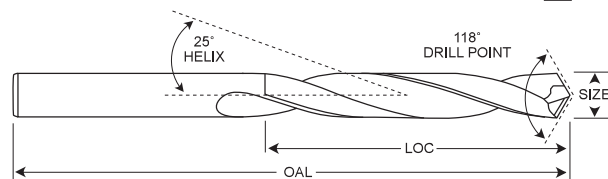
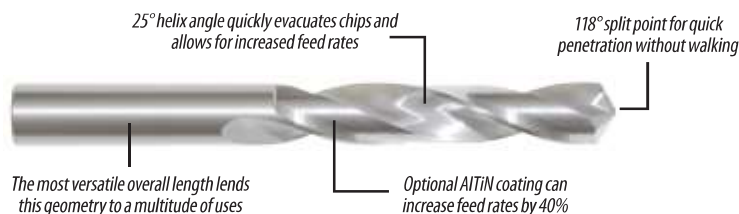


DRILLING RECOMMENDATIONS - TWIST DRILLS
- STUB DRILLS
- STRAIGHT FLUTE DRILLS
- 3 FLUTE DRILLS

				Inches Per Revolution (IPR)								
Workpiece Material Group			Hardness	SFM	(IPR) Cutting Tool Diameter							
					1/32	1/16	1/8	1/4	3/8	1/2	5/8	3/4
Steels	Free Machining & Low Carbon, 10XX, 11XX, 12XX 12LXX, ASTM A27 ASTM A36		≤ 28 Rc	175	0.0010	0.0020	0.0030	0.0060	0.0080	0.0100	0.0110	0.0120
	Medium / High Carbon, Alloys, & Easy to Machine Tool Steels		28~38 Rc	165								
Tool & Die Steels	A2, D2, H13, L6, P20, S7		28~44 Rc	150								
Stainless Steels	Moderately Difficult to Machine, Nitronic 50, Nitronic 60, 301, 303, 304, 304L, Incoloy 27-7MO, 316 316L, 321, 347		≤ 28 Rc	140	0.0010	0.0020	0.0030	0.0060	0.0080	0.0100	0.0110	0.0120
	Difficult to Machine, 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics		> 28 Rc	60	0.0003	0.0005	0.0020	0.0040	0.0050	0.0060	0.0080	0.0100
Super Alloys	High Temp, Nimonics, Inconel, Monel, Hastelloy		≤ 42 Rc	60	0.0003	0.0005	0.0020	0.0040	0.0050	0.0060	0.0080	0.0100
	Titanium: Ti 3Al-2.5V, Ti 6Al-4V Ti 10V-2Fe-3Al		≤ 42 Rc	80								
Hardened Materials			45 to 65 Rc	50	0.0003	0.0010	0.0010	0.0010	0.0020	0.0020	0.0020	0.0030
Cast Iron	Gray, SAE J431, ASTM A48		≤ 240 HB	175	0.0010	0.0020	0.0030	0.0060	0.0080	0.0100	0.0110	0.0120
	Ductile & Malleable, ASTM A536, ASTM 897, ASTM A47, ASTM A220 ASTM A602		> 240 HB	175								
Non-Ferrous	Aluminium, Brass, Broze, Copper, Plastics			300	0.0003	0.0005	0.0020	0.0040	0.0050	0.0060	0.0080	0.0100
	Kevlar/Graphite			375								

NOTE: ALL RECOMMENDATIONS ARE CONSIDERED AS STARTING PARAMETERS ONLY

TWIST DRILLS **JOBBER LENGTH**



DIAMETER TOLERANCE: +0.0000 / -0.0005"

