



Product Table: High Performance Drills – Stainless Steel & Titanium – Coolant Through
Characteristics: 3x & 5x 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.
- Use a fine mesh prefilter (≈5µm) on spindle through coolant to prevent a blockage of the coolant hole. A minimum coolant pressure of 600-800 PSI is recommended.

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	-	≤ 150	470	0.005	0.005	0.006	0.009	0.010	0.012	0.014
			ASTM A36	≤ 32	≤ 300	430	0.005	0.005	0.006	0.008	0.009	0.011	0.013
		Free Cutting Steels	AISI 11XX	≤ 25	≤ 255	510	0.006	0.006	0.007	0.010	0.011	0.013	0.016
			AISI 12LXX AISI 12XX	≤ 32	≤ 300	445	0.006	0.006	0.007	0.009	0.011	0.013	0.015
		Unalloyed Heat Treatable Steels	AISI 10XX	≤ 20	≤ 220	410	0.006	0.006	0.007	0.009	0.011	0.012	0.015
				≤ 25	≤ 255	405	0.005	0.005	0.006	0.008	0.009	0.011	0.013
	Low Alloy Steel	Alloy Heat-Treatable Steels	AISI 41XX AISI 43XX AISI 51XX AISI 61XX	≤ 32	≤ 300	385	0.005	0.005	0.006	0.008	0.009	0.010	0.013
				≤ 42	≤ 400	340	0.004	0.004	0.006	0.007	0.009	0.010	0.012
		Alloyed Case-Hardened Steels	AISI 86XX AISI 31XX AISI 23XX	≤ 32	≤ 300	385	0.005	0.005	0.006	0.008	0.009	0.010	0.013
				≤ 42	≤ 400	330	0.004	0.004	0.005	0.006	0.007	0.009	0.010
		Nitriding Steels	AISI 41XXN Nitalloy 135M 34CrAlNi7 31CrMoV9	≤ 32	≤ 300	340	0.004	0.004	0.006	0.007	0.009	0.010	0.012
				≤ 42	≤ 400	305	0.003	0.003	0.004	0.005	0.006	0.007	0.009
		Spring Steels	1075 1095 5160 6150 9260	≤ 38	≤ 350	205	0.002	0.002	0.003	0.004	0.005	0.006	0.007
	Tool Steels	Tool Steels	AISI A Series AISI O Series AISI D Series AISI H Series AISI S Series	≤ 25	≤ 255	310	0.004	0.004	0.006	0.007	0.008	0.009	0.011
				≤ 42	≤ 400	230	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	220	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	215	0.003	0.003	0.003	0.004	0.006	0.006	0.007
				≤ 36	≤ 340	230	0.003	0.003	0.004	0.005	0.006	0.006	0.008
				≤ 46	≤ 435	250	0.003	0.003	0.004	0.005	0.006	0.007	0.008
S	Special Alloys	High Temp Alloys	-	≤ 55	≤ 550	140	0.002	0.002	0.003	0.004	0.005	0.005	0.006
	Titanium	CP Titanium	Grades 1-4	≤ 25	≤ 255	175	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	140	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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