SUMITOMO
CARBIDE - CBN - DIAMOND

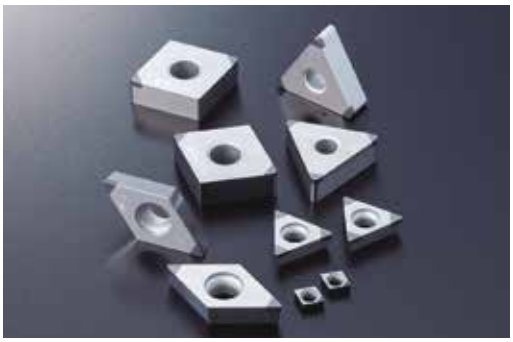
CBN Grades for Sintered Alloy Finishing

SUMIBORON BN7115

Excellent Stability in High-Precision Finishing of Sintered Alloy

P M K N S H Sintered Alloy

SUMITOMO ELECTRIC GROUP



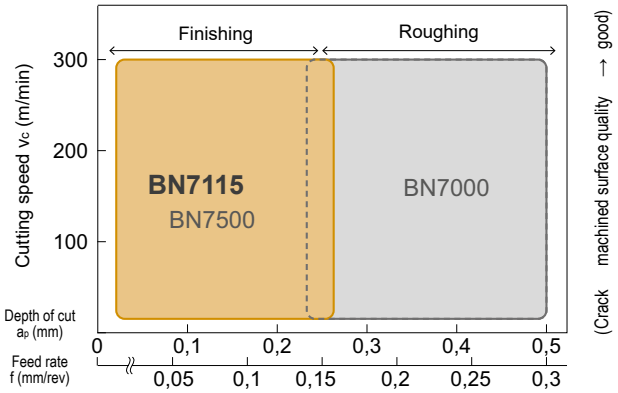
General Features

Good wear resistance through high CBN content also delivers superior fracture resistance by increasing the binding strength between CBN particles.
BN7115 provides stable performance for high-speed finishing work and is ideal for finishing of sintered alloys.

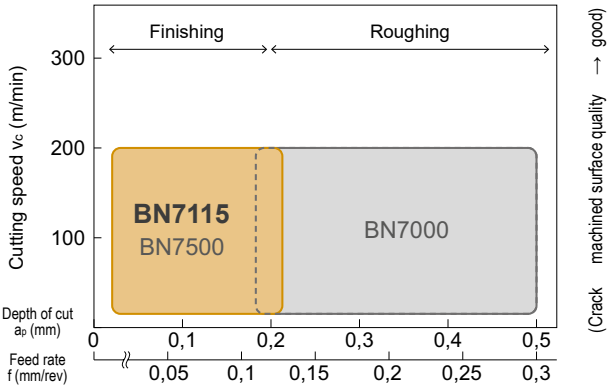
New cutting edge treatment with an emphasis on fracture resistance: “US” type chipbreaker now available.

Application Range

Sintered Alloy (50–95 HRB/90–200 HV)

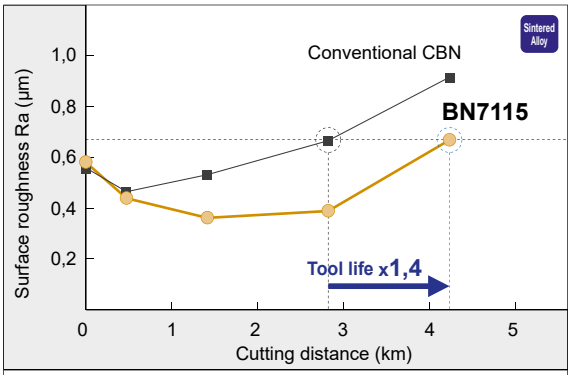


High-density/Sintered Alloy (30–65 HRC/300–800 HV)



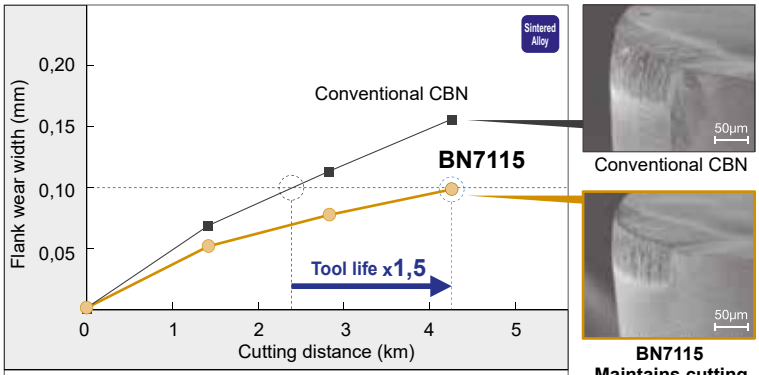
Cutting Performance

Continuous Cutting (Surface Roughness)