SIZE	Dec In	LOC	OAL	Bright	TiN	AlTiN
#80	0.0135	3/16	1-1/4	450-300135	450-300135A	450-300135B
#79	0.0145	3/16	1-1/4	450-300145	450-300145A	450-300145B
1/64	0.0156	3/16	1-1/4	450-100156	450-100156A	450-100156B
#78	0.0160	3/16	1-1/4	450-300160	450-300160A	450-300160B
#77	0.0180	3/16	1-1/4	450-300180	450-300180A	450-300180B
#76	0.0200	1/4	1-1/4	450-300200	450-300200A	450-300200B
#75	0.0210	1/4	1-1/4	450-300210	450-300210A	450-300210B
#74	0.0225	1/4	1-1/4	450-300225	450-300225A	450-300225B
#73	0.0240	1/4	1-1/4	450-300240	450-300240A	450-300240B
#72	0.0250	5/16	1-1/4	450-300250	450-300250A	450-300250B
#71	0.0260	5/16	1-1/4	450-300260	450-300260A	450-300260B
#70	0.0280	5/16	1-1/4	450-300280	450-300280A	450-300280B
#69	0.0292	5/16	1-1/4	450-300292	450-300292A	450-300292B
#68	0.0310	5/16	1-1/4	450-300310	450-300310A	450-300310B
1/32	0.0313	5/16	1-1/4	450-100312	450-100312A	450-100312B
#67	0.0320	5/16	1-1/4	450-300320	450-300320A	450-300320B
#66	0.0330	5/16	1-1/4	450-300330	450-300330A	450-300330B
#65	0.0350	5/8	1-3/8	450-300350	450-300350A	450-300350B
#64	0.0360	5/8	1-3/8	450-300360	450-300360A	450-300360B
#63	0.0370	5/8	1-3/8	450-300370	450-300370A	450-300370B
#62	0.0380	5/8	1-3/8	450-300380	450-300380A	450-300380B
#61	0.0390	5/8	1-3/8	450-300390	450-300390A	450-300390B
1mm	0.0394	16mm	38mm	450-400394	450-400394A	450-400394B
#60	0.0400	3/4	1-1/2	450-300400	450-300400A	450-300400B
#59	0.0410	3/4	1-1/2	450-300410	450-300410A	450-300410B
#58	0.0420	3/4	1-1/2	450-300420	450-300420A	450-300420B
#57	0.0430	3/4	1-1/2	450-300430	450-300430A	450-300430B
#56	0.0465	3/4	1-1/2	450-300465	450-300465A	450-300465B
3/64	0.0469	3/4	1-1/2	450-100469	450-100469A	450-100469B
#55	0.0520	3/4	1-1/2	450-300520	450-300520A	450-300520B
#54	0.0550	3/4	1-1/2	450-300550	450-300550A	450-300550B
1.5mm	0.0591	19mm	38mm	450-400591	450-400591A	450-400591B
#53	0.0595	3/4	1-1/2	450-300595	450-300595A	450-300595B
1/16	0.0625	3/4	1-1/2	450-100625	450-100625A	450-100625B
#52	0.0635	3/4	1-1/2	450-300635	450-300635A	450-300635B
#51	0.0670	3/4	1-1/2	450-300670	450-300670A	450-300670B
#50	0.0700	7/8	1-3/4	450-300700	450-300700A	450-300700B
#49	0.0730	7/8	1-3/4	450-300730	450-300730A	450-300730B
#48	0.0760	7/8	1-3/4	450-300760	450-300760A	450-300760B
5/64	0.0781	7/8	1-3/4	450-100781	450-100781A	450-100781B
#47	0.0785	7/8	1-3/4	450-300785	450-300785A	450-300785B
2mm	0.0787	22mm	45mm	450-400787	450-400787A	450-400787B
#46	0.0810	7/8	1-3/4	450-300810	450-300810A	450-300810B

TWIST DRILLS - JOBBER LENGTH CONTINUED

DIAMETER TOLERANCE: +0.0000 / -0.0005"

