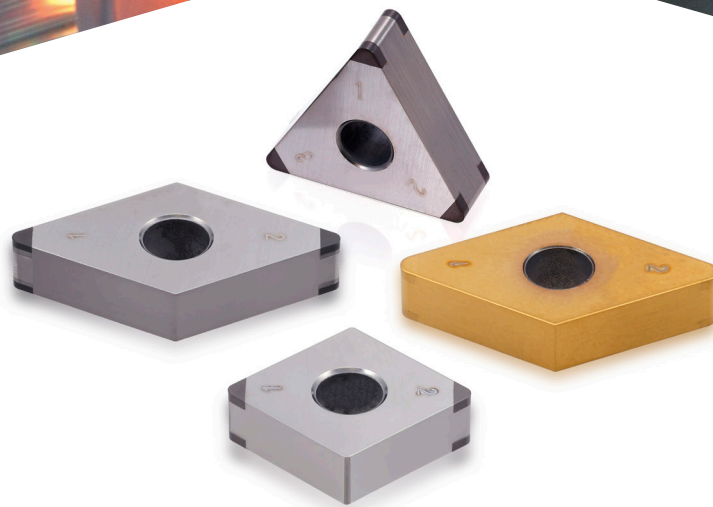
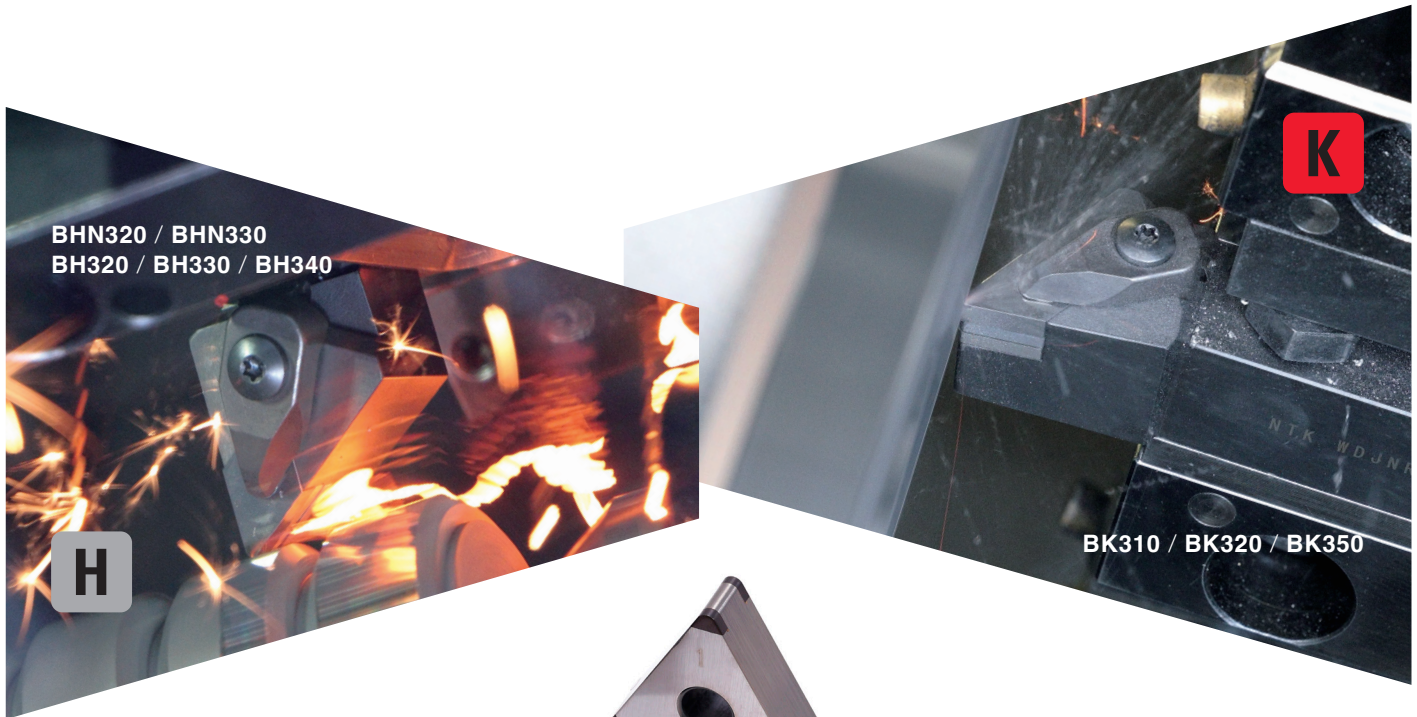