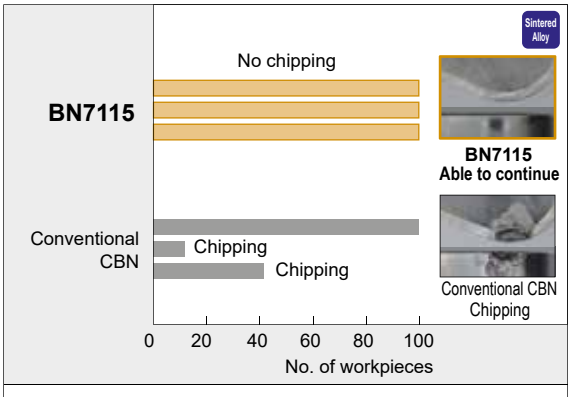
Work material: Sinterred ferrous alloy F-08C2 equivalent (150 HV)
Insert: CNGA 120408 NU2
Cutting conditions: v_c = 200 m/min, f = 0,1 mm/rev, a_p = 0,2 mm, wet

Continuous Cutting (Wear Resistance)



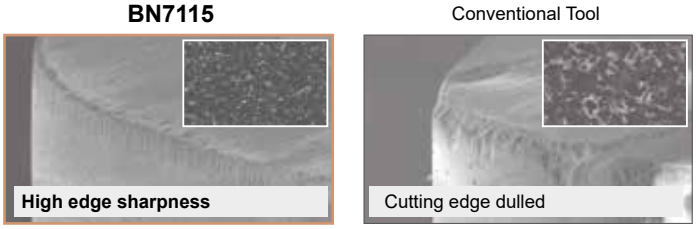
Work material: Sinterred ferrous alloy F-08C2 equivalent (150 HV)
Insert: CNGA 120408 NU2
Cutting conditions: v_c = 200 m/min, f = 0,1 mm/rev, a_p = 0,2 mm, wet

Interrupted Cutting (Fracture Resistance)



Work material: Sinterred ferrous alloy FLA-07C2M equivalent (500 HV)
Insert: CNGA 120408 NU2
Cutting conditions: v_c = 175 m/min, f = 0,09 mm/rev, a_p = 0,15 mm, dry

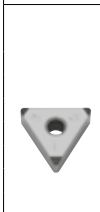
With improved CBN particle/binder boundary strength due to the special binder and improved binding strength between CBN particles thanks to our proprietary sintering process, the edge sharpness in sintered alloy machining is excelllent, suppressing burrs and cracks.



Removal of binder → comparison of CBN particles‘ binding strength

Stock Items

Multi-Cornered Single-Use Inserts/Negative

Shape	Cat. No.	BN7115	No. of corners	Dimensions (mm) Inscribed circle	Thick-ness	Screw hole Ø	Nose radius
	CNGA 120404 NU2	❍	2	12,7	4,76	5,16	0,4
	120408 NU2	●					0,8
	120412 NU2	❍					1,2
	CNGA 120404 LF NU2	❍	2	12,7	4,76	5,16	0,4
	120408 LF NU2	❍					0,8
	CNGA 120404 LE NU2	❍	2	12,7	4,76	5,16	0,4
	120408 LE NU2	❍					0,8
	CNGA 120404 LS NU2	❍	2	12,7	4,76	5,16	0,4
	CNGA 120404 HS NU2	❍	2	12,7	4,76	5,16	0,4
	CNGA 120404 US NU2	❍	2	12,7	4,76	5,16	0,4
	DNGA 150404 NU2	❍	2	12,7	4,76	5,16	0,4
	150408 NU2	❍					0,8
	TNGA 160404 NU3	❍	3	9,525	4,76	3,81	0,4
	160408 NU3	❍					0,8
	160412 NU3	❍					1,2
	TNGA 160404 LF NU3	❍	3	9,525	4,76	3,81	0,4
	160408 LF NU3	❍					0,8
	TNGA 160404 LE NU3	❍	3	9,525	4,76	3,81	0,4
	160408 LE NU3	❍					0,8
	TNGA 160404 LS NU3	❍	3	9,525	4,76	3,81	0,4
	TNGA 160404 HS NU3	❍	3	9,525	4,76	3,81	0,4
	160416 HS NU3	●					1,6
	TNGA 160404 US NU3	❍	3	9,525	4,76	3,81	0,4
	VNGA 160404 NU2	●	2	9,525	4,76	3,81	0,4
	160408 NU2	●					0,8

