USER GUIDE RECOMMENDED CUTTING CONDITION - FOR BTA BRAZED & TBTA INDEXABLE

ISO	Material		Condition	Tensile Strength Rm(N/mm2)	Hardness HB	Ground Brazed Solid Drill Heads BTA(ø0.496 - ø2.559) , BTS(ø0.315 - ø0.787)						Ajustable Solid Drill Heads TBTA-B(ø0.630 - ø1.122) No Cartridge		
						Cutting Speed	Feed Rate f (in/rev)					Cutting Speed	Feed Rate f (in/rev)	
						SFM	0.31 - 0.79 *1	0.22 - 0.79	0.79 - 1.22	1.22 - 1.69	1.69 - 2.56	SFM	0.63 - 0.87	0.87 - 1.12
P		0.1 - 0.25 %C	Annealed	420	125	230-394	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.006
	Non-alloy steel,	0.25 - 0.25 %C	Annealed	650	190	230-394	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.006
	cast steel, free	0.25 - 0.25 %C	Quenched and tempered	850	250	131-230	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.006
	cutting steel	0.55 - 0.80 %C	Annealed	750	220	230-394	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.006
		0.55 - 0.80 %C	Quenched and tempered	1000	300	180-328	0.002 - 0.004	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.011	164-328	0.003 - 0.004	0.004- 0.005
	Low alloy steel		Annealed	600	200	230-328	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	164-328	0.003 - 0.004	0.004- 0.006
	and cast steel			930	275	180-328	0.002 - 0.004	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.011	164-328	0.003 - 0.004	0.004- 0.005
	(less than 5%		Quenched and tempered	1000	300	180-328	0.002 - 0.004	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.011	164-328	0.003 - 0.004	0.004- 0.005
	alloying elements)			1200	350	180-328	0.002 - 0.004	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.011	164-328	0.003 - 0.004	0.004- 0.005
	High alloy steel, cast steel and		Annealed	680	200	164-279	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.006
	tool steel.		Quenched and tempered	1100	325	180-328	0.002 - 0.004	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.011	164-328	0.003 - 0.004	0.004- 0.005
M	Stainless steel		Ferritic/martensitic	680	200	197-328	0.002 - 0.005	0.003 - 0.006	0.004 - 0.011	0.005 - 0.012	0.006 - 0.014	131-262	0.003 - 0.005	0.004- 0.006
	and cast steel		Martensitic	820	240	197-328	0.002 - 0.005	0.003 - 0.006	0.004 - 0.011	0.005 - 0.012	0.006 - 0.014	131-262	0.003 - 0.005	0.004- 0.006
			Austenitic	600	180	197-328	0.002 - 0.005	0.002 - 0.005	0.003 - 0.010	0.004 - 0.011	0.006 - 0.013	98-197	0.002 - 0.004	0.003- 0.006
K	Cast iron nodular		Ferritic/pearlitic		180	262-328	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	230-328	0.003 - 0.005	0.004- 0.006
	(GGG)		Pearlitic		260	262-328	0.002 - 0.005	0.003 - 0.006	0.004 - 0.007	0.005 - 0.008	0.006 - 0.012	230-328	0.003 - 0.005	0.004- 0.006
	Gray cast iron		Ferritic		160	197-328	0.002 - 0.005	0.002 - 0.005	0.003 - 0.007	0.004 - 0.008	0.006 - 0.010	164-295	0.002 - 0.005	0.003- 0.006
	(GG)		Pearlitic		250	197-328	0.002 - 0.005	0.002 - 0.005	0.003 - 0.007	0.004 - 0.008	0.006 - 0.010	164-262	0.002 - 0.005	0.003- 0.006
	Malleable cast iron		Ferritic		130	164-328	0.002 - 0.005	0.002 - 0.005	0.003 - 0.007	0.004 - 0.008	0.006 - 0.010	164-295	0.002 - 0.005	0.003- 0.006
			Pearlitic		230	164-328	0.002 - 0.005	0.002 - 0.005	0.003 - 0.007	0.004 - 0.008	0.006 - 0.010	164-295	0.002 - 0.005	0.003- 0.006
N	Aluminum-		Not cureable		60	213-426	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.007
	wrought alloy		Cured		100	213-328	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-295	0.003 - 0.005	0.004- 0.007
	Aluminum-	<=12% Si	Not cureable		75	213-426	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.007
	cast, alloyed		Cured		90	213-426	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.007
		>12% Si	High temp.		130	213-426	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.007
		>1% Pb	Free cutting		110	213-426	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.007
	Copper alloys		Brass		90	213-426	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.007
			Electrolitic copper		100	213-426	0.002 - 0.005	0.003 - 0.006	0.004 - 0.008	0.006 - 0.010	0.006 - 0.012	197-394	0.003 - 0.005	0.004- 0.007
S	High temp. alloys	Fe based	Annealed		200	33-164	0.002 - 0.005	0.002 - 0.005	0.003 - 0.006	0.005 - 0.007	0.006 - 0.010	66-164	0.002 - 0.004	0.003- 0.006
			Cured		280	33-164	0.002 - 0.005	0.002 - 0.005	0.003 - 0.006	0.005 - 0.007	0.006 - 0.010	66-164	0.002 - 0.004	0.003- 0.006
	Super alloys	Ni or	Annealed		250	33-164	0.002 - 0.005	0.002 - 0.005	0.003 - 0.006	0.005 - 0.007	0.006 - 0.010	66-164	0.002 - 0.004	0.003- 0.006
		Co based	Cured		350	33-164	0.002 - 0.005	0.002 - 0.005	0.003 - 0.006	0.005 - 0.007	0.006 - 0.010	66-164	0.002 - 0.004	0.003- 0.006
			Cast		320	33-164	0.002 - 0.005	0.002 - 0.005	0.003 - 0.006	0.005 - 0.007	0.006 - 0.010	66-164	0.002 - 0.004	0.003- 0.006
	Titanium,			Rm 400		98-164	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004 - 0.006	0.005 - 0.079	66-164	0.002 - 0.004	0.003- 0.004
	Ti alloys	Alpha+beta alloys cured		Rm 1050		98-164	0.002 - 0.004	0.002 - 0.004	0.003 - 0.005	0.004 - 0.006	0.005 - 0.008	66-164	0.002 - 0.004	0.003- 0.004
H	Hardened steel		Hardened		55 HRc									
			Hardened		60 HRc									
	Chilled cast iron		Cast		400									
	Cast iron		Hardened		55 HRc									