New CBN Grade Series BHN / BH / BK



For turning Hardened steel, Cast iron, and Sintered powder metals



The New Era of NTK CBN Grades

CERTainly | but not only | *CERamics*
Outstanding solutions for demanding applications

For Hardened steel **H**



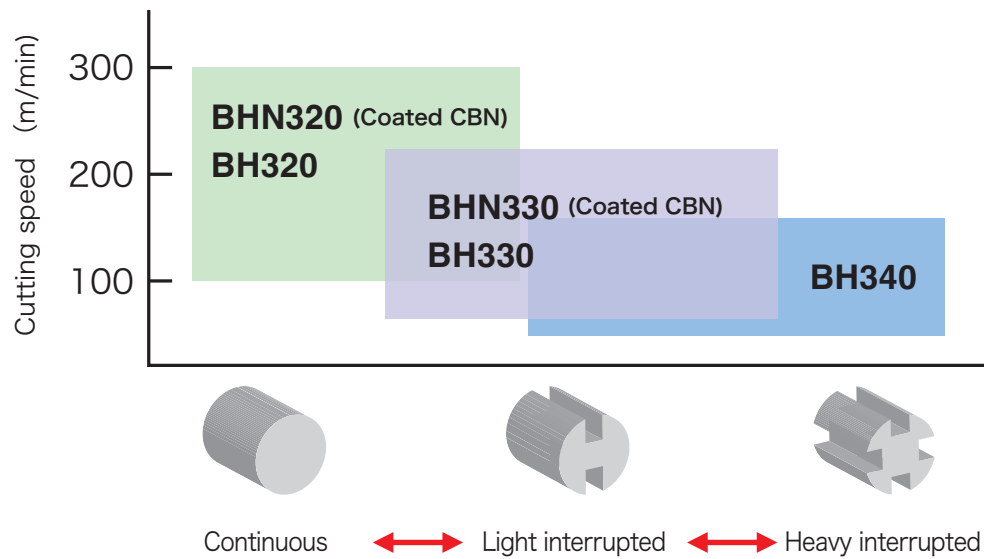
Excellent crater wear resistance, New coating achieves amazingly long tool life!
An extensive selection of cutting edge preparations tailored to meet a wide variety of turning needs.

H

Coated CBN _____
BHN320 / BHN330

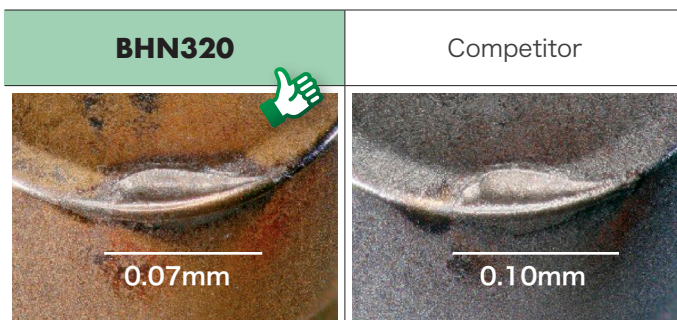
Uncoated CBN _____
BH320 / BH330 / BH340

Hardened steel - Finishing

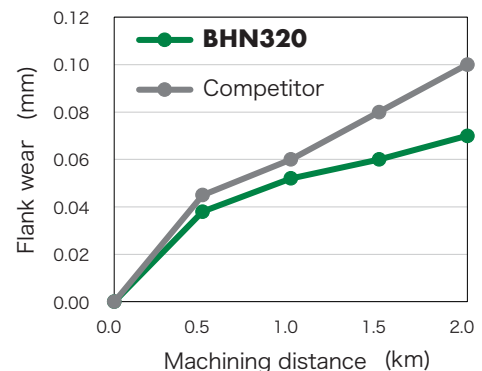


| Coated CBN BHN320

The first recommended material for continuous to light interrupted machining, with a coating that has excellent wear resistance.

