0031	0.100   .0039	0.120   .0047	0.150   .0059	0.180   .0071	0.220   .0087	0.250   .0098
0.060   .0024	0.060   .0024	0.080   .0031	0.100   .0039	0.120   .0047	0.150   .0059	0.150   .0059	0.180   .0071	0.200   .0079
0.040   .0016	0.060   .0024	0.080   .0031	0.100   .0039	0.120   .0047	0.150   .0059	0.180   .0071	0.200   .0079	0.220   .0087
0.020   .0008	0.040   .0016	0.060   .0024	0.080   .0031	0.100   .0039	0.130   .0051	0.150   .0059	0.200   .0079	0.220   .0087
0.040   .0016	0.060   .0024	0.080   .0031	0.100   .0039	0.120   .0047	0.150   .0059	0.180   .0071	0.200   .0079	0.220   .0087
0.020   .0008	0.030   .0012	0.040   .0016	0.060   .0024	0.070   .0028	0.100   .0039	0.120   .0047	0.150   .0059	0.180   .0071
0.060   .0024	0.080   .0031	0.100   .0039	0.120   .0047	0.150   .0059	0.180   .0071	0.200   .0079	0.250   .0098	0.300   .0118
0.040   .0016	0.060   .0024	0.080   .0031	0.120   .0047	0.160   .0063	0.200   .0079	0.250   .0098	0.300   .0118	0.250   .0098
0.040   .0016	0.060   .0024	0.080   .0031	0.100   .0039	0.120   .0047	0.150   .0059	0.200   .0079	0.250   .0098	0.300   .0118
0.025   .0010	0.045   .0018	0.065   .0026	0.085   .0033	0.110   .0043	0.140   .0055	0.160   .0063	0.180   .0071	0.200   .0079
0.025   .0010	0.045   .0018	0.065   .0026	0.085   .0033	0.110   .0043	0.140   .0055	0.160   .0063	0.180   .0071	0.200   .0079
0.030   .0012	0.050   .0020	0.070   .0028	0.090   .0035	0.120   .0047	0.150   .0059	0.170   .0067	0.220   .0087	0.240   .0094
0.025   .0010	0.045   .0018	0.065   .0026	0.085   .0033	0.110   .0043	0.140   .0055	0.160   .0063	0.210   .0083	0.230   .0091
0.010   .0004	0.020   .0008	0.030   .0012	0.040   .0016	0.050   .0020	0.065   .0026	0.080   .0031	0.100   .0039	0.120   .0047
0.010   .0004	0.020   .0008	0.030   .0012	0.040   .0016	0.050   .0020	0.065   .0026	0.080   .0031	0.100   .0039	0.120   .0047
0.010   .0004	0.020   .0008	0.030   .0012	0.040   .0016	0.050   .0020	0.065   .0026	0.080   .0031	0.100   .0039	0.120   .0047
0.020   .0008	0.040   .0016	0.060   .0024	0.080   .0031	0.100   .0039	0.120   .0047	0.140   .0055	0.160   .0063	0.180   .0071