

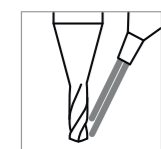
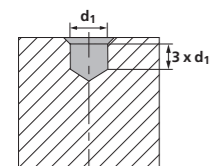
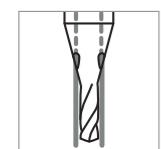
# 3 x d - 90° countersink

RECOMMENDATION FOR USE

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



## DRILLING WITH INTEGRATED COOLING | CUTTING DATA OVERVIEW



**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]	$f$ [mm/rev]								
						0.2 mm	0.5 mm	0.8 mm	1.0 mm	$\varnothing d_1$ 1.2 mm	1.2 mm	1.6 mm	1.8 mm	2.0 mm
						$f$	$f$	$f$	$f$	$f$	$f$	$f$	$f$	$f$
P	Unalloyed carbon steel $R_m < 800 \text{ N/mm}^2$	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										
		1.5752	15NiCr13	ASTM 3415 / AISI 3310										
	Low alloyed steel $R_m > 900 \text{ N/mm}^2$	1.7131	16MnCr5	AISI 5115										
		1.3505	100Cr6	AISI 52100										
		1.7225	42CrMo4	AISI 4140										
		1.2842	90MnCrV8	AISI O2										
		1.2379	X153CrMoV12	AISI D2										
		1.2436	X210CrW12	AISI D4/D6										
M	Stainless steel ferritic	1.4016	X6Cr17	AISI 430 / UNS S43000	35 - 50									
		1.4105	X6CrMoS17	AISI 430F		0.015	0.020	0.030	0.035	0.040	0.050	0.055	0.060	0.070
		1.4034	X46Cr13	AISI 420C		0.020	0.030	0.040	0.055	0.060	0.070	0.075	0.080	0.100
	Stainless steel martensitic	1.4112	X90CrMoV18	AISI 440B	35 - 50									
		1.4542	X5CrNiCuNb 16-4	AISI 630 / ASTM 17-4 PH		0.015	0.020	0.025	0.030	0.040	0.050	0.055	0.060	0.070
	Stainless steel martensitic - PH	1.4545	X5CrNiCuNb 15-5	ASTM 15-5 PH	35 - 50									
		1.4301	X5CrNi 18-10	AISI 304										
	Stainless steel austenitic	1.4435	X2CrNiMo 18-14-3	AISI 316L	30 - 45									
		1.4441	X2CrNiMo 18-15-3	AISI 316LM		0.010	0.020	0.025	0.030	0.035	0.045	0.050	0.055	0.060
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	2.0040	Cu-OF / CW008A	UNS C10100	40 - 100									
		2.0065	Cu-ETP / CW004A	UNS C11000		0.040	0.060	0.080	0.090	0.100	0.120	0.140	0.160	0.180
	Brass lead free	2.0321	CuZn37 CW508L	UNS C27400	40 - 100									
		2.0360	CuZn40 CW509L	UNS C28000		0.040	0.060	0.080	0.090	0.100	0.120	0.140	0.160	0.180
	Brass, Bronze $R_m < 400 \text{ N/mm}^2$	2.0401	CuZn39Pb3 / CW614N	UNS C38500										
		2.1020	CuSn6	UNS C51900										
Bronze $R_m < 600 \text{ N/mm}^2$	2.0966	CuAl10Ni5Fe4	UNS C63000											
	2.0960	CuAl9Mn2	UNS C63200											
S <sub>1</sub>	Super alloys	2.4856		Inconel 625	15 - 30									
		2.4668		Inconel 718		0.010	0.015	0.020	0.022	0.025	0.035	0.037	0.045	0.055
		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 $< 55 \text{ HRC}$	2.4964	CoCr20W15Ni	Haynes 25	40 - 50									
			CrCoMo28	ASTM F1537		0.020	0.030	0.040	0.055	0.060	0.070	0.075	0.080	0.100
H <sub>2</sub>	Hardened steel $\geq 55 \text{ HRC}$	1.2510	100MnCrMoW4	AISI O1										
		1.2379	X153CrMoV12	AISI D2										