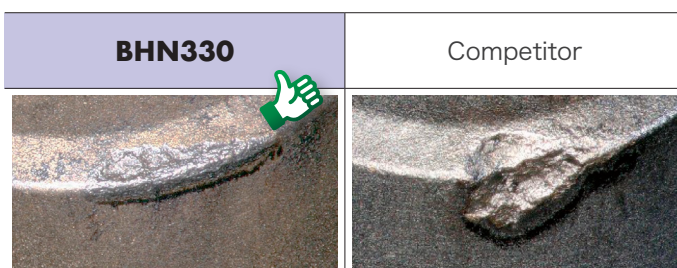


Alloy steel (HRc62)
 $v_C=150\text{m/min}$, $f=0.1\text{mm/rev}$, $a_p=0.2\text{mm}$, Continuous



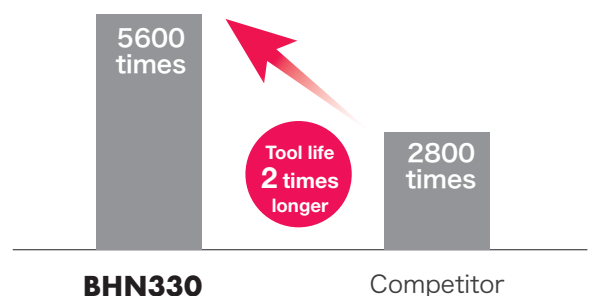
| Coated CBN BHN330

A multi-layer coating with excellent wear resistance and chipping resistance is used, making this a versatile material that can be used for continuous to interrupted machining.



Number of impacts 2800 times

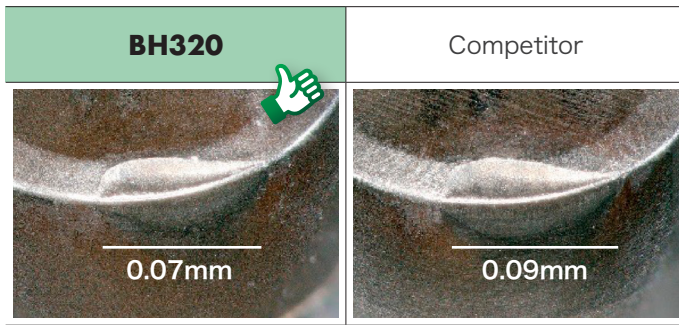
Number of times until breakage



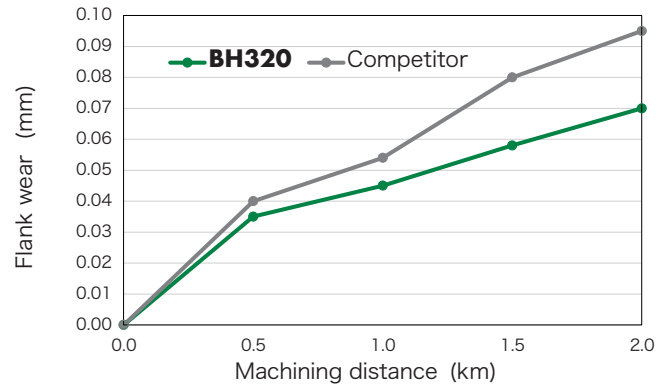
Alloy steel (HRc62)
 $v_C=75\text{m/min}$, $f=0.1\text{mm/rev}$, $a_p=0.1\text{mm}$, Heavy interrupted

| Uncoated CBN BH320

CBN is bonded with a special binder, providing excellent wear resistance at high speeds and continuous cutting.

