

Jobber Length • Screw Machine Length • Taper Length

Operating Parameters – General Application Cobalt and HSS Drills

Material	Hardness	Speeds (SFM) Drill Finish				Feed Rate (IPR)			
		Bright or Steam Oxide	Straw	TiN	TiCN TiAlN	1/8" 3.17mm	1/4" 6.35mm	3/8" 9.52mm	1/2" 12.70mm
Ferrous									
low carbon steel	85-125 Bhn	90	125	135	-	.0040	.0065	.0080	.0100
medium carbon steel	125-175 Bhn	90	125	135	-	.0040	.0065	.0080	.0100
high carbon steel	175-225 Bhn	90	125	135	-	.0030	.0050	.0065	.0080
alloyed steel	200-300 Bhn	60	80	90	-	.0025	.0040	.0050	.0065
heat-treatable steel and forgings	370-420 Bhn	40	50	60	70	.0025	.0040	.0050	.0065
tool steels	< 24 HRc	60	80	90	110	.0030	.0050	.0065	.0080
	> 24-30 HRc	30	40	45	55	.0025	.0040	.0050	.0065
high-speed steels	14-30 HRc	35	50	55	60	.0025	.0040	.0050	.0065
gray cast iron	240 Bhn	115	160	175	-	.0050	.0080	.0100	.0125
	<300 Bhn	90	125	135	-	.0050	.0080	.0100	.0125
malleable cast iron	<300 Bhn	70	95	105	-	.0050	.0080	.0100	.0125
chilled cast iron	<350 Bhn	25	35	40	-	.0025	.0040	.0050	.0065
stainless steel									
300 series (Austenitic)	120-200 Bhn	60	80	90	100	.0025	.0040	.0050	.0065
400 series (Martensitic)	200-300 Bhn	40	50	60	80	.0025	.0040	.0050	.0065
sulphurized	> 25 HRc	45	65	70	80	.0025	.0040	.0050	.0065
spring steel	400 Bhn	25	35	40	45	.0020	.0030	.0040	.0050
Nonferrous									
aluminum and aluminum alloys	40-100 Bhn	180	-	-	-	.0050	.0080	.0100	.0125
cast aluminum									
< 10% Si	200 Bhn	200	275	-	-	.0050	.0080	.0100	.0125
> 10% Si	200 Bhn	180	225	-	250	.0040	.0065	.0080	.0100
brass, long chipping	190-210 Bhn	150	-	-	-	.0040	.0065	.0080	.0100
bronze, long chipping	150-200 Bhn	90	115	-	130	.0030	.0050	.0065	.0080
copper, low alloy	65-100 Bhn	120	145	-	-	.0040	.0065	.0080	.0100
plastics, duraplastics	N/A	55	75	80	-	.0030	.0050	.0065	.0080

The speeds and feeds listed here are conservative recommendations for initial setup. In actual use, depending on the machine environment and workpiece material, significantly higher speeds and feeds may be achievable. Use these

speeds and feeds as a starting point. Cutting conditions can be gradually adjusted until the optimum settings for the application are found. Questions? Contact Technical Support at 800.892.4281.

Drill Definitions

- RPM = revolutions per minute
- SFM = surface feet per minute
- FR = feed rate in inches per minute
- IPR = inches per revolution

Drill Formulas

- $RPM = 3.82 \times SFM / \text{drill diameter}$
- $SFM = .262 \times RPM \times \text{drill diameter}$
- $FR = RPM \times IPR$



