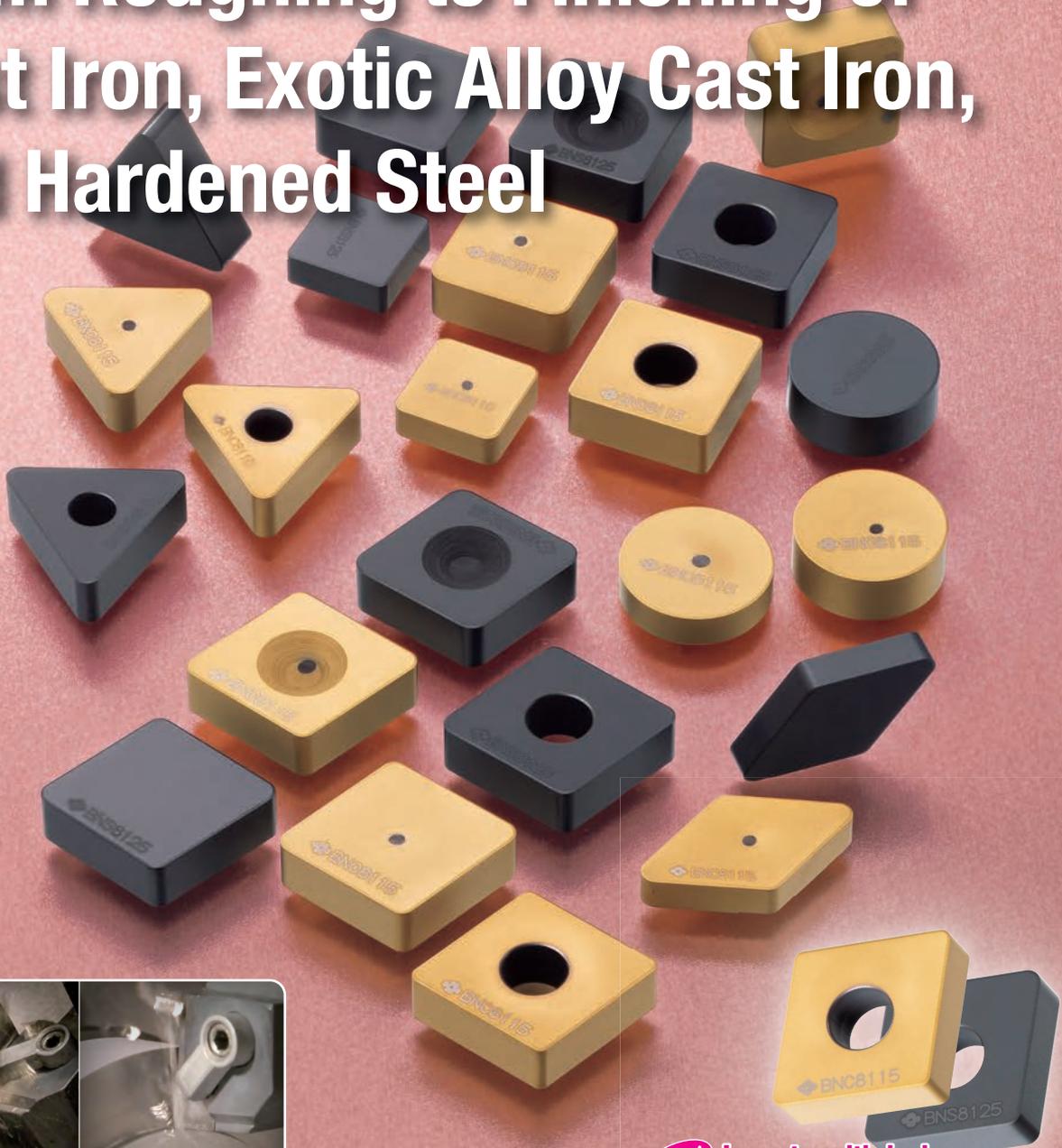


Coated **BNC8115** / SUMIBORON **BNS8125**

Rev. 2

From Roughing to Finishing of
Cast Iron, Exotic Alloy Cast Iron,
and Hardened Steel