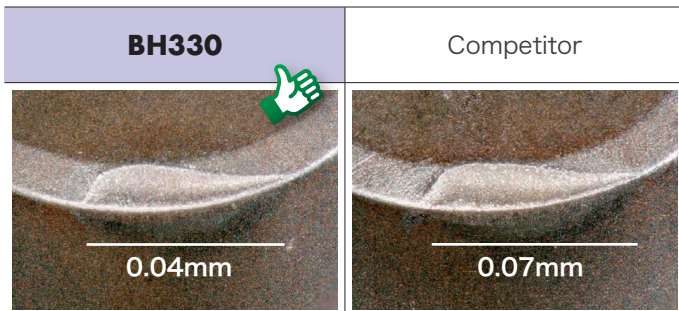


Alloy steel (HRc62)
 $v_c=150\text{m/min}$, $f=0.1\text{mm/rev}$, $a_p=0.2\text{mm}$, Continuous

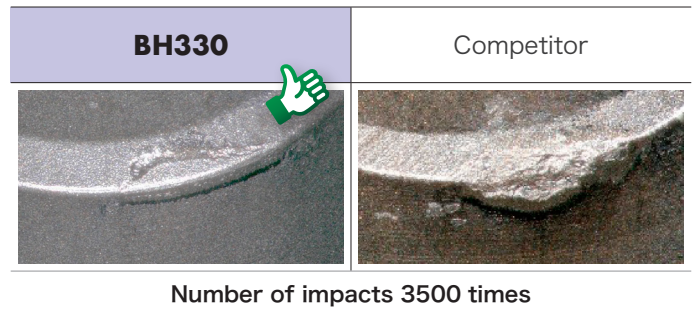


| Uncoated CBN BH330

A general-purpose material that exhibits excellent wear resistance and fracture resistance in continuous to heavy interrupted applications.



Alloy steel (HRc62)
 $v_c=150\text{m/min}$, $f=0.1\text{mm/rev}$, $a_p=0.2\text{mm}$,
After processing 0.7km

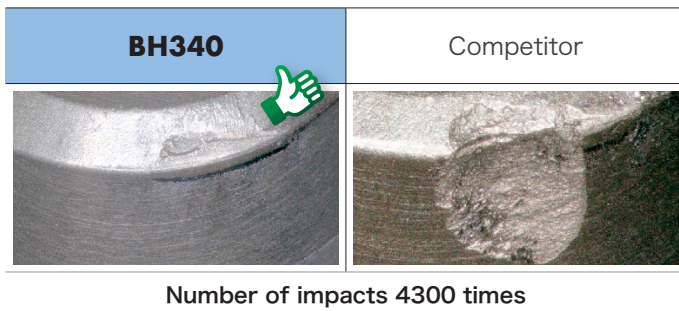


Alloy steel (HRc62)
 $v_c=150\text{m/min}$, $f=0.1\text{mm/rev}$, $a_p=0.2\text{mm}$, Heavy interrupted



| Uncoated CBN BH340

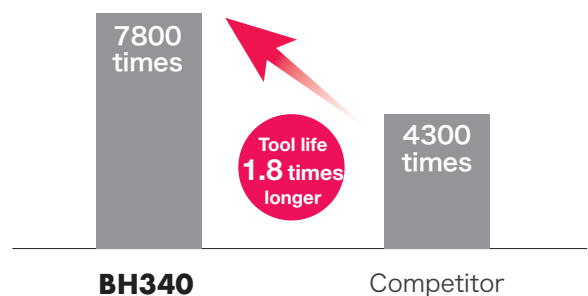
High resistance to chipping and fracture, highly recommended for heavy interrupted cutting.



