鎢鋼複合材料用銑刀

Carbide Composites Router End Mills

- 特殊溝槽設計搭配DIA鑽石鍍層、新RD彩鑽鍍層，使排屑更加優異.
  Special flute geometry design, DIA coating and RD coating for better chip removal.
- 適合加工非金屬(碳纖維、玻璃纖維).
  For Non-metal(Glass Fiber, Carbon Fiber).
- 適合中加工、精加工用.
  Use for semi finishing cutting, finishing.





高硬度鋼
加工用銑刀

6 Flutes High Speed 45° Helix End Mills

- 高剛性幾何設計，切削刃具有優異的加工性能.
  Strong geometry design has excellent cutting ability of cutting edges.
- 45度螺旋角設計適合高轉速、高進給加工.
  45 degree helix design for high speed, feed condition.
- 適合加工高硬度鋼材(HRC45~60).
  For hardened steel(HRC45~60) machining.
- 適合中加工、精加工用.
  Use for semi finishing cutting, finishing.

鎢鋼複合材料用銑刀- 小柄/標準型

CARBIDE ROUTER END MILLS FOR COMPOSITES- Square Type

- CEFM00000D
- CEF00000D



刃徑 d	公差 Tolerance
Φ<3	0 ~ -0.02
3≦Φ≦10	-0.01 ~ -0.03
10<Φ	-0.01 ~ -0.04

超精銑 Bright Finishing	—
精銑 Finishing	—
中銑 Semi Finishing	◎
粗銑 Roughing	◎

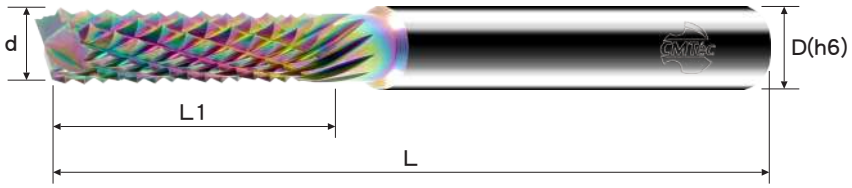
MG DIA 30° Cutting Table 80

刃徑 d	刃長 L1	全長 L	柄徑 D	刃數 F	DIA 鍍膜訂購編號 DIA Coated Order No.
4.0	20	60	4	8	CEFM80400D
6.0	25	60	6	11	CEF110600D
8.0	25	60	8	14	CEF140800D
10.0	30	75	10	16	CEF161000D
12.0	32	100	12	17	CEF171200D

鎢鋼複合材料用銑刀- 小柄/標準型

CARBIDE ROUTER END MILLS FOR COMPOSITES- Square Type

- CEFM00000A
- CEF00000A



刃徑 d	公差 Tolerance
Φ<3	0 ~ -0.02
3≦Φ≦10	-0.01 ~ -0.03
10<Φ	-0.01 ~ -0.04

超精銑 Bright Finishing	—
精銑 Finishing	—
中銑 Semi Finishing	◎
粗銑 Roughing	◎

MG RD 30° Cutting Table 81

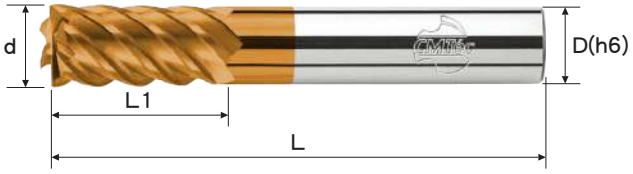
刃徑 d	刃長 L1	全長 L	柄徑 D	刃數 F	RD 鍍膜訂購編號 RD Coated Order No.
4.0	20	60	4	8	CEFM80400A
6.0	25	60	6	11	CEF110600A
8.0	25	60	8	14	CEF140800A
10.0	30	75	10	16	CEF161000A
12.0	32	100	12	17	CEF171200A

➡ 切削條件表 Cutting Condition P.578 ➡ 技術資料 Technical Data P.622

M520 極細鎢鋼平銑刀- 高硬型- 6刃

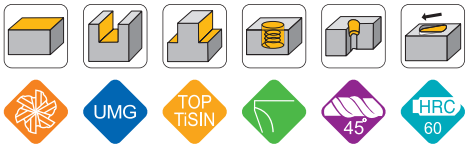
M520 ULTRA CARBIDE END MILLS FOR HIGH HARDNESS- Standard- 6F

· MED60000A



刃徑 d	公差 Tolerance
Φ<3	0 ~ -0.02
3≦Φ≦10	-0.01 ~ -0.03
10<Φ	-0.01 ~ -0.04

超精銑 Bright Finishing	○
精銑 Finishing	◎
中銑 Semi Finishing	◎
粗銑 Roughing	—



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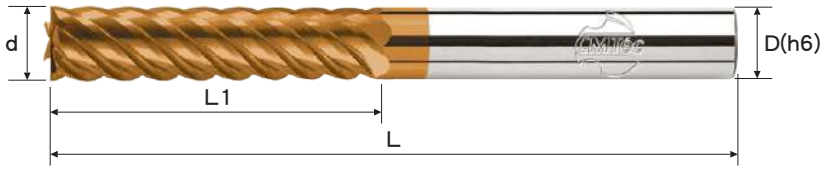
刃徑 d	刃長 L1	全長 L	柄徑 D	刃數 F	鍍膜訂購編號 Coated Order No.
6.0	15	50	6	6	MED60600A
8.0	20	60	8	6	MED60800A
10.0	25	75	10	6	MED61000A
12.0	30	75	12	6	MED61200A
14.0	30	75	14	6	MED61400A
16.0	40	100	16	6	MED61600A
18.0	40	100	18	6	MED61800A
20.0	45	100	20	6	MED62000A
25.0	45	100	25	6	MED62500A