DRILLING

HOLE FINISHING

THREADING

MILLING

OTHER TOOLS

Taper Length

Style 2510 • General Purpose Taper Length

DRILLING

HOLE FINISHING

THREADING

MILLING

OTHER TOOLS

FEATURES

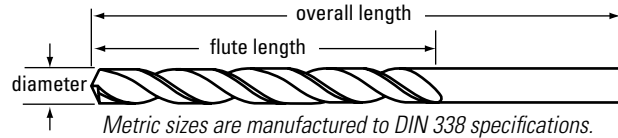
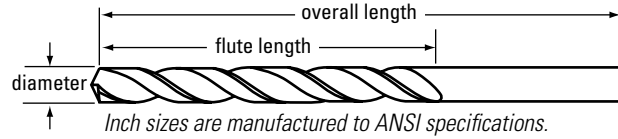
- ANSI SIZES**
- HSS SUBSTRATE**
- DIN 340**
- STEAM OXIDE**
- GENERAL PURPOSE**
- 118°**
- SHANK**
- 30°**

APPLICATIONS

- ALLOY STEEL**
- CARBON STEEL**
- CAST IRON**



Style 2510 Steam Oxide



Operating parameters are on page 23.

Drill Diameter	Decimal	Metric	Flute Length	Overall Length	Order Number
Fract Wire	mm	Eqiv.	in	mm	Steam Oxide
1.0	.0394	1.00	1.299	33.00	2.205 56.00 C08592
60	.0400	1.02	1.125	28.58	2.250 57.15 C08593
59	.0410	1.04	1.125	28.58	2.250 57.15 C08594
58	.0420	1.07	1.125	28.58	2.250 57.15 C08596
57	.0430	1.09	1.125	28.58	2.250 57.15 C08597
56	.0465	1.18	1.125	28.58	2.250 57.15 C08600
3/64	.0469	1.19	1.125	28.58	2.250 57.15 C08601
1.25	.0492	1.25	1.614	41.00	2.559 65.00 C08603
55	.0520	1.32	1.750	44.45	3.000 76.20 C08605
54	.0550	1.40	1.750	44.45	3.000 76.20 C08607
53	.0595	1.51	1.750	44.45	3.000 76.20 C08611
1.55	.0610	1.55	1.772	45.00	2.756 70.00 C08612
1/16	.0625	1.59	1.750	44.45	3.000 76.20 C08613
52	.0635	1.61	2.000	50.80	3.750 95.25 C08615
51	.0670	1.70	2.000	50.80	3.750 95.25 C08618
50	.0700	1.78	2.000	50.80	3.750 95.25 C08620
49	.0730	1.85	2.000	50.80	3.750 95.25 C08623
48	.0760	1.93	2.000	50.80	3.750 95.25 C08625
5/64	.0781	1.98	2.000	50.80	3.750 95.25 C08627
47	.0785	1.99	2.250	57.15	4.250 107.95 C08628
2.0	.0787	2.00	2.205	56.00	3.346 85.00 C08629
46	.0810	2.06	2.250	57.15	4.250 107.95 C08631
45	.0820	2.08	2.250	57.15	4.250 107.95 C08632
44	.0860	2.18	2.250	57.15	4.250 107.95 C08635
43	.0890	2.26	2.250	57.15	4.250 107.95 C08638
2.35	.0925	2.35	2.323	59.00	3.543 90.00 C08640
42	.0935	2.37	2.250	57.15	4.250 107.95 C08641
3/32	.0938	2.38	2.250	57.15	4.250 107.95 C08642
2.4	.0945	2.40	2.441	62.00	3.740 95.00 C08643
41	.0960	2.44	2.500	63.50	4.625 117.48 C08644
40	.0980	2.49	2.500	63.50	4.625 117.48 C08646
39	.0995	2.53	2.500	63.50	4.625 117.48 C08648
38	.1015	2.58	2.500	63.50	4.625 117.48 C08649
37	.1040	2.64	2.500	63.50	4.625 117.48 C08651

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Style 2510 • General Purpose Taper Length (continued)

