SARA® TiNplus HPC solid carbide high-performance drill bit

- Please adjust these guideline values according to clamping operation and machine set-up!

111503.... **111507....** **111512....**

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Cutting speed Vc m/min	Feed rates in mm/revolution in relation to drill bit diameter range in mm								
						With IC	3	4	5	6	8	10	12.50	16	20
P	Machining steel	Up to 700	9 SMn 28	1.0715	115	135	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
	Unalloyed structural steel	Up to 700	St-52	1.0052	90	95	0.09	0.13	0.16	0.2	0.25	0.25	0.32	0.4	0.5
	Structural steel	700 - 950	Ck45	1.1191	90	95	0.11	0.16	0.16	0.2	0.25	0.32	0.32	0.4	0.5
	Cast steel	Up to 950	GS 40	1.0416	60	68	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Alloyed case-hardened steel	Up to 950	16 MnCr 5	1.7131	70	68	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Tool steel	950 -1400	X 38 CrMoV 5 1	1.2343	45	50	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
M	Stainless steel, ferr./marten.	500 - 950	X 10 Cr 13	1.4006	36	36	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Stainless steel, austenitic	500 - 950	X 12 CrMoS 17	1.4104	45	52	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
K	Grey cast iron	100 - 400	GG 25	0.6025	125	125	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Alloyed grey cast iron	150-250	GGL-NiCr 35 2	0.6678	36	40	0.07	0.1	0.1	0.13	0.16	0.2	0.2	0.25	0.32
	Ductile iron	400 - 800	GGG 60	0.7060	95	95	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
	Malleable cast iron	350 - 700	GTS 55	0.8155	95	95	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
N	Al. alloy long-chipping	Up to 550	AlMg 3	3.3535	210	250	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Al. alloy short-chipping	Up to 400	G-AlSi 12	3.2581	145	180	0.16	0.2	0.25	0.32	0.32	0.4	0.5	0.63	0.63
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	145	180	0.11	0.16	0.16	0.2	0.25	0.32	0.32	0.4	0.5
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	215	250	0.14	0.2	0.2	0.25	0.32	0.4	0.4	0.5	0.63
S	Titanium alloys	Up to 1300	TiAl6Sn 2	3.7174	28	32	0.06	0.08	0.08	0.1	0.13	0.16	0.16	0.2	0.25
	Nickel-based alloys	Up to 1300	NiCr19Fe19NbMo	Inconel 718	20	28	0.06	0.08	0.08	0.1	0.13	0.16	0.16	0.2	0.25
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	32	45	0.05	0.06	0.06	0.08	0.1	0.13	0.13	0.16	0.2
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	20	28	0.04	0.05	0.05	0.06	0.08	0.1	0.1	0.13	0.16

ATORN AluSpeed 5D solid carbide high-performance drill bit

111400....

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed rates in mm/revolution in relation to drill bit diameter range in mm					
						2,5 - 3	3 - 5	5 - 8	8 - 12	12 - 16	16 - 20
N	Al. alloy long-chipping	Up to 500	AlMg 3	3.3535	360	0,25	0,30	0,40	0,50	0,60	0,65
	Al. alloy short-chipping	Up to 500	G-AlSi 12	3.2581	400	0,30	0,35	0,45	0,55	0,65	0,70
	Copper alloy (bronze) long-chipping	Up to 1200	CuSn4	2.1016	200	0,15	0,23	0,30	0,38	0,45	0,52
	Copper alloy (bronze) short-chipping	Up to 850	CuNi12Zn24	2.0730	160	0,15	0,23	0,30	0,38	0,45	0,52
	Copper alloy (brass) long-chipping	Up to 600	Cu ZN 20	2.0250	200	0,15	0,23	0,30	0,38	0,45	0,52
	Copper alloy (brass) short-chipping	Up to 600	Cu Zn 39 Pb 3	2.0381	200	0,15	0,23	0,30	0,38	0,45	0,52

Solid carbide high-performance drill bit HARD 3D / 5D

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111535.... **111537....** **111536....**

ISO	Materials group	Strength/ Hardness N/mm²	Material examples	Material number	Cutting speed Vc m/min	Feed rates in mm/revolution in relation to drill bit diameter range in mm					
						1 - 3	3 - 5	5 - 8	8 - 12	12 - 16	16 - 20
H	Hardened materials up to 55 HRc		X40Cr14	1.2083	16 - 28	0,03 - 0,06	0,06 - 0,08	0,08 - 0,09	0,09 - 0,11	0,11 - 0,13	0,13 - 0,15
	Hardened materials up to 60 HRc		X153CrMoV12	1.2379	10 - 16	0,02 - 0,04	0,04 - 0,06	0,06 - 0,07	0,07 - 0,08	0,08 - 0,09	0,09 - 0,1
	Hardened materials up to 64 HRc		100Cr6	1.2067	8 - 14	0,02 - 0,04	0,04 - 0,06	0,06 - 0,07	0,07 - 0,08	0,08 - 0,09	0,09 - 0,1