

S220 MICRO GRAIN CARBIDE END MILLS- Square Type- Long Neck- 4F

Technical drawing of a drill bit. The drawing shows a side view of the drill bit with the following dimensions labeled:

- $L1$: Length of the cutting edge.
- $L2$: Length of the cutting edge plus the length of the flute.
- L : Total length of the drill bit.
- d : Diameter of the cutting edge.
- $D(h6)$: Diameter of the shank.

02

→ 技術資料 P.622
Technical Data

Table 01

S220 鎢鋼銑刀- 2 / 3刃(鍍膜) 切削條件表

SOLID CARBIDE END MILLS- CUTTING CONDITION TABLE

加工材質 Material	碳素鋼 Carbon Steels		合金鋼 Alloy Steels		合金鋼 Alloy Steels		調質鋼 Hardened Steels		調質鋼 Hardened Steels		不銹鋼 Stainless Steels		鑄鐵 Cast Iron	
工件料號 Material Code	S35C,S45C,S50C		SCM,SKT,SKD		SCM,SKT,SKD		SKT,SKD		SKT,SKD		SUS304		FC,FCD	
硬度 Hardness	HRC<20		HRC20~30		HRC30~45		HRC45~55		HRC55~63		—		HRC<30	
切削速度 Vc	68m/min		54m/min		45m/min		27m/min		20m/min		54m/min		79m/min	
外徑 Diameter	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)
1mm	20,000	120	17,100	100	14,400	65	8,000	50	6,000	35	17,100	100	25,200	270
2mm	10,800	155	8,640	120	7,200	85	4,320	65	3,240	45	8,640	120	12,600	290
3mm	7,560	155	5,760	135	4,680	90	3,000	65	2,230	45	5,760	135	8,640	290
4mm	5,400	165	4,320	135	3,600	100	2,160	65	1,620	50	4,320	135	6,480	290
5mm	4,500	180	3,420	135	2,880	100	1,800	75	1,350	55	3,420	135	5,040	325
6mm	3,600	180	2,880	135	2,340	100	1,440	75	1,080	55	2,880	135	4,320	360
8mm	2,700	180	2,160	155	1,800	110	1,080	75	810	55	2,160	155	3,240	360
10mm	2,160	180	1,710	155	1,440	120	870	75	650	55	1,710	155	2,520	380
12mm	1,800	180	1,440	155	1,200	120	720	75	540	55	1,440	155	2,160	400
14mm	1,800	200	1,360	170	1,140	130	720	80	540	60	1,360	170	2,000	440
16mm	1,560	220	2,100	180	1,000	140	630	90	470	65	2,100	180	1,800	480
18mm	1,560	220	1,060	180	880	140	630	90	470	65	1,060	180	1,600	480
20mm	1,200	220	960	180	800	140	480	90	360	65	960	180	1,400	480
切削量 Cutting Amount (mm)	Ap=0.5D (D<3, Ap≤0.25D)						Ap=0.1D (D<3, Ap≤0.05D)						Ap=0.5D (D<3, Ap≤0.25D)	
														

Table 02

S220 鎢鋼銑刀- 3 / 4刃(鍍膜) 切削條件表

SOLID CARBIDE END MILLS- CUTTING CONDITION TABLE

加工材質 Material	碳素鋼 Carbon Steels		合金鋼 Alloy Steels		合金鋼 Alloy Steels		調質鋼 Hardened Steels		調質鋼 Hardened Steels		不銹鋼 Stainless Steels		鑄鐵 Cast Iron	
工件料號 Material Code	S35C,S45C,S50C		SCM,SKT,SKD		SCM,SKT,SKD		SKT,SKD		SKT,SKD		SUS304		FC,FCD	
硬度 Hardness	HRC<20		HRC20~30		HRC30~45		HRC45~55		HRC55~63		—		HRC<30	
切削速度 Vc	68m/min		54m/min		45m/min		27m/min		20m/min		54m/min		79m/min	
外徑 Diameter	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)
3mm	7,560	490	5,760	345	4,680	165	3,020	200	2,300	150	5,760	345	8,640	900
4mm	5,400	490	4,320	345	3,600	165	2,160	200	1,620	150	4,320	345	6,480	1,080
5mm	4,500	490	3,420	345	2,880	165	1,800	200	1,350	150	3,420	345	5,040	1,080
6mm	3,600	490	2,880	345	2,340	165	1,440	200	1,080	150	2,880	345	4,320	1,080
8mm	2,700	490	2,160	345	1,800	175	1,080	200	810	150	2,160	345	3,240	1,080
10mm	2,160	505	1,710	360	1,440	175	860	210	650	155	1,710	360	2,520	1,170
12mm	1,800	505	1,440	360	1,200	175	720	210	540	155	1,440	360	2,160	1,260
14mm	1,800	560	1,360	400	1,140	190	720	230	540	170	1,360	400	2,000	1,400
16mm	1,560	600	1,200	420	1,000	200	620	240	470	180	1,200	420	1,800	1,500
18mm	1,400	600	1,060	420	880	200	560	240	420	180	1,060	420	1,600	1,500
20mm	1,200	600	960	420	800	200	480	240	360	180	960	420	1,490	1,400
切削量 Cutting Amount (mm)	Ap=1.5D Ae≤0.1D						Ap=1.5D Ae≤0.05D						Ap=1.5D Ae≤0.1D	
														

1. 當加工聲音尖銳時，請調降主軸轉速(S) (10~40%)。When the sound is piercing, please lower the spindle speed(S) (10~40%).

2. 當機台震動太大時，請調降進給速度(F) (10~40%)。When the machine is vibrating, please decrease the feed rate(F) (10~40%).

3. 當主軸負載太大時，請調降進給速度(F) (10~40%)。When the spindle load is high, please decrease the feed rate(F) (10~40%).

4. 以上數據為建議值，適當的條件仍需視機台狀況，夾治具品質，潤滑冷卻系統...等而改變。

These are recommended values which depend on the condition of the machine, fixture, lubricating & cooling systems... etc. They may have to be adapted.