Fract	Drill Diameter		Metric Equiv.	Flute Length		Overall Length		Order Number Steam Oxide	
	Wire	mm		Decimal Equiv.	in	mm	in		mm
7/64	36		.1065	2.71	2.500	63.50	4.625	117.48	C08653
			.1094	2.78	2.500	63.50	4.625	117.48	C08655
	35		.1100	2.79	2.750	69.85	5.125	130.18	C08656
		2.8	.1102	2.80	2.598	66.00	3.937	100.00	C08578
	34		.1110	2.82	2.750	69.85	5.125	130.18	C08658
	33		.1130	2.87	2.750	69.85	5.125	130.18	C08659
	32		.1160	2.95	2.750	69.85	5.125	130.18	C08661
		3.0	.1181	3.00	2.598	66.00	5.125	100.00	C08662
1/8	31		.1200	3.05	2.750	69.85	5.125	130.18	C08663
			.1250	3.18	2.750	69.85	5.125	130.18	C08665
		3.2	.1260	3.20	2.717	69.00	4.173	106.00	C08666
	30		.1285	3.26	3.000	76.20	5.375	136.53	C08668
		3.3	.1299	3.30	2.717	69.00	4.173	106.00	C08669
	29		.1360	3.45	3.000	76.20	5.375	136.53	C08671
		3.5	.1378	3.50	2.874	73.00	4.409	112.00	C08582
9/64	28		.1405	3.57	3.000	76.20	5.375	136.53	C08673
			.1406	3.57	3.000	76.20	5.375	136.53	C08674
	27		.1440	3.66	3.000	76.20	5.375	136.53	C08676
	26		.1470	3.73	3.000	76.20	5.375	136.53	C08678
	25		.1495	3.80	3.000	76.20	5.375	136.53	C08680
	24		.1520	3.86	3.000	76.20	5.375	136.53	C08682
5/32	23		.1540	3.91	3.000	76.20	5.375	136.53	C08684
			.1562	3.97	3.000	76.20	5.375	136.53	C08685
	22		.1570	3.99	3.375	85.73	5.750	146.05	C08686
		4.0	.1575	4.00	3.071	78.00	4.685	119.00	C08687
	21		.1590	4.04	3.375	85.73	5.750	146.05	C08688
	20		.1610	4.09	3.375	85.73	5.750	146.05	C08689
		4.2	.1654	4.20	3.071	78.00	4.685	119.00	C08587
	19		.1660	4.22	3.375	85.73	5.750	146.05	C08692
11/64	18		.1695	4.31	3.375	85.73	5.750	146.05	C08695
			.1719	4.37	3.375	85.73	5.750	146.05	C08696
	17		.1730	4.39	3.375	85.73	5.750	146.05	C08697
	16		.1770	4.50	3.375	85.73	5.750	146.05	C08699
	15		.1800	4.57	3.375	85.73	5.750	146.05	C08701
	14		.1820	4.62	3.375	85.73	5.750	146.05	C08703
3/16	13		.1850	4.70	3.375	85.73	5.750	146.05	C08704
			.1875	4.76	3.375	85.73	5.750	146.05	C08707
	12		.1890	4.80	3.625	92.08	6.000	152.40	C08708
	11		.1910	4.85	3.625	92.08	6.000	152.40	C08710
	10		.1935	4.91	3.625	92.08	6.000	152.40	C08712
	9		.1960	4.98	3.625	92.08	6.000	152.40	C08713
		5.0	.1969	5.00	3.425	87.00	5.197	132.00	C08714
	8		.1990	5.05	3.625	92.08	6.000	152.40	C08715
13/64	7		.2010	5.11	3.625	92.08	6.000	152.40	C08717
			.2031	5.16	3.625	92.08	6.000	152.40	C08718
	6		.2040	5.18	3.625	92.08	6.000	152.40	C08719
	5		.2055	5.22	3.625	92.08	6.000	152.40	C08721
	4		.2090	5.31	3.625	92.08	6.000	152.40	C08724
7/32	3		.2130	5.41	3.625	92.08	6.000	152.40	C08726
			.2188	5.56	3.625	92.08	6.000	152.40	C08728
	2		.2210	5.61	3.750	95.25	6.125	155.58	C08730
	1		.2280	5.79	3.750	95.25	6.125	155.58	C08733