SIZE	Dec In	LOC	OAL	Bright	TiN	AlTiN
#45	0.0820	7/8	1-3/4	450-300820	450-300820A	450-300820B
#44	0.0860	1	2	450-300860	450-300860A	450-300860B
#43	0.0890	1	2	450-300890	450-300890A	450-300890B
#42	0.0935	1	2	450-300935	450-300935A	450-300935B
3/32	0.0938	1	2	450-100938	450-100938A	450-100938B
#41	0.0960	1	2	450-300960	450-300960A	450-300960B
#40	0.0980	1	2	450-300980	450-300980A	450-300980B
2.5mm	0.0984	25mm	51mm	450-400984	450-400984A	450-400984B
#39	0.0995	1-1/4	2-1/4	450-300995	450-300995A	450-300995B
#38	0.1015	1-1/4	2-1/4	450-301015	450-301015A	450-301015B
#37	0.1040	1-1/4	2-1/4	450-301040	450-301040A	450-301040B
#36	0.1065	1-1/4	2-1/4	450-301065	450-301065A	450-301065B
7/64	0.1094	1-1/4	2-1/4	450-101094	450-101094A	450-101094B
#35	0.1100	1-1/4	2-1/4	450-301100	450-301100A	450-301100B
#34	0.1110	1-1/4	2-1/4	450-301110	450-301110A	450-301110B
#33	0.1130	1-1/4	2-1/4	450-301130	450-301130A	450-301130B
#32	0.1160	1-1/4	2-1/4	450-301160	450-301160A	450-301160B
3mm	0.1181	32mm	57mm	450-401181	450-401181A	450-401181B
#31	0.1200	1-1/4	2-1/4	450-301200	450-301200A	450-301200B
1/8	0.1250	1-1/4	2-1/4	450-101250	450-101250A	450-101250B
#30	0.1285	1-1/4	2-1/4	450-301285	450-301285A	450-301285B
#29	0.1360	1-3/8	2-1/2	450-301360	450-301360A	450-301360B
3.5mm	0.1378	35mm	64mm	450-401378	450-401378A	450-401378B
#28	0.1405	1-3/8	2-1/2	450-301405	450-301405A	450-301405B
9/64	0.1406	1-3/8	2-1/2	450-101406	450-101406A	450-101406B
#27	0.1440	1-3/8	2-1/2	450-301440	450-301440A	450-301440B
#26	0.1470	1-3/8	2-1/2	450-301470	450-301470A	450-301470B
#25	0.1495	1-3/8	2-1/2	450-301495	450-301495A	450-301495B
#24	0.1520	1-3/8	2-1/2	450-301520	450-301520A	450-301520B
#23	0.1540	1-3/8	2-1/2	450-301540	450-301540A	450-301540B
5/32	0.1563	1-3/8	2-1/2	450-101562	450-101562A	450-101562B
#22	0.1570	1-3/8	2-1/2	450-301570	450-301570A	450-301570B
4mm	0.1575	35mm	64mm	450-401575	450-401575A	450-401575B
#21	0.1590	1-3/8	2-1/2	450-301590	450-301590A	450-301590B
#20	0.1610	1-3/8	2-1/2	450-301610	450-301610A	450-301610B
#19	0.1660	1-5/8	2-3/4	450-301660	450-301660A	450-301660B
#18	0.1695	1-5/8	2-3/4	450-301695	450-301695A	450-301695B
11/64	0.1719	1-5/8	2-3/4	450-101719	450-101719A	450-101719B
#17	0.1730	1-5/8	2-3/4	450-301730	450-301730A	450-301730B
#16	0.1770	1-5/8	2-3/4	450-301770	450-301770A	450-301770B
4.5mm	0.1772	41mm	70mm	450-401772	450-401772A	450-401772B
#15	0.1800	1-5/8	2-3/4	450-301800	450-301800A	450-301800B
#14	0.1820	1-5/8	2-3/4	450-301820	450-301820A	450-301820B
#13	0.1850	1-5/8	2-3/4	450-301850	450-301850A	450-301850B
3/16	0.1875	1-5/8	2-3/4	450-101875	450-101875A	450-101875B
#12	0.1890	1-5/8	2-3/4	450-301890	450-301890A	450-301890B
#11	0.1910	1-5/8	2-3/4	450-301910	450-301910A	450-301910B
#10	0.1935	1-5/8	2-3/4	450-301935	450-301935A	450-301935B
#9	0.1960	1-3/4	3	450-301960	450-301960A	450-301960B
5mm	0.1969	45mm	76mm	450-401969	450-401969A	450-401969B
#8	0.1990	1-3/4	3	450-301990	450-301990A	450-301990B
#7	0.2010	1-3/4	3	450-302010	450-302010A	450-302010B
13/64	0.2031	1-3/4	3	450-102031	450-102031A	450-102031B
#6	0.2040	1-3/4	3	450-302040	450-302040A	450-302040B
#5	0.2055	1-3/4	3	450-302055	450-302055A	450-302055B
#4	0.2090	1-3/4	3	450-302090	450-302090A	450-302090B
#3	0.2130	1-3/4	3	450-302130	450-302130A	450-302130B
5.5mm	0.2165	45mm	76mm	450-402165	450-402165A	450-402165B
7/32	0.2188	1-3/4	3	450-102188	450-102188A	450-102188B
#2	0.2210	1-3/4	3	450-302210	450-302210A	450-302210B

TWIST DRILLS - JOBBER LENGTH CONTINUED

DIAMETER TOLERANCE: +0.0000 / -0.0005"