New Inserts with holes
Lineup of 12 items

Coated SUMIBORON

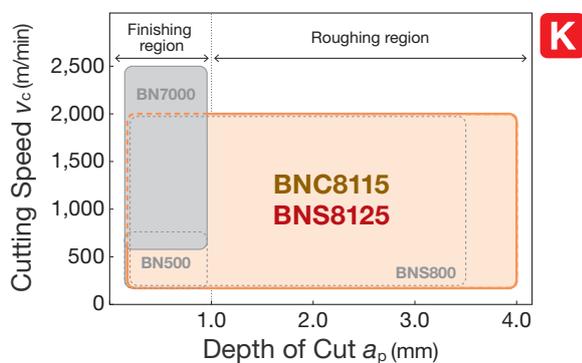
SUMIBORON

BNC8115/BNS8125

From Roughing to Finishing of Cast Iron, Exotic Alloy Cast Iron, and Hardened Steel (Hard-to-cut)

Application Range

● Gray Cast Iron

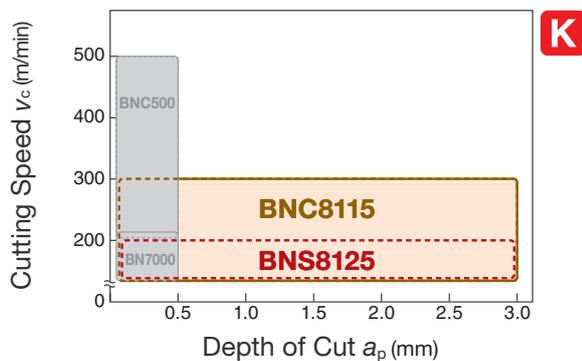


Wet machining is recommended for gray cast iron
For dry machining, BNC8115/BNS8125 are recommended for both roughing and finishing

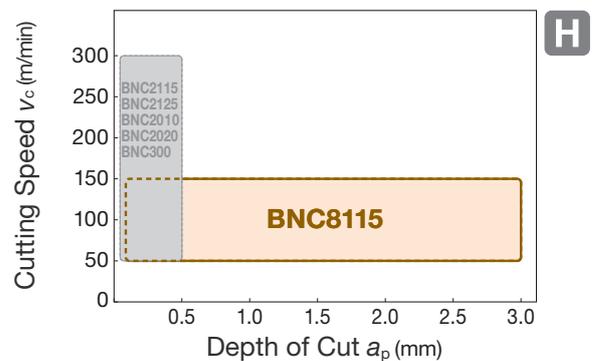


100% Solid CBN Structure

● Ductile Cast Iron



● Hardened Steel



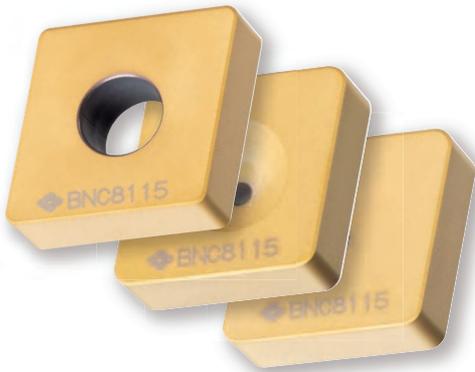
Choosing Between BNC8115 and BNS8125 (Cast Iron/Hardened Steel)

Work Material	Coated SUMIBORON BNC8115		SUMIBORON BNS8125		SUMIBORON BN7000		Coated SUMIBORON BNC500		Coated SUMIBORON BNC2125	
	Turning	Milling	Turning	Milling	Turning	Milling	Turning		Turning	
K Grey Cast Iron	○	Best	○	Best Economical	○	Depth of Cut 1.0mm or below High-speed Finishing	—	—	—	—
	○	Depth of Cut 0.5mm or above	○	Interrupted Machining	○	Depth of Cut 0.5mm or below Low-speed machining	○	Depth of Cut 0.5mm or below	—	—
H Hardened Steel	○	Depth of Cut 0.5mm or above	—	—	—	—	—	—	○	Depth of Cut 0.5mm or below High-speed Machining