Multi-Cornered Single-Use Inserts/Positive

Shape	Relief angle	Cat. No.	BN7115	No. of corners	Dimensions (mm) Inscribed circle	Thick-ness	Screw hole Ø	Nose radius
	7°	CCGW 060204 NU2	●	2	6,35	2,38	2,8	0,4
		CCGW 09T304 NU2	●	2	9,525	3,97	4,4	0,4
		09T308 NU2	●					0,8
		CCGW 09T308 HS NU2	●	2	9,525	3,97	4,4	0,8
	7°	DCGW 070204 NU2	❍	2	6,35	2,38	2,8	0,4
		070208 NU2	●					0,8
		DCGW 070208 HS NU2	●	2	6,35	2,38	2,8	0,8
		DCGW 11T302 NU2	●					0,2
		11T304 NU2	❍	2	9,525	3,97	4,4	0,4
		11T308 NU2	●					0,8
		DCGW 11T302 LF NU2	❍					0,2
		11T304 LF NU2	●	2	9,525	3,97	4,4	0,4
		11T308 LF NU2	●					0,8
		DCGW 11T302 LE NU2	❍					0,2
		11T304 LE NU2	❍	2	9,525	3,97	4,4	0,4
		11T308 LE NU2	❍					0,8
		DCGW 11T302 LS NU2	❍					0,2
		11T304 LS NU2	❍	2	9,525	3,97	4,4	0,4
		11T308 LS NU2	❍					0,8
		DCGW 11T304 HS NU2	●	2	9,525	3,97	4,4	0,4
		11T308 HS NU2	●					0,8
	11°	TPGW 110304 NU3	❍	3	6,35	3,18	3,4	0,4
		110308 NU3	❍					0,8
		TPGW 110302 LF NU3	❍					0,2
		110304 LF NU3	❍	3	6,35	3,18	3,4	0,4
		110308 LF NU3	❍					0,8
		TPGW 110304 LE NU3	❍	3	6,35	3,18	3,4	0,4
	5°	VBGW 110304 NU2	❍	2	6,35	3,18	2,8	0,4
		VBGW 160404 NU2	●	2	9,525	4,76	4,4	0,4
		160408 NU2	❍					0,8
		VBGW 160408 LE NU2	●	2	9,525	4,76	4,4	0,8

Cutting Edge Preparation

Symbol	Application
LF/LE	Low cutting force
LS	General purpose continuous cutting
HS/US	Heavy interrupted machining

Single-Use Inserts/Positive

Shape	Relief angle	Cat. No.	BN7115	No. of corners	Dimensions (mm) Inscribed circle	Thick-ness	Screw hole Ør	Nose radius
	7°	CCEW 03X102 LF NU	❍	1	3,5	1,4	1,9	0,2
	11°	TPGW 160404 NU	●	1	9,525	4,76	4,3	0,4

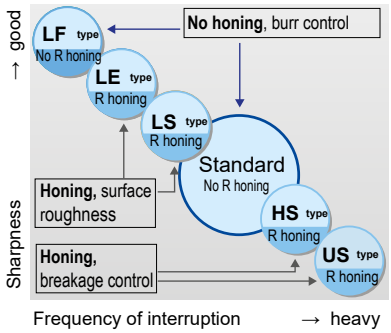
Recommended Cutting Conditions

Sintered Alloy

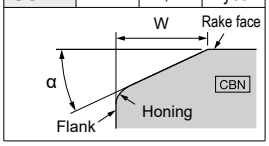
Work material	Grade	Cutting conditions (min.–**optimum**–max.) Cutting speed Vc (m/min)	Feed rate f (mm/rev)	Depth of cut ap (mm)
General sintered alloy	**BN7115**	10–**150**–300	0,01–**0,08**–0,15	0,05–**0,13**–0,25
	BN7000	10–**150**–300	0,01–**0,15**–0,30	0,05–**0,25**–0,50
High-density sintered alloy	**BN7115**	10–**100**–200	0,01–**0,06**–0,12	0,05–**0,10**–0,20
	BN7000	10–**100**–200	0,01–**0,15**–0,30	0,05–**0,25**–0,50

Cutting Edge Specification

BN7115



Type	α°	W (mm)	Honing
Standard	15°	0,12	no
LF	Standard edge		no
LE	Standard edge		yes
LS	15°	0,07	yes
HS	25°	0,05	yes
US	25°	0,12	yes



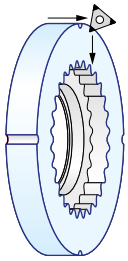
New **US** type emphasises fracture resistance, ideal for heavy interrupted cutting.

