



## Micro-Drills 135° Point, 12° Helix Technical Information

- RedLine Hole Shot High Performance Drills are designed to give optimal performance in a wide range of materials. Our 135° point is designed to reduce thrust and our flute design stabilizes our drills for better positioning and for a more accurate hole.
- High Performance Micro-Drills found on pages 230-233.

### Micro-Drills, Solid Carbide, 135° Point Speeds & Feeds

Material	Grades	SFM	Tool Diameter (IPR)							
			(.0040)	(.0100)	1/64 (.0156)	1/32 (.0312)	1/16 (.0625)	3/32 (.0937)	1/8 (.1250)	
<b>P - Steels</b>										
High Strength Tool Steel	A2, D2, P20, H11, H13, S2, 01	85-120	.00010	.00026	.0004	.0008	.0015	.0023	.0030	
Low Carbon	A36, 12L14, 12L15, 1005, 1018, 1020, 1108-1119, 1213-1215, 1513-1518, 4012, 5015, 9310	110-150	.00010	.00026	.0004	.0008	.0015	.0023	.0030	
Medium Carbon	1040-1095, 1140-1151, 1330-1345, 1520-1572, 4023-4063, 4120-4161, 4330-4340, 4620-4640, 8620-8660, 8740-8750, 6150, 51000, 52100	90-130	.00010	.00026	.0004	.0008	.0015	.0023	.0030	
<b>M - Stainless Steels</b>										
Austenitic	301-304L, 310, 316L, 321, 347	90-125	.00010	.00026	.0004	.0008	.0015	.0023	.0030	
Martensitic	403, 410, 416, 420, 430, 431, 440	80-110	.00010	.00026	.0004	.0008	.0015	.0023	.0030	
Precipitation Hardening	12/8, 15/5, 17/4, AM-350/355/363, PH13-8MO, PH14-8/MO	45-60	.00010	.00013	.0002	.0004	.0007	.0011	.0014	
<b>K - Cast Irons</b>										
Ductile	A536, J434, 60-40-18	110-150	.00010	.00026	.0004	.0008	.0015	.0023	.0030	
Gray	A48, A436, A319, Class 20, G4000	110-150	.00010	.00026	.0004	.0008	.0015	.0023	.0030	
Malleable	A220, A602, J158	110-150	.00010	.00026	.0004	.0008	.0015	.0023	.0030	
<b>N - Non-Ferrous</b>										
Aluminum Alloys	2014, 2024, 6061, 7075	175	.00010	.00030	.0005	.0010	.0020	.0030	.0040	
Aluminum High Silicon	A380, A390	175	.00010	.00030	.0005	.0010	.0020	.0030	.0040	
Brass/Bronze	Aluminum Bronze, Low Silicon Bronze	100	.00010	.00030	.0005	.0010	.0020	.0030	.0040	
Composites	G-10, Fiberglass, Graphite, Graphite Epoxy, Plastics	175	.00010	.00030	.0005	.0010	.0020	.0030	.0040	
Copper		175	.00010	.00030	.0005	.0010	.0020	.0030	.0040	
Magnesium		175	.00010	.00030	.0005	.0010	.0020	.0030	.0040	
<b>S - High Temp Alloys</b>										
Cobalt Base	Stellite, HS-21, Haynes 25/188, X40, L605	45-60	.00010	.00015	.0002	.0004	.0007	.0011	.0014	
Iron Base	Incoloy 800-802, Multmet N-155, Timkin 16-25-6, Carpenter 22-b3	45-60	.00010	.00015	.0002	.0004	.0007	.0011	.0014	
Nickel Base	Inconel 625/718, Inco 700, 713C, 718, Monel 400-401, 404, K401, Rene, Rene 41 & 95 Hastelloy, Waspoly, Udimet 500 & 700	45-60	.00010	.00015	.0002	.0004	.0007	.0011	.0014	
Titanium	Commercially Pure, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si, Ti-8Al-1Mo, Ti-8Al-4Mo	50-70	.00020	.00030	.0004	.0008	.0015	.0023	.0030	

**NOTE:** Speeds and Feeds listed are estimated and will vary by application.

Recommended Peck Depths by Diameter* (Inch)	
Diameter	Peck Depth
1/64	.5 x Diameter
1/32	1 x Diameter
1/16	1.5 x Diameter
3/32	2 x Diameter
1/8	3 x Diameter

Recommended Peck Depths by Diameter* (mm)	
Diameter	Peck Depth
0.5 mm	.5 x Diameter
1.0 mm	1 x Diameter
1.5 mm	1.5 x Diameter
2.0 mm	2 x Diameter
3.0 mm	3 x Diameter

High Performance Drills Tolerances					
Inches			Millimeters		
Size	Drill ø (m7)	Shank ø (h6)	Size	Drill ø (m7)	Shank ø (h6)
.0000-.1250	+0/-0.0003	+0/-0.0002	0-3.00	+0/-0.008	+0/-0.005

\* Peck depths can vary by material type.