○ : Recommendation

Coated SUMIBORON

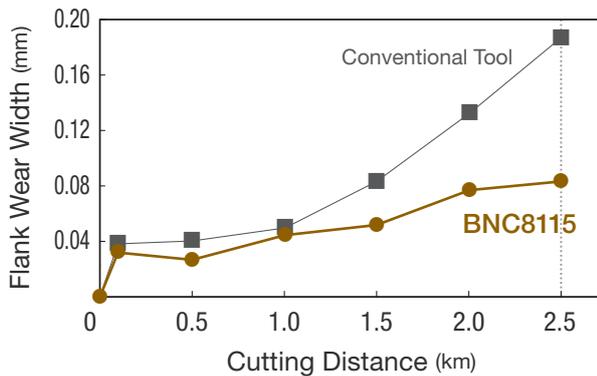
BNC8115



PVD coating with excellent wear resistance suppresses flank wear in machining of exotic alloy cast iron and hardened steel
 Ideal for roughing and 0.5mm to 3.0mm depths of cut can also be used for roughing and finishing of grey cast iron
 Gold-colored coating for improved visibility of used corners

Wear Resistance (Ductile Cast Iron Machining)

Adopts a PVD coating with excellent wear resistance in ductile cast iron machining
 Significantly suppresses flank wear compared to conventional solid CBN



K



BNC8115 (After Cutting 2.5km)



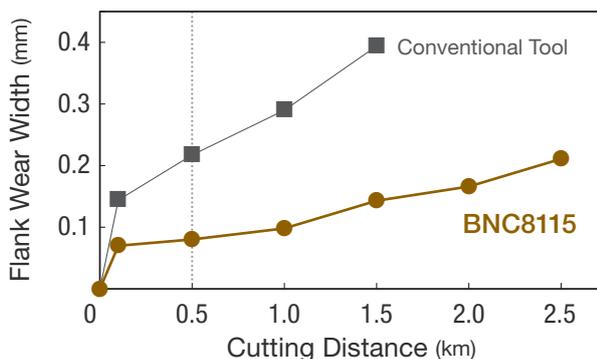
Conventional Tool (Uncoated) (After Cutting 2.5km)

Work Material: FCD450 (Round Bar) Tool Used: SNGN090308

Cutting Conditions: $v_c = 300\text{m/min}$, $f = 0.2\text{mm/rev}$, $a_p = 0.2\text{mm}$ Wet

Wear Resistance (Hardened Steel Machining)

The use of PVD coating with excellent wear resistance on a high-strength solid CBN substrate realises high fracture resistance and wear resistance even in hardened steel machining



H



BNC8115 (After Cutting 0.5km)



Conventional Tool (Uncoated) (After Cutting 0.5km)

Work Material: SUJ2 58-62 HRC (Round Bar) Tool Used: SNGN090308

Cutting Conditions: $v_c = 150\text{m/min}$, $f = 0.2\text{mm/rev}$, $a_p = 0.3\text{mm}$ Wet

SUMIBORON

BNS8125

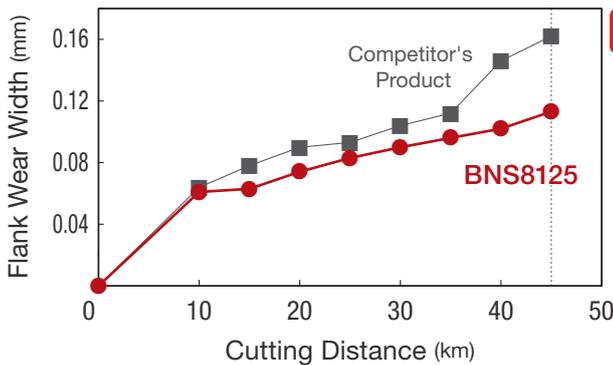


Optimising the particle size distribution of the CBN particles has resulted in improved chipping resistance and longer life while maintaining wear resistance during grey cast iron machining

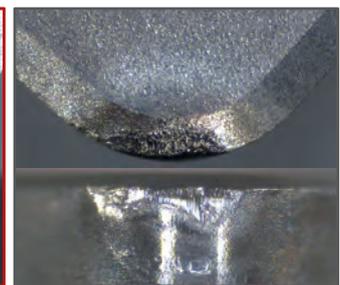
Wear Resistance (Grey Cast Iron Machining)

Optimised grain size distribution of CBN particles

Realises excellent wear resistance in high-efficiency grey cast iron machining



BNS8125
(After Cutting 45km)