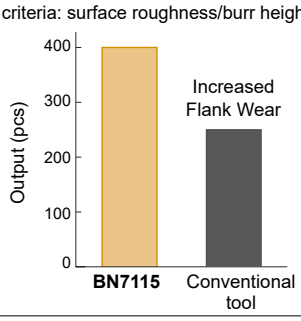
● = Euro stock ❍ = Japan stock

Application Examples

Sintered ferrous alloy FLA-07C2M (500 HV), gear

Excellent wear resistance, maintaining good surface roughness. Achieves long tool life 1,5 times or longer that of conventional tools.

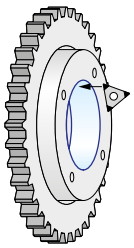


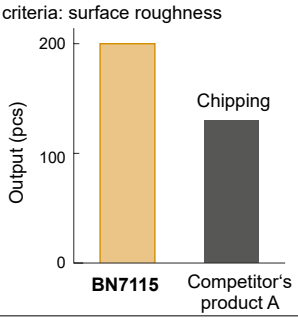


Insert:	TNGA 160404 HS NU3
Cutting conditions:	v_c= 180 m/min, f = 0,1 mm/rev, a_p = 0,2 mm, wet

Sintered ferrous alloy FLA-07C2M (500 HV), gear

Surface roughness improved via excellent fracture resistance. Achieves long tool life 1,5 times or longer that of competitors' products.

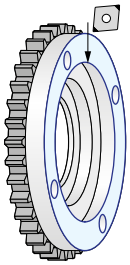


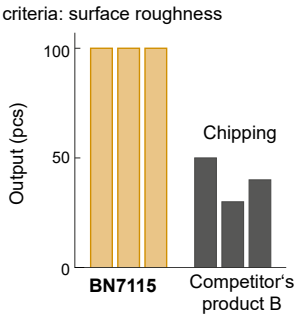


Insert:	TNGA 160404 US NU3
Cutting conditions:	v_c = 200 m/min, f = 0,1 mm/rev, a_p = 0,1 mm, wet

Sintered ferrous alloy F-08C2 (450 HV), gear

Surface roughness improved via excellent fracture resistance. Achieves long tool life 1,5 times or longer that of competitors' products.

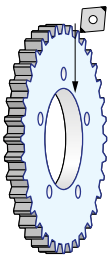


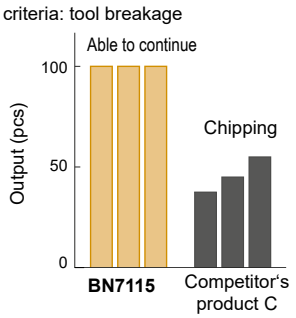


Insert:	CNGA 120404 US NU2
Cutting conditions:	v_c = 170m/min, f = 0,08 mm/rev, a_p = 0,10 mm, wet

Sintered ferrous alloy F-08C2 (450 HV), gear

Excellent fracture resistance for sharp edges as well. Achieves stable tool life twice or longer that of competitors' products.





Insert:	CNGA 120408 LF NU2
Cutting conditions:	v_c= 200 m/min, f = 0,1 mm/rev, a_p = 0,2 mm, dry

SUMITOMO
CARBIDE - CBN - DIAMOND

(Germany)
SUMITOMO ELECTRIC Hartmetall GmbH
Konrad-Zuse-Straße 9, 47877 Willich

Tel. +49 2154 4992-0, Fax +49 2154 4992-161
Info@SumitomoTool.com
www.SumitomoTool.com

(UK and Ireland)
SUMITOMO ELECTRIC Hardmetal Ltd.
3 Paper Mill Drive
Redditch, B98 8QJ, UK

Tel. +44 1844 342081, Fax: +44 1844 342415
InfoUK@SumitomoTool.com
www.SumitomoTool.com