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General Application Drills

Taper Length

Style 2510 • General Purpose Taper Length (continued)

Drill Diameter Fract Let	mm	Decimal Equiv.	Metric Equiv.	Flute Length		Overall Length		Order Number Steam Oxide
				in	mm	in	mm	
	5.8	.2283	5.80	3.583	91.00	5.472	139.00	C08608
	5.9	.2323	5.90	3.583	91.00	5.472	139.00	C08735
15/64		.2344	5.95	3.750	95.25	6.125	155.58	C08737
	6.0	.2362	6.00	3.583	91.00	5.472	139.00	C08738
	D	.2460	6.25	3.750	95.25	6.125	155.58	C08743
	6.3	.2480	6.30	3.819	97.00	5.827	148.00	C08745
1/4	E	.2500	6.35	3.750	95.25	6.125	155.58	C08746
	6.5	.2559	6.50	3.819	97.00	5.827	148.00	C08749
	F	.2570	6.53	3.875	98.43	6.250	158.75	C08750
17/64		.2656	6.75	3.875	98.43	6.250	158.75	C08752
	6.8	.2677	6.80	4.016	102.00	6.142	156.00	C08755
	I	.2720	6.91	3.875	98.43	6.250	158.75	C08757
	7.0	.2756	7.00	4.016	102.00	6.142	156.00	C08758
	J	.2770	7.04	3.875	98.43	6.250	158.75	C08759
9/32		.2812	7.14	3.875	98.43	6.250	158.75	C08766
	7.5	.2953	7.50	4.016	102.00	6.142	156.00	C08609
19/64		.2969	7.54	4.000	101.60	6.375	161.93	C08770
	N	.3020	7.67	4.000	101.60	6.375	161.93	C08772
5/16		.3125	7.94	4.000	101.60	6.375	161.93	C08777
	8.0	.3150	8.00	4.291	109.00	6.496	165.00	C08778
	O	.3160	8.03	4.125	104.78	6.500	165.10	C08779
	P	.3230	8.20	4.125	104.78	6.500	165.10	C08782
21/64		.3281	8.33	4.125	104.78	6.500	165.10	C08785
	Q	.3320	8.43	4.125	104.78	6.500	165.10	C08787
	8.5	.3346	8.50	4.291	109.00	6.496	165.00	C08788
	R	.3390	8.61	4.125	104.78	6.500	165.10	C08790
11/32		.3438	8.73	4.125	104.78	6.500	165.10	C08792
	9.0	.3543	9.00	4.528	115.00	6.890	175.00	C08797
23/64		.3594	9.13	4.250	107.95	6.750	171.45	C08800
3/8		.3750	9.53	4.250	107.95	6.750	171.45	C08807
	V	.3770	9.58	4.375	111.13	7.000	177.80	C08808
25/64		.3906	9.92	4.375	111.13	7.000	177.80	C08815
	10.0	.3937	10.00	4.764	121.00	7.244	184.00	C08816
	10.2	.4016	10.20	4.764	121.00	7.244	184.00	C08818
13/32		.4062	10.32	4.375	111.13	7.000	177.80	C08821
	10.5	.4134	10.50	4.764	121.00	7.244	184.00	C08823
27/64		.4219	10.72	4.625	117.48	7.250	184.15	C08824
	11.0	.4331	11.00	5.039	128.00	7.677	195.00	C08826
7/16		.4375	11.11	4.625	117.48	7.250	184.15	C08827
	11.2	.4409	11.20	5.039	128.00	7.677	195.00	C08828
29/64		.4531	11.51	4.750	120.65	7.500	190.50	C08830
15/32		.4688	11.91	4.750	120.65	7.500	190.50	C08832
	12.0	.4724	12.00	5.276	134.00	8.071	205.00	C08833
31/64		.4844	12.30	4.750	120.65	7.750	196.85	C08835
	12.5	.4921	12.50	5.276	134.00	8.071	205.00	C08610
1/2		.5000	12.70	4.750	120.65	7.750	196.85	C08837
	13.0	.5118	13.00	5.276	134.00	8.071	205.00	C08839
33/64		.5156	13.10	4.750	120.65	8.000	203.20	C08840
17/32		.5312	13.49	4.750	120.65	8.000	203.20	C08842
35/64		.5469	13.89	4.875	123.83	8.250	209.55	C08845
	14.0	.5512	14.00	5.512	140.00	8.425	214.00	C08846
9/16		.5625	14.29	4.875	123.83	8.250	209.55	C08848