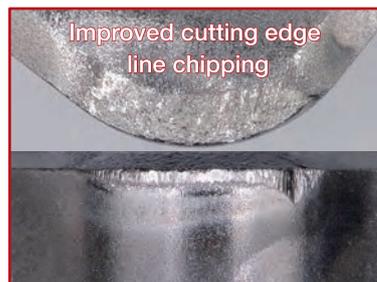
Competitor's Product
(Uncoated)
(After Cutting 45km)

Work Material: FC300 (Round Bar) Tool Used: SNGN090308
Cutting Conditions: $v_c = 800\text{m/min}$, $f = 0.1\text{mm/rev}$, $a_p = 0.2\text{mm Wet}$

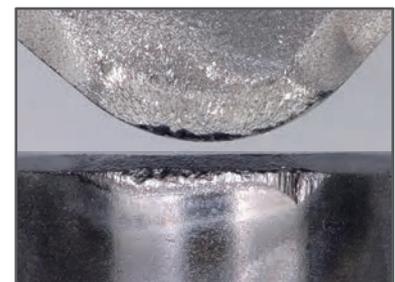
Fracture Resistance (Ductile Cast Iron Machining)

Use of high-strength solid CBN substrate improves fracture resistance

Suppresses chipping to realise longer tool life



BNS8125
(After Cutting 9.0km)



Conventional Tool (Uncoated)
(After Cutting 9.0km)

Work Material: FCD450 (Round Bar with 2 V-grooves) Tool Used: SNGN120408
Cutting Conditions: $v_c = 200\text{m/min}$, $f = 0.2\text{mm/rev}$, $a_p = 0.5\text{mm Wet}$

Stock Items

Solid Insert / Negative (With Hole)

Appearance	Cat. No.	Stock		Dimensions (mm)			
		BNC8115	BNS8125	Inscribed Circle	Thickness	Hole Dia.	Nose Radius
	CNGA 120408	●	●	12.7	4.76	5.16	0.8
	120412	●	●				1.2
	SNGA 120408	●	●	12.7	4.76	5.16	0.8
	120412	●	●				1.2
	TNGA 160408	●	●	9.525	4.76	3.81	0.8
	160412	●	●				1.2

Solid Insert / Negative (Dimple Lock)

Appearance	Cat. No.	Stock		Dimensions (mm)			
		BNC8115	BNS8125	Inscribed Circle	Thickness	Hole Dia.	Nose Radius
	CNGX 120412	●	●	12.7	4.76	—	1.2
	120416	●	●				1.6
	SNGX 120412	●	●	12.7	4.76	—	1.2
	120416	●	●				1.6

For the above products, use Tool Holder for Solid SUMIBORON XCLN Type/XSBN Type (Dimple Lock).

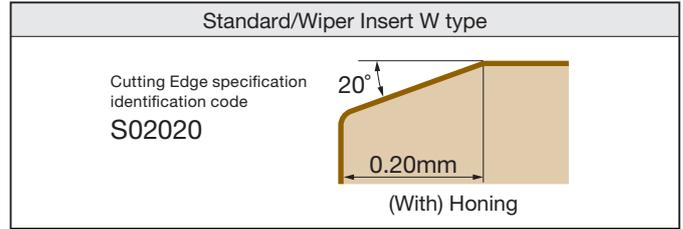
Solid Insert / Negative (Without Hole)

Appearance	Cat. No.	Stock		Dimensions (mm)						
		BNC8115	BNS8125	Inscribed Circle	Thickness	Hole Dia.	Nose Radius			
	CNGN 090308	●	●	9.525	3.18	—	0.8			
	090312	●	●				1.2			
	CNGN 120408	●	●	12.7	4.76	—	0.8			
	120412	●	●				1.2			
	120416	●	●				1.6			
	DNGN 110308	●	●	9.525	3.18	—	0.8			
	110312	●	●				1.2			
	RNGN 090300	●	●	9.525	3.18	—	—			
	RNGN 120300	●	●	12.7	3.18	—	—			
	RNGN 120400	●	●	12.7	4.76	—	—			
	SNGN 090308W*	●	●	9.525	3.18	—	0.8			
	Wiper									
	SNGN 090308*	●	●	9.525	3.18	—	0.8			
	090312*	●	●				1.2			
	SNGN 120308	●	●	12.7	3.18	—	0.8			
	120312	●	●				1.2			
	SNGN 120408	●	●				0.8			
	120412	●	●				1.2			
	120416	●	●	12.7	4.76	—	1.6			
	120420	●	●				2.0			
	TNGN 110308	●	●				6.35	3.18	—	0.8
	110312	●	●							1.2
	TNGN 160408	●	●	9.525	4.76	—	0.8			
	160412	●	●				1.2			
	160416	●	●				1.6			
	160420	●	●				2.0			