SIZE	Dec In	LOC	OAL	Bright	TiN	AlTiN
#1	0.2280	1-3/4	3	450-302280	450-302280A	450-302280B
A	0.2340	2	3-1/4	450-202340	450-202340A	450-202340B
15/64	0.2344	2	3-1/4	450-102344	450-102344A	450-102344B
6mm	0.2362	51mm	83mm	450-402362	450-402362A	450-402362B
B	0.2380	2	3-1/4	450-202380	450-202380A	450-202380B
C	0.2420	2	3-1/4	450-202420	450-202420A	450-202420B
D	0.2460	2	3-1/4	450-202460	450-202460A	450-202460B
E	0.2500	2	3-1/4	450-202500	450-202500A	450-202500B
1/4	0.2500	2	3-1/4	450-102500	450-102500A	450-102500B
6.5mm	0.2559	51mm	83mm	450-402559	450-402559A	450-402559B
F	0.2570	2	3-1/4	450-202570	450-202570A	450-202570B
G	0.2610	2-1/8	3-1/2	450-202610	450-202610A	450-202610B
17/64	0.2656	2-1/8	3-1/2	450-102656	450-102656A	450-102656B
H	0.2660	2-1/8	3-1/2	450-202660	450-202660A	450-202660B
I	0.2720	2-1/8	3-1/2	450-202720	450-202720A	450-202720B
7mm	0.2756	54mm	89mm	450-402756	450-402756A	450-402756B
J	0.2770	2-1/8	3-1/2	450-202770	450-202770A	450-202770B
K	0.2810	2-1/8	3-1/2	450-202810	450-202810A	450-202810B
9/32	0.2813	2-1/8	3-1/2	450-102812	450-102812A	450-102812B
L	0.2900	2-1/8	3-1/2	450-202900	450-202900A	450-202900B
M	0.2950	2-3/8	3-3/4	450-202950	450-202950A	450-202950B
7.5mm	0.2953	60mm	95mm	450-402953	450-402953A	450-402953B
19/64	0.2969	2-3/8	3-3/4	450-102969	450-102969A	450-102969B
N	0.3020	2-3/8	3-3/4	450-203020	450-203020A	450-203020B
5/16	0.3125	2-3/8	3-3/4	450-103125	450-103125A	450-103125B
8mm	0.3150	60mm	95mm	450-403150	450-403150A	450-403150B
O	0.3160	2-3/8	3-3/4	450-203160	450-203160A	450-203160B
P	0.3230	2-3/8	3-3/4	450-203230	450-203230A	450-203230B
21/64	0.3281	2-1/2	4	450-103281	450-103281A	450-103281B
Q	0.3320	2-1/2	4	450-203320	450-203320A	450-203320B
8.5mm	0.3346	64mm	102mm	450-403346	450-403346A	450-403346B
R	0.3390	2-1/2	4	450-203390	450-203390A	450-203390B
11/32	0.3438	2-1/2	4	450-103438	450-103438A	450-103438B
S	0.3480	2-1/2	4	450-203480	450-203480A	450-203480B
9mm	0.3543	64mm	102mm	450-403543	450-403543A	450-403543B
T	0.3580	2-3/4	4-1/4	450-203580	450-203580A	450-203580B
23/64	0.3594	2-3/4	4-1/4	450-103594	450-103594A	450-103594B
U	0.3680	2-3/4	4-1/4	450-203680	450-203680A	450-203680B
9.5mm	0.3740	70mm	108mm	450-403740	450-403740A	450-403740B
3/8	0.3750	2-3/4	4-1/4	450-103750	450-103750A	450-103750B
V	0.3770	2-3/4	4-1/4	450-203770	450-203770A	450-203770B
W	0.3860	2-7/8	4-1/2	450-203860	450-203860A	450-203860B
25/64	0.3906	2-7/8	4-1/2	450-103906	450-103906A	450-103906B
10mm	0.3937	73mm	114mm	450-403937	450-403937A	450-403937B
X	0.3970	2-7/8	4-1/2	450-203970	450-203970A	450-203970B
Y	0.4040	2-7/8	4-1/2	450-204040	450-204040A	450-204040B
13/32	0.4063	2-7/8	4-1/2	450-104062	450-104062A	450-104062B
Z	0.4130	2-7/8	4-1/2	450-204130	450-204130A	450-204130B
10.5mm	0.4134	73mm	114mm	450-404134	450-404134A	450-404134B
27/64	0.4219	2-7/8	4-1/2	450-104219	450-104219A	450-104219B
11mm	0.4331	73mm	114mm	450-404331	450-404331A	450-404331B
7/16	0.4375	2-7/8	4-1/2	450-104375	450-104375A	450-104375B
11.5mm	0.4528	76mm	121mm	450-404528	450-404528A	450-404528B
29/64	0.4531	3	4-3/4	450-104531	450-104531A	450-104531B
15/32	0.4688	3	4-3/4	450-104688	450-104688A	450-104688B
12mm	0.4724	76mm	121mm	450-404724	450-404724A	450-404724B
31/64	0.4844	3	4-3/4	450-104844	450-104844A	450-104844B
12.5mm	0.4921	76mm	121mm	450-404921	450-404921A	450-404921B
1/2	0.5000	3	4-3/4	450-105000	450-105000A	450-105000B