

**AQUA Micro Drills List No. 9544**

Drilling in Wet Condition

Workpiece Material		Carbon Steels Cast Irons			Alloy Steels			Die Steels Hardened Steels (30-40HRc)			Hardened Steels (40-50HRc)		
Drill Diameter		RPM	Feed (IPR)	Step Feed	RPM	Feed (IPR)	Step Feed	RPM	Feed (IPR)	Step Feed	RPM	Feed (IPR)	Step Feed
Metric mm	Decimal												
0.2	0.0079	31,800	0.0001	0.1D	26,500	0.0001	0.1D	21,200	0.0001	0.1D	12,700	0.0001	0.1D
0.3	0.0118	31,800	0.0001	0.1D	26,500	0.0001	0.1D	21,200	0.0001	0.1D	12,700	0.0001	0.1D
0.4	0.0157	31,800	0.0002	0.1D	25,900	0.0002	0.1D	19,900	0.0002	0.1D	12,700	0.0002	0.1D
0.5	0.0197	31,800	0.0002	0.1D	25,900	0.0002	0.1D	19,100	0.0002	0.1D	12,700	0.0002	0.1D
1.0	0.0394	23,900	0.0006	0.2D-0.5D <sup>*5)</sup>	15,900	0.0006	0.2D-0.5D <sup>*5)</sup>	12,700	0.0006	0.2D-0.5D <sup>*5)</sup>	8,000	0.0005	0.1D
1.5	0.0591	21,200	0.0011	0.2D-0.5D <sup>*5)</sup>	13,800	0.0011	0.2D-0.5D <sup>*5)</sup>	9,500	0.0011	0.2D-0.5D <sup>*5)</sup>	6,400	0.0009	0.1D
1.99	0.0783	19,200	0.0019	0.2D-0.5D <sup>*5)</sup>	12,800	0.0020	0.2D-0.5D <sup>*5)</sup>	8,000	0.0020	0.2D-0.5D <sup>*5)</sup>	5,600	0.0015	0.1D

D: Drill Diameter

Workpiece Material		Hardened Steels (50-55HRc)			Ductile Cast Irons			Stainless Steels		
Drill Diameter		RPM	Feed (IPR)	Step Feed	RPM	Feed (IPR)	Step Feed	RPM	Feed (IPR)	Step Feed
Metric mm	Decimal									
0.2	0.0079	10,600	0.0001	0.1D	31,800	0.0001	0.1D	10,600	0.0001	0.1D
0.3	0.0118	10,600	0.0001	0.1D	31,800	0.0001	0.1D	10,600	0.0001	0.1D
0.4	0.0157	9,900	0.0002	0.1D	31,800	0.0002	0.1D	9,500	0.0002	0.1D
0.5	0.0197	9,500	0.0002	0.1D	31,800	0.0002	0.1D	9,500	0.0002	0.1D
1.0	0.0394	5,600	0.0004	0.1D	19,100	0.0006	0.2D-0.5D <sup>*5)</sup>	5,600	0.0006	0.1D
1.5	0.0591	4,200	0.0006	0.1D	17,000	0.0011	0.2D-0.5D <sup>*5)</sup>	4,200	0.0012	0.1D
1.99	0.0783	3,600	0.0008	0.1D	16,000	0.0014	0.2D-0.5D <sup>*5)</sup>	3,600	0.0015	0.1D

D: Drill Diameter

- 1) These table values are for drilling with water soluble cutting fluid.
- 2) Drill diameters under 1mm must be used in wet condition.
- 3) Adjust drilling condition when unusual vibration or different sound occurs.
- 4) When using low speed machines, use the maximum speed and adjust the feed rate.
- 5) If drilling a deep hole over 3 times drill diameter, use pecking.

\* SFM vary largely according the diameter. It is decided that AQUA Micro does not have SFM information.