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Style 2510 • General Purpose Taper Length (continued)

Drill Diameter Fract	Decimal mm	Metric Equiv.	Metric Equiv.	Flute Length in	Flute Length mm	Overall Length in	Overall Length mm	Order Number Steam Oxide
37/64		.5781	14.68	4.875	123.83	8.750	222.25	C08850
	15.0	.5906	15.00	5.669	144.00	8.661	220.00	C08852
19/32		.5938	15.08	4.875	123.83	8.750	222.25	C08853
39/64		.6094	15.48	4.875	123.83	8.750	222.25	C08855
5/8		.6250	15.88	4.875	123.83	8.750	222.25	C08858
	16.0	.6299	16.00	5.866	149.00	8.937	227.00	C08859
41/64		.6406	16.27	5.125	130.18	9.000	228.60	C08861
21/32		.6562	16.67	5.125	130.18	9.000	228.60	C08863
	17.0	.6693	17.00	5.866	149.00	9.252	235.00	C08865
43/64		.6719	17.07	5.375	136.53	9.250	234.95	C08866
11/16		.6875	17.46	5.375	136.53	9.250	234.95	C08868
45/64		.7031	17.86	5.625	142.88	9.500	241.30	C08870
	18.0	.7087	18.00	5.630	143.00	9.488	241.00	C08871
23/32		.7188	18.26	5.625	142.88	9.500	241.30	C08872
47/64		.7344	18.65	5.875	149.23	9.750	247.65	C08874
3/4		.7500	19.05	5.875	149.23	9.750	247.65	C08876
49/64		.7656	19.45	6.000	152.40	9.875	250.83	C08877
25/32		.7812	19.84	6.000	152.40	9.875	250.83	C08879
	20.0	.7874	20.00	6.142	156.00	10.000	254.00	C08880
51/64		.7969	20.24	6.125	155.58	10.000	254.00	C08881
13/16		.8125	20.64	6.125	155.58	10.000	254.00	C08883
53/64		.8281	21.03	6.125	155.58	10.000	254.00	C08885
27/32		.8438	21.43	6.125	155.58	10.000	254.00	C08886
55/64		.8594	21.83	6.125	155.58	10.000	254.00	C08888
7/8		.8750	22.23	6.125	155.58	10.000	254.00	C08890
57/64		.8906	22.62	6.125	155.58	10.000	254.00	C08892
29/32		.9062	23.02	6.125	155.58	10.000	254.00	C08894
59/64		.9219	23.42	6.125	155.58	10.750	273.05	C08895
15/16		.9375	23.81	6.125	155.58	10.750	273.05	C08897
61/64		.9531	24.21	6.375	161.93	11.000	279.40	C08899
31/32		.9688	24.61	6.375	161.93	11.000	279.40	C08901
63/64		.9844	25.00	6.375	161.93	11.000	279.40	C08903
1		1.0000	25.40	6.375	161.93	11.000	279.40	C08904

Sets

No. of Pieces	Drill Style	Finish	Size Range	Set Order Number
29	2510	steam oxide	1/16" through 1/2" x 1/64"	C00962