



Product Table: High Performance Drills – Stainless Steel & Titanium
Characteristics: 3x LOF

Product Notes:

For best results, the following steps are recommended:

- Increase speed and feed to recommended parameters.
- Under optimal conditions, a pecking cycle should not be needed.
- On through holes, reduce feed rate by 50% just before break through with drill point. Feed at 50% to final depth.
- After reaching desired hole depth, reduce speed (~500 RPM) before retracting the drill.
- In order to achieve the best results, cutting fluid is recommended. As an alternative, it is possible to use emulsions with EP additives.

ISO	Grouping	Type	Families	HRC	BHN	SFM	Chip Load (IPR) by Drill Diameter						
							1/16	1/8	3/16	1/4	5/16	3/8	1/2
							(1.588mm)	(3.175mm)	(4.763mm)	(6.35mm)	(7.938mm)	(9.525mm)	(12.7mm)
P	Carbon Steel	Common Structural Steels	AISI 10XX ASTM A36	-	≤ 150	425	0.005	0.005	0.006	0.009	0.010	0.012	0.014
				≤ 32	≤ 300	360	0.005	0.005	0.006	0.008	0.009	0.011	0.013
		Free Cutting Steels	AISI 11XX AISI 12LXX AISI 12XX	≤ 25	≤ 255	475	0.006	0.006	0.007	0.010	0.011	0.013	0.016
				≤ 32	≤ 300	360	0.006	0.006	0.007	0.009	0.011	0.013	0.015
		Unalloyed Heat Treatable Steels	AISI 10XX	≤ 20	≤ 220	395	0.006	0.006	0.007	0.009	0.011	0.012	0.015
				≤ 25	≤ 255	360	0.005	0.005	0.006	0.008	0.009	0.011	0.013
	Low Alloy Steel	Unalloyed Case-Hardened Steels	AISI 1010, 1015, 1020	≤ 32	≤ 300	345	0.005	0.005	0.006	0.008	0.009	0.010	0.012
				≤ 32	≤ 300	345	0.005	0.005	0.006	0.008	0.009	0.010	0.012
		Alloy Heat-Treatable Steels	AISI 41XX AISI 43XX AISI 51XX AISI 61XX	≤ 25	≤ 255	345	0.006	0.006	0.007	0.009	0.011	0.013	0.015
				≤ 32	≤ 300	330	0.005	0.005	0.006	0.008	0.009	0.010	0.013
		Alloyed Case-Hardened Steels	AISI 86XX AISI 31XX AISI 23XX	≤ 32	≤ 300	395	0.005	0.005	0.006	0.008	0.009	0.010	0.013
				≤ 42	≤ 400	425	0.004	0.004	0.006	0.007	0.009	0.010	0.012
		Nitriding Steels	AISI 41XXN Nitralloy 135M 34CrAlNi7 31CrMoV9	≤ 32	≤ 300	330	0.004	0.004	0.006	0.007	0.009	0.010	0.012
				≤ 42	≤ 400	295	0.003	0.003	0.004	0.005	0.006	0.007	0.009
		Spring Steels	1075 1095 5160 6150 9260	≤ 32	≤ 300	330	0.004	0.004	0.006	0.007	0.009	0.010	0.012
				≤ 42	≤ 400	295	0.003	0.003	0.004	0.005	0.006	0.007	0.009
	Tool Steels	Tool Steels	AISI A Series AISI O Series AISI D Series AISI H Series AISI S Series	≤ 25	≤ 255	180	0.004	0.004	0.006	0.007	0.008	0.009	0.011
				≤ 42	≤ 400	180	0.003	0.003	0.004	0.005	0.006	0.007	0.009
		High Speed Steels	AISI M Series AISI T Series	≤ 42	≤ 400	150	0.003	0.003	0.004	0.005	0.006	0.007	0.008
M	Stainless Steels	Austenitic Martensitic Sulphured Duplex	AISI 3XX AISI 3XXL AISI 4XX UNS S31XX UNS S32XX	≤ 28	≤ 275		0.003	0.003	0.003	0.004	0.006	0.006	0.007
				≤ 36	≤ 340		0.003	0.003	0.004	0.005	0.006	0.006	0.008
				≤ 46	≤ 435		0.003	0.003	0.004	0.005	0.006	0.007	0.008
S	Special Alloys	High Temp Alloys	-	≤ 55	≤ 550	80	0.002	0.002	0.003	0.004	0.005	0.005	0.006
	Titanium	CP Titanium	Grades 1-4	≤ 25	≤ 255	130	0.002	0.002	0.003	0.004	0.005	0.005	0.006
		Alpha Alloys Beta Alloys Alpha-Beta Alloys	Ti-5Al-2.5Sn Ti-10V-2Fe-3Al Ti-6Al-4V, Ti-6Al-6V-2Sn	≤ 42	≤ 400	115	0.002	0.002	0.002	0.003	0.004	0.004	0.005

General Notes:

All posted speed and feed parameters are suggested starting values that may be increased given optimal setup conditions. Cutting tools may shatter under improper use. Government regulations require use of safety glasses and other appropriate safety equipment in the vicinity of use.

If you require additional information, Valor Holemaking has a team of technical experts available to assist you through even the most challenging applications. Please contact us at **866-840-1505** or

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