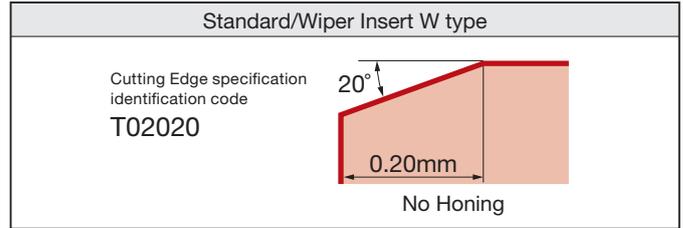
* Can be used with SUMIBORON Cutter for High-speed Cast Iron Machining RM type.
-W: Wiper Insert

Cutting Edge Specification

BNC8115



BNS8125



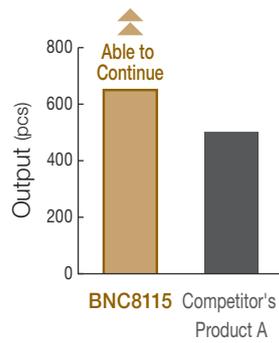
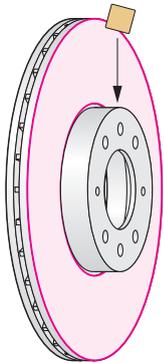
Application Examples of BNC8115

FC250 Brake Disc

Turning



High fracture resistance suppresses flaking, achieving 1.3x or longer tool life compared with competitor's CBN



BNC8115
After machining 650 pcs



Competitor's CBN A
After machining 500 pcs

Tool Used: SNGN120416 (BNC8115)

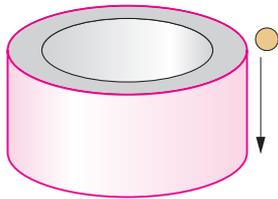
Cutting Conditions: $v_c=250\text{m/min}$, $f=0.4\text{mm/rev}$, $a_p=2.5\text{mm}$ Wet

SNCM (Heat-treated) Large Bearing

Turning



High-wear resistance coating suppresses flank wear, achieving twice or longer tool life compared with competitor's CBN



BNC8115
After 2 passes



Competitor's CBN B
After 1 pass

Tool Used: RNGN120400 (BNC8115)

Cutting Conditions: $v_c=150\text{m/min}$, $f=0.3\text{mm/rev}$, $a_p=2.5\text{mm}$ Wet

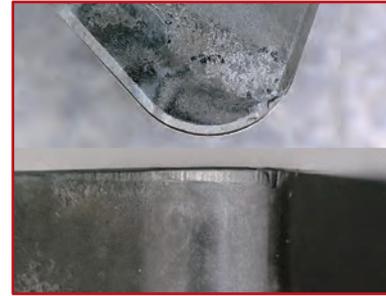
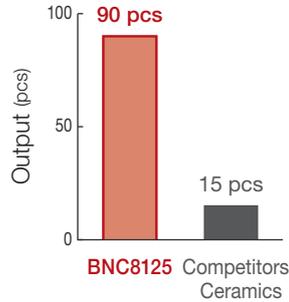
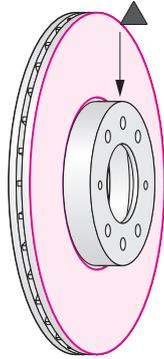
Application Examples of BNS8125

FC250 Brake Disc

Turning



6x tool life with ceramic tools; good wear resistance



BNS8125
After machining 90 pcs

Tool Used: TNGN160412 (BNS8125)

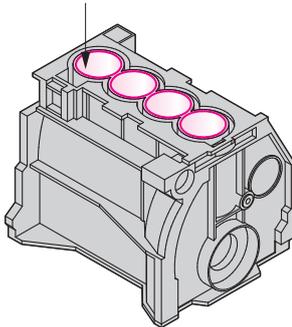
Cutting Conditions: $v_c=300\text{m/min}$, $f=0.4\text{mm/rev}$, $a_p=1.0\text{mm}$ Wet

