High Performance Powdered Metal Cobalt Drills

NACHI

SG - ESS Micro Drills

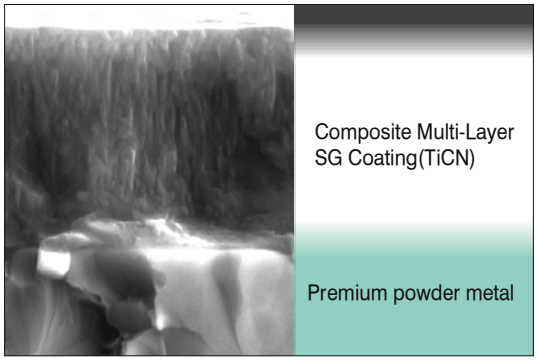
New Micro Sizes

Diameter Range 0.5 to 0.99 mm (0.01mm increments)

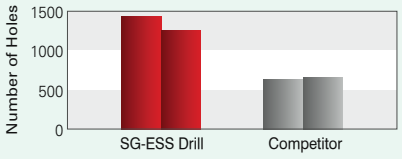
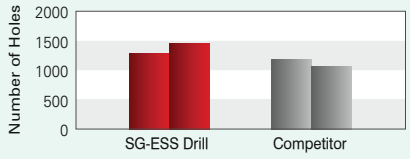
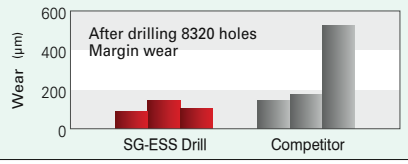
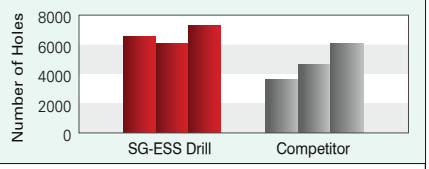
- Premium PM-Cobalt Substrate with composite SG Coating (Tin + Ticn)
- Equals Solid Carbide Drill in performance due to tough PM Cobalt Substrate
- 30 - 40% more tool life than conventional HSS/HSCO micro drills
- 3mm diameter end mill style shanks for highly precise and accurate drilling
- Precision ground end mill style shank for accurate and precision drilling

SG-ESS Micro Drills

SG Coating (Tin + TiCN)



Drilling Performance of SG-ESS Micro Drill

Diameter	Carbon Steel	304 Stainless Steel
0.5mm		
	SFM (RPM) 80 (15,500) Feed 0.0006 ipr / 9.3 ipm Hole Depth 1.5mm (Blind Hole) Cutting Fluid Water solube	SFM (RPM) 26 (5000) Feed 0.0004 ipr / 2.0 ipm Hole Depth 1.5mm (Blind Hole) 0.25mm-peck depth Cutting Fluid Water Solube
0.99mm		
	SFM (RPM) 80 (8,000) Feed 0.0015 ipr / 12 ipm Hole Depth 1.5mm (Blind Hole) Cutting Fluid Water Solube	SFM (RPM) 30 (3,200) Feed 0.001 ipr / 2.5 ipm Hole Depth 3mm (Blind Hole) 0.5mm-peck depth Cutting Fluid Water Solube

SG-ESS Drills made with Tough PM Material
Suitable for drilling of wide variety
materials from Steel to Stainless Steel.

SG-ESS 0.5mm (material: 304 SS)
Cutting edge after drilling 1080 holes

Well Suited for Drilling:

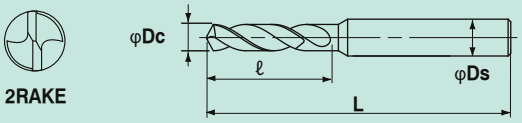
◎: Great ○: Good ×: Not recommended

Drill name	Structual Steels	Carbon Steels	Alloy Steels Pre-hardened Steels	Hardened Steels Mold Steels	Hardened Steels		Stainless Steels		Titanium Alloys Nickel Alloys	Cast Irons	Aluminum Alloys	Copper Alloys
	SS400	S45C/S50C	SCR/NAK	30～40HRC	40～50HRC	50～65HRC	304SS/316SS	400-Series		FCD/FC	AC/ADC	Cu
SGESS	◎	◎	◎	◎	×	×	◎	◎	○	◎	◎	◎