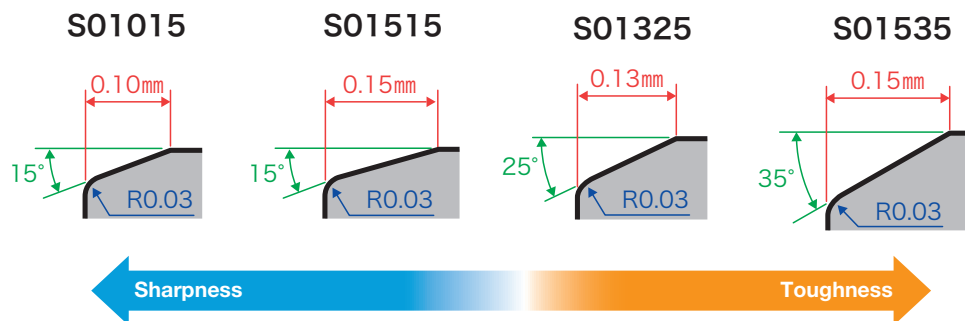
Alloy steel (HRc62)
 $v_c=75\text{m/min}$, $f=0.1\text{mm/rev}$, $a_p=0.1\text{mm}$, Heavy interrupted



Number of times until breakage



Cutting edge preparation according to processing purposes



Recommended cutting conditions


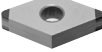



●: First recommendation
○: Second recommendation

Interruption length	Recommended material	Cutting speed	Feed	D.O.C	Coolant	
		(m/min)	(mm/rev)	(mm)	DRY	WET
Continuous cutting	BHN320 (Coated CBN) BH320	100 to 300	up to 0.2	up to 0.5	○	●
Light interrupt cutting	BHN330 (Coated CBN) BH330	75 to 225	up to 0.15		●	○
Heavy interrupted cutting	BH340	50 to 150	up to 0.1		●	○







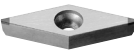
Lineup: Negative insert



Shape	Item number	Coated BHN320	BH320	Coated BHN330	BH330	BH340	Wiper	Length of Edge mm	corner R mm	No. of corners	IC mm	S mm
	CNGA120402PQS01015		●					2.3	0.2	4	12.7	4.76
	CNGA120404PQS01015	●	●					2.3				
	CNGA120404PQS01325	●		●	●	●		2.3				
	CNGA120404PQS01535					●		2.3	0.4			
	CNGA120404QWS01015	●					Yes	2.3				
	CNGA120404QWS01535		●				Yes	2.3				
	CNGA120408PQS01015	●	●					2.2				
	CNGA120408PQS01325	●		●	●	●		2.2				
	CNGA120408PQS01535			●		●		2.2				
	CNGA120408QWS01015	●	●				Yes	2.2				
	CNGA120412PQS01015	●	●	●				2.4				
	CNGA120412PQS01325			●	●			2.4				
	CNGA120412PQS01535					●		2.4				
	CNGA120412QWS01015	●					Yes	2.4				
	CNGA120416PQS01325			●				3.3	1.6			
	DNGA150402PQS01015		●					2.7	0.2	4	12.7	6.35
	DNGA150404PQS01325		●	●	●			2.5				
	DNGA150404PQS01015	●	●					2.5	0.4			
	DNGA150404PQS01535					●		2.5				
	DNGA150408PQS01015	●	●					2.1				
	DNGA150408PQS01325			●	●			2.1	0.8			
	DNGA150408PQS01535			●		●		2.1				
	DNGA150412PQS01015	●	●	●				2				
	DNGA150412PQS01325	●		●	●			2	1.2			
	DNGA150412PQS01535	●		●		●		2				
	DNGA150416PQS01325				●			3.4	1.6			
	DNGA150612PQS01015		●					2	1.2	8	9.525	4.76
	SNGA120408PES01015		●			●		2.4	0.8			
	SNGA120412PES01535		●					2.4	1.2	6	9.525	4.76
	TNGA160401PHS01015	●						2.4	0.1			
	TNGA160401PHS01535					●		2.4				
	TNGA160402PHS01015		●					2.3				
	TNGA160402PHS01325					●		2.3	0.2			
	TNGA160402PHS01535	●						2.3				
	TNGA160404PHS01015	●	●			●		2.2				
	TNGA160404PHS01325	●	●	●	●			2.2	0.4			
	TNGA160404PHS01535			●		●		2.2				
	TNGA160408PHS01015	●	●	●		●		1.9				
	TNGA160408PHS01325			●	●			1.9	0.8			
	TNGA160408PHS01535	●				●		1.9				
	TNGA160412PHS01015	●						2.4				
	TNGA160412PHS01325	●		●				2.4	1.2			
	TNGA160412PHS01535					●		2.4				
	VNGA160401PQS01015		●					3.7	0.1	4	9.525	4.76
	VNGA160401PQS01535					●		3.7				
	VNGA160402PQS01015	●	●					3.5				
	VNGA160402PQS01325	●		●	●			3.5	0.2			
	VNGA160402PQS01535					●		3.5				
	VNGA160404PQS01015	●	●	●				3.1				
	VNGA160404PQS01325	●		●	●	●		3.1	0.4			
	VNGA160404PQS01535					●		3.1				
	VNGA160408PQS01015	●	●					2.2				
	VNGA160408PQS01325	●		●	●			2.2	0.8			
	VNGA160408PQS01535					●		2.2				

