



**Product Table: High Performance Drills - Steels - Coolant-Through**

**Characteristics:** 5x LOF

**Product Notes:**

For best results, the following steps are recommended:

- For hole depths of 7x Diameter or greater, drill a pilot hole up to 1.5-2x D in depth using a drill with 3x LOF or shorter.
- Insert primary drill at low speed (~50-500 RPM) and start coolant flow.
- 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.

Material Guide		SFM	Chip Load (IPR) by Drill Diameter											
			1/16	5/64	3/32	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4
Carbon Steel	10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36	475-560	.002-.003	.002-.003	.003-.004	.004-.005	.004-.006	.005-.007	.005-.007	.006-.009	.007-.010	.008-.012	.009-.013	.011-.015
Low Alloy Steel	13XX, 41XX, 43XX, 51XX, 86XX, 93XX	360-500	.002-.003	.002-.003	.003-.004	.005-.006	.005-.007	.006-.008	.007-.009	.008-.011	.009-.012	.010-.014	.011-.015	.014-.018
Tool Steel	A2, H13, L6, P20, S7	200-275	.002-.003	.002-.003	.003-.004	.004-.005	.004-.006	.005-.007	.005-.007	.006-.009	.007-.010	.008-.012	.009-.013	.011-.015
Austenitic Stainless Steel	Nitronic 50, Nitronic 60, 301, 303, 304, 304L, Incoloy 27-7MO, 316, 316L, 321, 347	150-275	.002-.003	.002-.003	.003-.004	.003-.004	.004-.006	.005-.007	.005-.007	.006-.009	.007-.010	.008-.012	.009-.013	.011-.015
Martensitic & Ferritic Stainless Steel	403, 410, 416, 420, 440, 430, 446	150-275	.002-.003	.002-.003	.003-.004	.003-.004	.004-.006	.005-.007	.005-.007	.006-.009	.007-.010	.008-.012	.009-.013	.011-.015
PH Stainless Steel	15-5, 17-4, Carpenter 450, Carpenter 465	100-200	.002-.003	.002-.003	.003-.004	.003-.004	.004-.006	.005-.007	.005-.007	.006-.009	.007-.010	.008-.012	.009-.013	.011-.015
Gray Cast Iron	SAE J431, ASTM A48	525-690	.002-.003	.002-.003	.003-.004	.003-.004	.004-.006	.005-.007	.005-.007	.006-.009	.007-.010	.008-.012	.009-.013	.011-.015
Malleable Cast Iron	ASTM A47, ASTM A220, ASTM A602	425-460	.002-.003	.002-.003	.003-.004	.003-.004	.004-.006	.005-.007	.005-.007	.006-.009	.007-.010	.008-.012	.009-.013	.011-.015
Nodular (Ductile) Cast Iron	ASTM A536, ASTM 897	360-500	.002-.003	.002-.003	.003-.004	.003-.004	.004-.006	.005-.007	.005-.007	.006-.009	.007-.010	.008-.012	.009-.013	.011-.015

**General Notes:**

All posted speed and feed parameters are suggested starting values that may be increased given optimal setup conditions.

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 **Valortech@harveyperformance.com**.

WARNING: Cutting tools may shatter under improper use. Government regulations require use of safety glasses and other appropriate safety equipment in the vicinity of use.