SG - ESS Micro Drills

New Micro Sizes

FAX | SG | h7 | HELIX N | 118° | h7



LIST 7572P

Item Code	Diameter	Flute Length	Overall Length	Shank Dia
EDP	Dc	ℓ	L	Ds
0716602	0.50	3	38	3
0716705	0.51	3	38	3
0716711	0.52	3	38	3
0716728	0.53	3	38	3
0716734	0.54	3	38	3
0716619	0.55	3	38	3
0716740	0.56	3	38	3
0716757	0.57	3	38	3
0716763	0.58	3	38	3
0716770	0.59	3	38	3
0716625	0.60	3.5	38	3
0716786	0.61	3.5	38	3
0716792	0.62	3.5	38	3
0716808	0.63	3.5	38	3
0716814	0.64	3.5	38	3
0716631	0.65	3.5	38	3
0716820	0.66	3.5	38	3
0716837	0.67	3.5	38	3
0716843	0.68	3.5	38	3
0716850	0.69	3.5	38	3
0716648	0.70	4.5	38	3
0716866	0.71	4.5	38	3
0716872	0.72	4.5	38	3
0716889	0.73	4.5	38	3
0716895	0.74	4.5	38	3

Item Code	Diameter	Flute Length	Overall Length	Shank Dia
EDP	Dc	ℓ	L	Ds
0716654	0.75	4.5	38	3
0716900	0.76	4.5	38	3
0716917	0.77	4.5	38	3
0716923	0.78	4.5	38	3
0716930	0.79	4.5	38	3
0716660	0.80	5	38	3
0716946	0.81	5	38	3
0716952	0.82	5	38	3
0716969	0.83	5	38	3
0716975	0.84	5	38	3
0716677	0.85	5	38	3
0716981	0.86	5	38	3
0716998	0.87	5	38	3
0717002	0.88	5	38	3
0717019	0.89	5	38	3
0716683	0.90	5.5	38	3
0717025	0.91	5.5	38	3
0717031	0.92	5.5	38	3
0717048	0.93	5.5	38	3
0717054	0.94	5.5	38	3
0716690	0.95	5.5	38	3
0717060	0.96	5.5	38	3
0717077	0.97	5.5	38	3
0717083	0.98	5.5	38	3
0717090	0.99	5.5	38	3

Standard Drilling Conditions

Work Material	Structual Steel Carbon Steels		Alloy Steels Hardened Steels		Die Steels Hardened Steels		Stainless Steels		Cast Irone		Aluminum Alloys Copper Alloys		Nickel Alloys Titanium Alloys	
	SS400 S50C		SCM440 NAK HPM		SKD61 NAK HPM		300-Series		FC250 FCD400		A5052 C1100			
	~200HB		20~30HRC		30~40HRC								30~40HRC	
Diameter (mm)	RPM	IPR	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
0.5	16000	0.0006	13000	0.0005	9500	0.0003	5100	0.0004	20000	0.0006	23000	0.0005	2500	0.0003
0.99	9500	0.0012	8000	0.0009	6400	0.0008	3500	0.0007	12000	0.0013	15000	0.0013	1600	0.0006

1) Adjust drilling condition according to the rigidity of machine or work clamp state.
2) The table values are for drilling with water soluble cutting fluid.
3) Provide suffice amount cutting fluid to the cutting point and in the flute.
4) When for stainless drilling, add step feed.
5) A work material and drilling condition to chip removal may be worse. In that case, add step feed.
6) In step feed, return to the entrance hole.
7) Step feel interval is about 0.5 ~ 1 x d. In small diameter, about 0.2 ~ 0.5 x d.
8) Use a collet chuck, milling chuck.