



WRH - Cutting CONDITION

切削條件表

	Hardness 硬度	Cutting Speed 切削速度 (m/min)	Feed per Tooth 進給 fz(mm /tooth)						
			Diameter 直徑 ØD (mm)						
			10	12	16	20	25	30	32
Carbon Steel 碳素鋼	HB 180~280	160~280	0.3~0.4	0.3~0.5	0.3~0.6	0.35~0.7	0.4~0.8	0.5~0.8	0.5~0.8
Alloy Steel 低合金鋼	HB 180~280	200~320	0.3~0.4	0.3~0.5	0.3~0.6	0.35~0.7	0.4~0.8	0.5~0.8	0.5~0.8
Pre-Hardened Steel 預硬鋼	HB 280~400	180~300	0.2~0.4	0.3~0.5	0.3~0.6	0.35~0.7	0.4~0.8	0.5~0.8	0.5~0.8
Die Steel 模具鋼	HB 180~250	160~250	0.2~0.4	0.3~0.5	0.3~0.6	0.35~0.7	0.4~0.8	0.5~0.8	0.5~0.8
Hardened steel 淬火鋼	HRC 40~55	140~220	0.15~0.35	0.2~0.4	0.2~0.5	0.25~0.6	0.25~0.6	0.3~0.8	0.3~0.8
	HRC 56~63	120~180	0.15~0.3	0.2~0.4	0.2~0.5	0.35~0.7	0.25~0.5	0.3~0.6	0.3~0.6
Stainless Steel 不銹鋼	HB 150~250	100~220	0.3~0.4	0.2~0.4	0.25~0.5	0.35~0.7	0.4~0.8	0.5~0.8	0.5~0.8
Gray Cast Iron 灰口鑄鐵	HB 160~260	300~400	0.3~0.5	0.4~0.6	0.5~0.7	0.5~0.8	0.6~0.8	0.8~1.	0.8~1.
Ductile Cast Iron 球墨鑄鐵	HB 170~300	240~300	0.3~0.4	0.3~0.4	0.3~0.6	0.5~0.8	0.5~0.8	0.6~0.8	0.6~0.8
Copper Alloy 銅合金	HB 80~150	220~320	0.3~0.5	0.4~0.5	0.4~0.6	0.35~0.7	0.4~0.8	0.5~0.8	0.5~0.8
Aluminum Alloy 鋁合金	HB 30~100	300~400	0.3~0.5	0.4~0.6	0.4~0.7	0.35~0.7	0.4~0.8	0.5~1.	0.5~1.
Graphite 石墨	-	400~550	0.3~0.5	0.4~0.6	0.4~0.8	0.35~0.7	0.4~0.8	0.5~1.	0.5~1.

Cutting Condition Method 球刀片計算圖

轉速

Rotation speed

$$N = \frac{V \times 1000}{\pi \times D_e} \text{ (min)}^{-1}$$

$$D_e = 2 \times \sqrt{A_p \times (D - A_p)} \text{ (mm)}$$

進給

Feed rate

$$F = N \times f_z \text{ (mm/min)}$$

$$f_z = h_{max} \times \frac{D}{\sqrt{A_p \times (D - A_p)}} \text{ (mm/rev)}$$

N = 轉速 (min)⁻¹
Rotation speed

V = 切削速度 (mm/min)
Cutting speed

D_e = 有效刀具直徑 (mm)
Cutting length of diameter

A_p = 軸向切深 (mm)
Depth of cut (ap)

A_e = 步距/徑向切深 (mm)
Depth of cut (ae)

F = 進給速度 (mm/min)
Feed rate

f_z = 每轉進給 (mm/rev)
Feed rate of rotation speed

h_{max} = 有效刀具直徑 (mm/min)
Cutting length of diameter