➡ 切削條件表 Cutting Condition P.581
➡ 技術資料 Technical Data P.622

M520 極細鎢鋼平銑刀- 高硬長刃型- 6刃

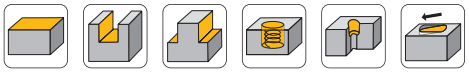
M520 ULTRA CARBIDE END MILLS FOR HIGH HARDNESS- Long Flute- 6F

· MEDF60000A



刃徑 d	公差 Tolerance
Φ<3	0 ~ -0.02
3≦Φ≦10	-0.01 ~ -0.03
10<Φ	-0.01 ~ -0.04

超精銑 Bright Finishing	○
精銑 Finishing	◎
中銑 Semi Finishing	◎
粗銑 Roughing	—





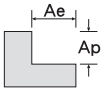
84

刃徑 d	刃長 L1	全長 L	柄徑 D	刃數 F	鍍膜訂購編號 Coated Order No.
6.0	35	75	6	6	MEDF60600A
8.0	45	100	8	6	MEDF60800A
10.0	55	100	10	6	MEDF61000A
12.0	55	100	12	6	MEDF61200A
14.0	75	150	14	6	MEDF61400A
16.0	75	150	16	6	MEDF61600A
18.0	90	150	18	6	MEDF61800A
20.0	90	150	20	6	MEDF62000A
25.0	90	150	25	6	MEDF62500A

➡ 切削條件表 Cutting Condition P.581 ➡ 技術資料 Technical Data P.622

Table 80 鎢鋼複合材料用銑刀- DIA鑽石塗層- 切削條件表

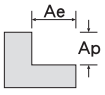
SOLID CARBIDE END MILLS- CUTTING CONDITION TABLE

加工材質 Material	非金屬 Non-metal			
工件料號 Material Code	碳纖維 Carbon Fiber CFRP		玻璃纖維 Glass Fiber GFRP	
硬度 Hardness	—		—	
切削速度 Vc	100m/min		70m/min	
外徑 Diameter	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)
3	10,610	640	7,430	450
4	7,960	720	5,570	500
5	6,370	960	4,450	670
6	5,310	1,110	3,710	780
8	3,980	1,310	2,780	910
10	3,180	1,530	2,230	1,060
12	2,650	1,700	1,860	1,190
切削量 Cutting Amount (mm)	Ap≦2D Ae≦0.35D			

※ 切削公式 Cutting Formula：S(主軸轉速) = Vc(切削速度) × 1000 / D(外徑) / π(3.14)　　F(進給速度) = fz(每刃進給量) × Z(刃數) × S(主軸轉速)

Table 81 鎢鋼複合材料用銑刀- RD彩鑽塗層- 切削條件表

SOLID CARBIDE END MILLS- CUTTING CONDITION TABLE

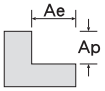
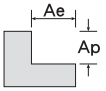
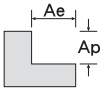
加工材質 Material	非金屬 Non-metal			
工件料號 Material Code	碳纖維 Carbon Fiber CFRP		玻璃纖維 Glass Fiber GFRP	
硬度 Hardness	—		—	
切削速度 Vc	100m/min		70m/min	
外徑 Diameter	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)
3	10,610	260	7,430	180
4	7,960	290	5,570	200
5	6,370	380	4,450	270
6	5,310	440	3,710	310
8	3,980	520	2,780	360
10	3,180	610	2,230	420
12	2,650	680	1,860	480
切削量 Cutting Amount (mm)	Ap≦2D Ae≦0.35D			

※ 切削公式 Cutting Formula：S(主軸轉速) = Vc(切削速度) × 1000 / D(外徑) / π(3.14)　　F(進給速度) = fz(每刃進給量) × Z(刃數) × S(主軸轉速)

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.

Table 84 M520 極細鎢鋼高硬型銑刀- 6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		不銹鋼 Stainless Steels	
工件料號 Material Code	S35C,S45C,S50C		SCM,SKT,SKD		SCM,SKT,SKD		SUS304	
硬度 Hardness	HRC<20		HRC20~30		HRC30~45		—	
切削速度 Vc	110m/min		95m/min		75m/min		75m/min	
外徑 Diameter	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)	S (rpm)	F (mm/min)
6mm	5,840	1,060	5,040	900	3,980	710	3,980	540
8mm	4,380	1,050	3,780	840	2,990	690	2,990	530
10mm	3,500	970	3,030	780	2,390	610	2,390	480
12mm	2,920	900	2,520	760	1,990	1,120	1,990	450
16mm	2,190	810	1,890	700	1,490	980	1,490	390
切削量 Cutting Amount (mm)	Ae=0.03D~0.1D 				Ae=0.02D~0.1D 		Ae=0.02D~0.05D 	

※ 切削公式 Cutting Formula：S(主軸轉速) = Vc(切削速度) × 1000 / D(外徑) / π(3.14)　　F(進給速度) = fz(每刃進給量) × Z(刃數) × S(主軸轉速)

※ 切削公式 Cutting Formula：S(主軸轉速) = Vc(切削速度) × 1000 / D(外徑) / π(3.14)　　F(進給速度) = f(每轉進給量) × S(主軸轉速)

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.