Centrifugal Cast Iron Cylinder Bore

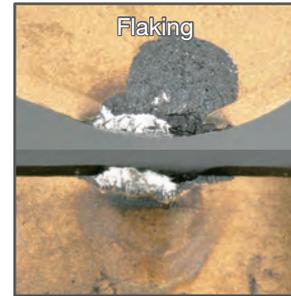
Milling



High fracture resistance suppresses flaking, achieving 1.2x or longer tool life compared with competitor's CBN



BNS8125
After machining 100 pcs



Competitor's CBN C
After machining 80 pcs

Tool Used: SNGN090312 (BNS8125) Cutter: Special Boring Cutter

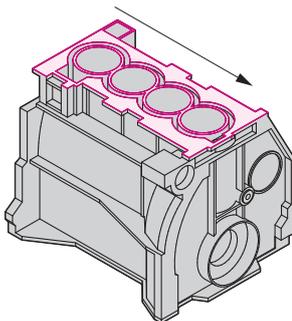
Cutting Conditions: $v_c=1,000\text{m/min}$, $v_f=2,000\text{mm/min}$, $f_z=0.6\text{mm/t}$, $a_p=0.05\text{mm}$ Wet

FC250 Cylinder Block

Milling



High fracture resistance suppresses flaking, achieving 1.5x or longer tool life compared with competitor's CBN



BNS8125
After 1.5 hours' machining



Competitor's CBN D
After 1.0 hours' machining

Tool Used: SNGN120412 (BNS8125) Cutter: Diameter $\phi 125\text{mm}$ (10-flute)

Cutting Conditions: $v_c=1,000\text{m/min}$, $v_f=2,600\text{mm/min}$, $f_z=0.1\text{mm/t}$, $a_p=1.0\text{mm}$ Remainder Wet

Recommended Cutting Conditions (Turning)**● Cast Iron****K**

Work Material	Grade	Cutting Conditions		
		Depth of Cut a_p (mm)	Feed Rate f (mm/rev)	Min. - Optimum - Max. Cutting Speed V_c (m/min)
Grey Cast Iron	BNC8115 / BNS8125	≤ 4.0	0.10 - 0.50 - 1.00	200 - 1,000 - 2,000
Ductile Cast Iron	BNC8115	≤ 3.0	0.10 - 0.30 - 0.50	80 - 160 - 300
	BNS8125	≤ 3.0	0.10 - 0.30 - 0.50	80 - 120 - 200

Coolant: Dry/Wet

● Hardened Steel**H**

Work Material	Grade	Cutting Conditions		
		Depth of Cut a_p (mm)	Feed Rate f (mm/rev)	Min. - Optimum - Max. Cutting Speed V_c (m/min)
Hardened Steel	BNC8115	≤ 3.0	0.10 - 0.25 - 0.40	50 - 100 - 150

Coolant: Wet

Recommended Cutting Conditions (Milling)**● Cast Iron****K**

Work Material	Grade	Cutting Conditions		
		Depth of Cut a_p (mm)	Feed Rate f (mm/rev)	Min. - Optimum - Max. Cutting Speed V_c (m/min)
Grey Cast Iron	BNC8115 / BNS8125	≤ 4.0	0.10 - 0.50 - 1.00	800 - 1,400 - 2,000

Coolant: Dry

< SAFETY NOTES >

• Very hot or lengthy chips may be discharged while the machine is in operation. Therefore, machine guards, safety goggles or other protective covers must be used. Fire safety precautions must also be considered.

• Please handle with care as this product has sharp edges.
• Improper cutting conditions or mis-handling of the tool may result in breakages or projectiles. Therefore, please use the tool within its recommended conditions.

• When using non-water soluble cutting oil, precautions against fire must be taken and please ensure that a fire extinguisher is placed near the machine.


Sumitomo Electric Industries, Ltd.
Hardmetal Division

Global Marketing Department : 1-1-1, Koyakita, Itami, Hyogo 664-0016, Japan

Tel: +81-72-772-4535 Fax: +81-72-771-0088

<https://www.sumitool.com/global>