



**Now a USA Stocked Item**

## AQUA Micro Drills



### Features

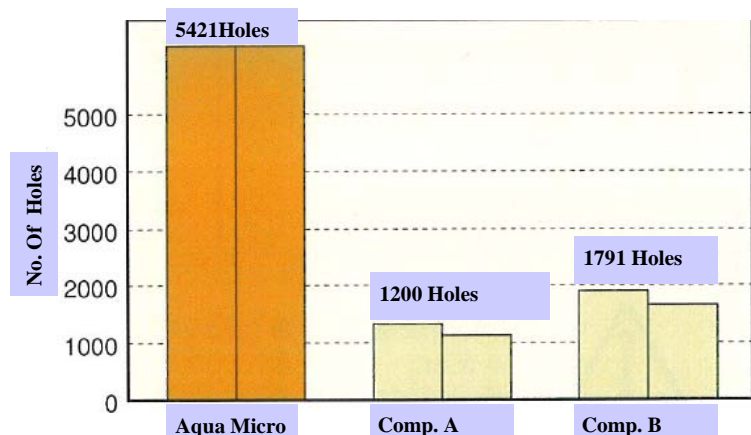
- Made from Ultra micro grain carbide with Nachi's patented Aqua Coating (Composite Multi layered TiALN + original lubrication film)
- Self-lubricating properties of Aqua Coating offers superior heat & wear resistance
- End mill type shank for highly precise and accurate drilling
- Diameter Range (0.2~1.99mm)

### Applications

- Suitable for Structural Steels, Carbon Steels, Pre-hardened Steels, Mold Steels, Cast Irons, Hardened Steels (under 55 HRC), Stainless Steels & Hi-temp alloys.

### Performance

**Drilling Condition:**  
**Drill Diameter: 0.5mm**  
**RPM: 9600**  
**IPR / IPM : .0002 / 1.9**  
**Peck:.005"**  
**Drill Depth: .080"**





1 per tube

This drill is suitable for stable drilling in small diameter on many kind of materials from raw material to hardened material.

(Unit) : mm

Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
0.20	0.0079	2.5	38	3
0.21	0.0083	2.5	38	3
0.22	0.0087	2.5	38	3
0.23	0.0091	2.5	38	3
0.24	0.0094	2.5	38	3
0.25	0.0098	2.5	38	3
0.26	0.0102	2.5	38	3
0.27	0.0106	2.5	38	3
0.28	0.0110	2.5	38	3
0.29	0.0114	2.5	38	3
0.30	0.0118	3	38	3
0.31	0.0122	3	38	3
0.32	0.0126	3	38	3
0.33	0.0130	3	38	3
0.34	0.0134	3	38	3
0.35	0.0138	4	38	3
0.36	0.0142	4	38	3
0.37	0.0146	4	38	3
0.38	0.0150	4	38	3
0.39	0.0154	4	38	3
0.40	0.0157	5	38	3
0.41	0.0161	5	38	3
0.42	0.0165	5	38	3
0.43	0.0169	5	38	3
0.44	0.0173	5	38	3
0.45	0.0177	5	38	3
0.46	0.0181	5	38	3
0.47	0.0185	5	38	3
0.48	0.0189	5	38	3
0.49	0.0193	5	38	3
0.50	0.0197	6	38	3
0.51	0.0201	6	38	3
0.52	0.0205	6	38	3
0.53	0.0209	6	38	3
0.54	0.0213	6	38	3
0.55	0.0217	6	38	3
0.56	0.0220	6	38	3
0.57	0.0224	6	38	3
0.58	0.0228	6	38	3
0.59	0.0232	6	38	3
0.60	0.0236	7	38	3
0.61	0.0240	7	38	3
0.62	0.0244	7	38	3
0.63	0.0248	7	38	3
0.64	0.0252	7	38	3
0.65	0.0256	7	38	3
0.66	0.0260	7	38	3
0.67	0.0264	7	38	3
0.68	0.0268	7	38	3
0.69	0.0272	7	38	3
0.70	0.0276	9	38	3
0.71	0.0280	9	38	3
0.72	0.0283	9	38	3
0.73	0.0287	9	38	3
0.74	0.0291	9	38	3
0.75	0.0295	9	38	3
0.76	0.0299	9	38	3
0.77	0.0303	9	38	3
0.78	0.0307	9	38	3
0.79	0.0311	9	38	3

Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
0.80	0.0315	10	38	3
0.81	0.0319	10	38	3
0.82	0.0323	10	38	3
0.83	0.0327	10	38	3
0.84	0.0331	10	38	3
0.85	0.0335	10	38	3
0.86	0.0339	10	38	3
0.87	0.0343	10	38	3
0.88	0.0346	10	38	3
0.89	0.0350	10	38	3
0.90	0.0354	11	38	3
0.91	0.0358	11	38	3
0.92	0.0362	11	38	3
0.93	0.0366	11	38	3
0.94	0.0370	11	38	3
0.95	0.0374	11	38	3
0.96	0.0378	11	38	3
0.97	0.0382	11	38	3
0.98	0.0386	11	38	3
0.99	0.0390	11	38	3
1.00	0.0394	12	38	3
1.01	0.0398	12	38	3
1.02	0.0402	12	38	3
1.03	0.0406	12	38	3
1.04	0.0409	12	38	3
1.05	0.0413	12	38	3
1.06	0.0417	12	38	3
1.07	0.0421	12	38	3
1.08	0.0425	12	38	3
1.09	0.0429	12	38	3
1.10	0.0433	14	47	3
1.11	0.0437	14	47	3
1.12	0.0441	14	47	3
1.13	0.0445	14	47	3
1.14	0.0449	14	47	3
1.15	0.0453	14	47	3
1.16	0.0457	14	47	3
1.17	0.0461	14	47	3
1.18	0.0465	14	47	3
1.19	0.0469	14	47	3
1.20	0.0472	15	47	3
1.21	0.0476	15	47	3
1.22	0.0480	15	47	3
1.23	0.0484	15	47	3
1.24	0.0488	15	47	3
1.25	0.0492	15	47	3
1.26	0.0496	15	47	3
1.27	0.0500	15	47	3
1.28	0.0504	15	47	3
1.29	0.0508	15	47	3
1.30	0.0512	15	47	3
1.31	0.0516	15	47	3
1.32	0.0520	15	47	3
1.33	0.0524	15	47	3
1.34	0.0528	15	47	3
1.35	0.0531	15	47	3
1.36	0.0535	15	47	3
1.37	0.0539	15	47	3
1.38	0.0543	15	47	3
1.39	0.0547	15	47	3

Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
1.40	0.0551	15	47	3
1.41	0.0555	15	47	3
1.42	0.0559	15	47	3
1.43	0.0563	15	47	3
1.44	0.0567	15	47	3
1.45	0.0571	15	47	3
1.46	0.0575	15	47	3
1.47	0.0579	15	47	3
1.48	0.0583	15	47	3
1.49	0.0587	15	47	3
1.50	0.0591	15	47	3
1.51	0.0594	15	47	3
1.52	0.0598	15	47	3
1.53	0.0602	15	47	3
1.54	0.0606	15	47	3
1.55	0.0610	15	47	3
1.56	0.0614	15	47	3
1.57	0.0618	15	47	3
1.58	0.0622	15	47	3
1.59	0.0626	15	47	3
1.60	0.0630	15	47	3
1.61	0.0634	15	47	3
1.62	0.0638	15	47	3
1.63	0.0642	15	47	3
1.64	0.0646	15	47	3
1.65	0.0650	15	47	3
1.66	0.0654	15	47	3
1.67	0.0657	15	47	3
1.68	0.0661	15	47	3
1.69	0.0665	15	47	3
1.70	0.0669	15	47	3
1.71	0.0673	15	47	3
1.72	0.0677	15	47	3
1.73	0.0681	15	47	3
1.74	0.0685	15	47	3
1.75	0.0689	15	47	3
1.76	0.0693	15	47	3
1.77	0.0697	15	47	3
1.78	0.0701	15	47	3
1.79	0.0705	15	47	3
1.80	0.0709	15	47	3
1.81	0.0713	15	47	3
1.82	0.0717	15	47	3
1.83	0.0720	15	47	3
1.84	0.0724	15	47	3
1.85	0.0728	15	47	3
1.86	0.0732	15	47	3
1.87	0.0736	15	47	3
1.88	0.0740	15	47	3
1.89	0.0744	15	47	3
1.90	0.0748	15	47	3
1.91	0.0752	15	47	3
1.92	0.0756	15	47	3
1.93	0.0760	15	47	3
1.94	0.0764	15	47	3
1.95	0.0768	15	47	3
1.96	0.0772	15	47	3
1.97	0.0776	15	47	3
1.98	0.0780	15	47	3
1.99	0.0783	15	47	3

AQUA Micro Drills List No. 9544

Drilling in Wet Condition

Work Material		Carbon Steels / Cast Irons			Alloy Steels			Die Steels / Hardened Steels (30-40 Hrc)			Hardened Steels (40-50 Hrc)			Hardened Steels (50-55 Hrc)		
Drill Diameter		RPM	Feed (IPR)	Step Feed (mm)	RPM	Feed (IPR)	Step Feed (mm)	RPM	Feed (IPR)	Step Feed (mm)	RPM	Feed (IPR)	Step Feed (mm)	RPM	Feed (IPR)	Step Feed (mm)
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	10,600	0.0001	0.1D
0.3	0.0118	31,800	0.0001		26,500	0.0001		21,200	0.0001		12,700	0.0001		10,600	0.0001	
0.4	0.0157	31,800	0.0002		25,900	0.0002		19,900	0.0002		12,700	0.0002		9,900	0.0002	
0.5	0.0197	31,800	0.0002		25,900	0.0002		19,100	0.0002		12,700	0.0002		9,500	0.0002	
1.0	0.0394	23,900	0.0006	0.2D*4	15,900	0.0006	0.2D*4	12,700	0.0006	0.2D*4	8,000	0.0005	0.1D	5,600	0.0004	0.1D
1.5	0.0591	21,200	0.0011		13,800	0.0011		9,500	0.0011		6,400	0.0009		4,200	0.0006	
1.99	0.0783	19,200	0.0019		12,800	0.0020		8,000	0.0020		5,600	0.0015		3,600	0.0008	

Work Material		Ductile Cast Irons			Stainless Steel		
Drill Diameter		RPM	Feed (IPR)	Step Feed (mm)	RPM	Feed (IPR)	Step Feed (mm)
0.2	0.0079	31,800	0.0001	0.1D	10,600	0.0001	0.1D
0.3	0.0118	31,800	0.0001		10,600	0.0001	
0.4	0.0157	31,800	0.0002		9,500	0.0002	
0.5	0.0197	31,800	0.0002		9,500	0.0002	
1.0	0.0394	19,100	0.0006	0.2D*4	5,600	0.0006	0.1D
1.5	0.0591	17,000	0.0011		4,200	0.0012	
1.99	0.0783	16,000	0.0014		3,600	0.0015	

Notes:

- These table values are for drilling with water soluble cutting fluid
- Adjust drilling conditions when unusual vibration or different sound occurs
- When using machines with low RPM, using maximum RPM and adjust feed rate
- Use pecking as recommended
- Recommended feeds and speeds are starting points only. Actual performance will be determined by specific material, condition of machine and set up.

D = Drill Diameter