USER GUIDE RECOMMENDED CUTTING CONDITION – FOR BTA BRAZED & TBTA INDEXABLE

ISO	Material		Condition	Tensile Strength Rm(N/mm2)	Hardness HB	No Cartridge Solid Drill Heads TBTA-C(ø0.984- ø2.094) TBTA-D(ø1.181- ø2.559)					Ajustable Solid Drill Heads TBTA3/5/7(ø1.496 - ø9.685)					
						Cutting Speed	Feed Rate f (in/rev)		Feed Rate f (in/rev)		Cutting Speed	Feed Rate f (in/rev)				
						SFM	0.98 - 1.56	1.56 - 2.09	1.18 - 1.69	1.69 - 2.56	SFM	1.50 - 1.57	1.57 - 2.05	2.05 - 2.52	2.52 - 3.35	3.35-
P		0.1 - 0.25 %C	Annealed	420	125	230-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-394	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	Non-alloy steel,	0.25 - 0.25 %C	Annealed	650	190	230-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-394	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	cast steel, free	0.25 - 0.25 %C	Quenched and tempered	850	250	230-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-394	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	cutting steel	0.55 - 0.80 %C	Annealed	750	220	230-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-394	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
		0.55 - 0.80 %C	Quenched and tempered	1000	300	230-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-394	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	Low alloy steel		Annealed	600	200	230-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	and cast steel			930	275	197-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	(less than 5%		Quenched and tempered	1000	300	197-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	164-328	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	alloying elements)			1200	350	197-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	168-328	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	High alloy steel, cast steel and		Annealed	680	200	230-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-394	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	tool steel.		Quenched and tempered	1100	325	230-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-394	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
M	Stainless steel		Ferritic/martensitic	680	200	131-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-361	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	and cast steel		Martensitic	820	240	131-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-361	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
			Austenitic	600	180	131-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-361	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
K	Cast iron nodular		Ferritic/pearlitic		180	164-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.008	0.007 - 0.009
	(GGG)		Pearlitic		260	164-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.008	0.007 - 0.009
	Gray cast iron		Ferritic		160	197-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.008	0.007 - 0.009
	(GG)		Pearlitic		250	197-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.008	0.007 - 0.009
	Malleable cast iron		Ferritic		130	230-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.008	0.007 - 0.009
			Pearlitic		230	230-361	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-328	0.003 - 0.005	0.004 - 0.006	0.005 - 0.007	0.006 - 0.008	0.007 - 0.009
N	Aluminum-		Not cureable		60	213-426	0.004 - 0.008	0.005 - 0.012	0.004 - 0.010	0.005 - 0.014	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
	wrought alloy		Cured		100	213-426	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
	Aluminum-	<=12% Si	Not cureable		75	213-426	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
	cast, alloyed		Cured		90	213-426	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
		>12% Si	High temp.		130	213-426	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
		>1% Pb	Free cutting		110	213-426	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
	Copper alloys		Brass		90	213-426	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
			Electrolitic copper		100	213-426	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	197-426	0.003 - 0.008	0.004 - 0.010	0.005 - 0.011	0.006 - 0.012	0.007 - 0.013
S	High temp. alloys	Fe based	Annealed		200	66-164	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	66-213	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
			Cured		280	66-164	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	66-213	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	Super alloys	Ni or	Annealed		250	66-164	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	66-213	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
		Co based	Cured		350	66-164	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	66-213	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
			Cast		320	66-164	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	66-213	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	Titanium,			Rm 400		98-197	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	98-328	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
	Ti alloys	Alpha+beta alloys cured		Rm 1050		98-197	0.003 - 0.007	0.005 - 0.009	0.003 - 0.009	0.005 - 0.011	98-328	0.003 - 0.006	0.004 - 0.008	0.005 - 0.009	0.006 - 0.010	0.007 - 0.012
H	Hardened steel		Hardened		55 HRc											
			Hardened		60 HRc											
	Chilled cast iron		Cast		400											
	Cast iron		Hardened		55 HRc											

BORE line