Lineup: Positive insert



Shape	Item number	Coated BHN320	BH320	Coated BHN330	BH330	BH340	Wiper	Length of Edge	corner R	No. of corners	IC	S
								mm	mm		mm	mm
	CCGW060204PDS01015		●		●	●		2.3	0.4	2	6.35	2.38
	CCGW09T302PDS01515		●					2.3	0.2		9.525	3.97
	CCGW09T304PDS01015		●					2.3	0.4			
	CCGW09T304PDS01535				●		2.3					
	CCGW09T308PDS01535				●		2.2	0.8				
	DCGW070202PDS01015		●					2.7	0.2	2	6.35	2.38
	DCGW070204PDS01015		●					2.5	0.4		9.525	3.97
	DCGW070204PDS01535				●		2.5					
	DCGW11T302PDS01015		●				2.7	0.2	0.4			
	DCGW11T304PDS01015		●				2.5					
	DCGW11T304PDS01535				●		2.5					
	DCGW11T308PDS01015		●				2.1	0.8				
	TPGN160304PTS01535					●		2.2	0.4	3		
	TPGW110304PTS01015		●					2.2	0.4	3	6.35	3.18
	TPGW110304PTS01325		●		●	●		2.2				
	TPGW110304PTS01535				●			2.2				
	TPGW110308PTS01015		●					1.9	0.8			
	TPGW110308PTS01325				●	●		1.9				
	TPGW110308PTS01535		●			●		1.9				
	TPGW110312PTS01325		●					2.4				
	VBGW160404PDS01325		●					3.1	0.4	2	9.525	4.76
	VCGW080204PDS01015		●					3.1			4.76	2.38
	VCGW110304PDS01015		●					3.1			6.35	3.18
	VCGW110304PDS01535				●		3.1					
	VCGW110308PDS01535				●		2.2	0.8				
	VCGW110312PDS01535		●				3	1.2				
	VCGW160404PDS01015		●					3.1	0.4		9.525	4.76

Workpiece condition Continuous Light interrupted Heavy interrupted



For Cast Iron 

For Sintered Alloy 

Excellent cutting edge sharpness provides excellent surface quality and machining accuracy

