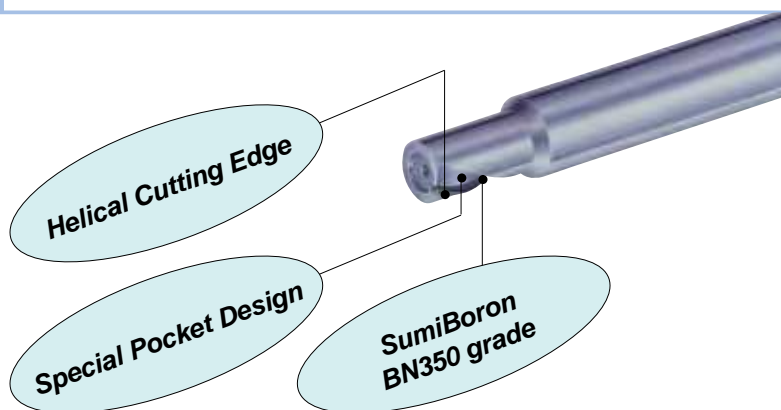


# SUMIBORON "Helical Master" BNES Type

## Spiral CBN Endmill for Hardened Steel



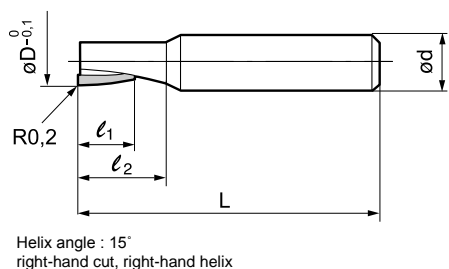
### ■ Endmills BNES Type with 1 Spiral Flute

Technical drawing of a lathe tool. The drawing shows a side view of the tool with the following dimensions and labels:

- $\overset{0}{\underset{-0,1}{\varnothing D}}$ : Dimension at the cutting edge.
- $\varnothing d$ : Dimension at the tool holder.
- $R0,2$ : Radius at the cutting edge.
- $\ell_1$ : Length of the cutting edge.
- $\ell_2$ : Length of the tool holder.
- $L$ : Total length of the tool.

Helix angle : 15°  
right-hand cut, right-hand helix

Cat. No.	Stock	Dimensions (mm)				
	BN350	$\varnothing D$	$\varnothing d$	$\ell_1$	$\ell_2$	L
<b>BNES 1060</b>	□	6,0	10	7,0	11	60
<b>BNES 1080</b>	□	8,0	10	10,0	14	70
<b>BNES 1100</b>	□	10,0	12	12,0	17	75
<b>BNES 1120</b>	□	12,0	12	14,0	20	80
<b>BNES 1140</b>	□	14,0	16	16,0	21,5	80
<b>BNES 1160</b>	□	16,0	16	18,0	24	80



### ■ Recommended Cutting Conditions

Cutting speed:  $v_c$  (m/min), Spindle revolutions:  $n$  (rpm), Feed per tooth:  $f_t$  (mm/tooth), Feed speed:  $v_f$  (mm/min)

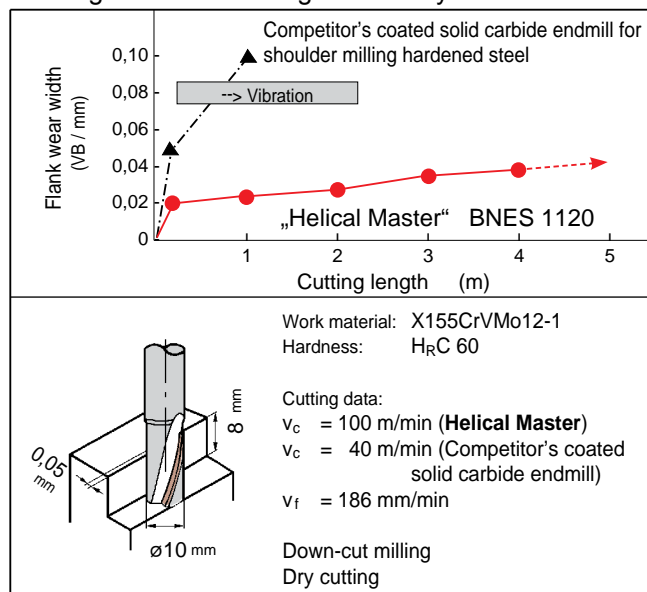
Tooling example	ø D	Hardened steel (H <sub>R</sub> C 50 ~ 57)			Hardened steel (H <sub>R</sub> C 58 ~ 65)		
		$v_c = 100 \sim 170$ m/min			$v_c = 80 \sim 150$ m/min		
	ø 6 ~ 8	$W_{oc} \leq 0,1$ mm	$n = 4000 \sim 9000$	$V_f$ (mm/min) = 240 ~ 540	$W_{oc} \leq 0,08$ mm	$n = 3200 \sim 8000$	$V_f$ (mm/min) = 150 ~ 370
	ø 10 ~ 12	$W_{oc} \leq 0,15$ mm	$n = 2700 \sim 5400$	$V_f$ (mm/min) = 180 ~ 360	$W_{oc} \leq 0,12$ mm	$n = 2100 \sim 4800$	$V_f$ (mm/min) = 120 ~ 270
	ø 14 ~ 16	$W_{oc} \leq 0,2$ mm	$n = 2000 \sim 3800$	$V_f$ (mm/min) = 140 ~ 260	$W_{oc} \leq 0,15$ mm	$n = 1600 \sim 3400$	$V_f$ (mm/min) = 110 ~ 230

Recommendation: Dry cutting (Air coolant)  
Down-cut milling  
Minimise the overhang  
Use a rigid machine

Depth of cut :  $d_{oc} \leq D$

### ■ Performance

#### ● Long Tool Life and High Efficiency



#### ● Excellent Surface Roughness