High CBN content provides excellent wear resistance and long tool life

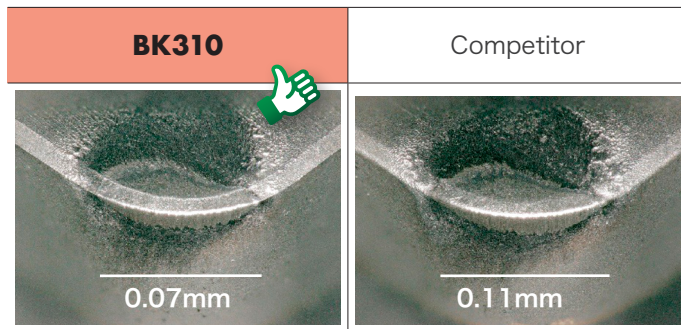


Uncoated CBN

BK310 / BK320 / BK350

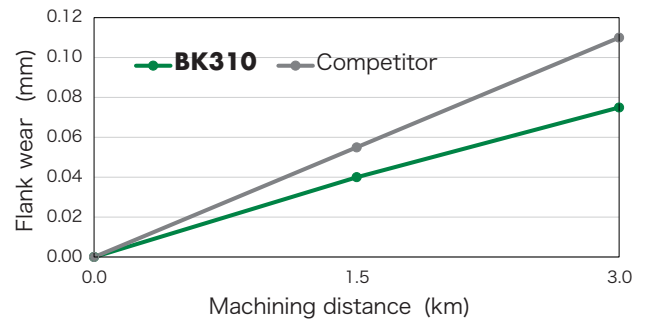
| Uncoated CBN **BK310** / **BK320**

High CBN content provides stable wear resistance in high-speed turning of Gray cast iron and sintered alloys. Fine particle size provides excellent edge sharpness and is effective in suppressing burrs.



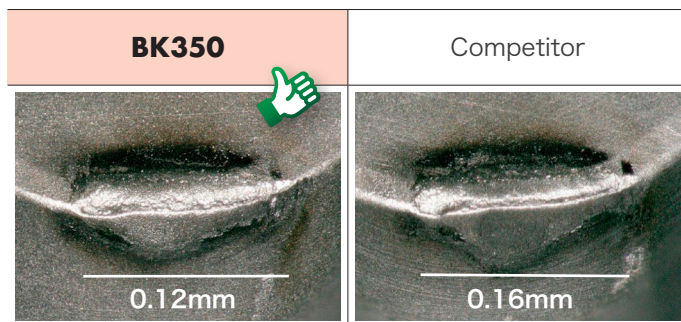
Gray cast iron (FC300)

$v_C=500\text{m/min}$, $f=0.3\text{mm/rev}$, $a_P=0.3\text{mm}$ After processing 3Km



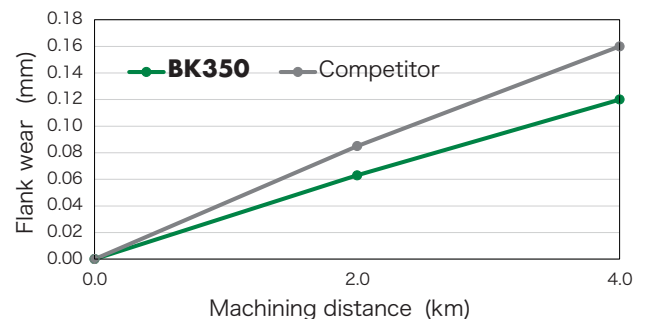
| Uncoated CBN **BK350**

General-purpose material with excellent wear resistance and chipping resistance compared to ductile cast iron for continuous to heavy interrupted use.



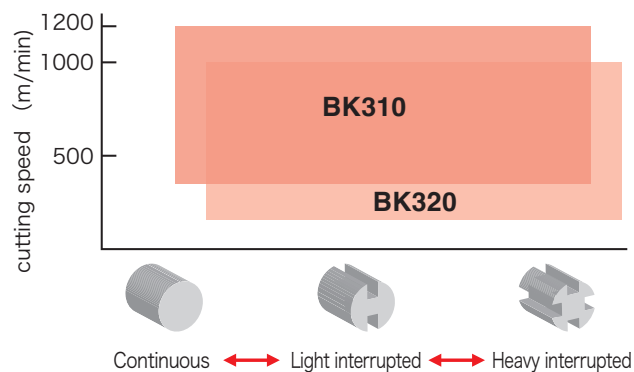
Ductile cast iron (FCD600)

$v_C=300\text{m/min}$, $f=0.1\text{mm/rev}$, $a_P=0.2\text{mm}$ After processing 4Km



Application area for turning

Cast iron - Finishing

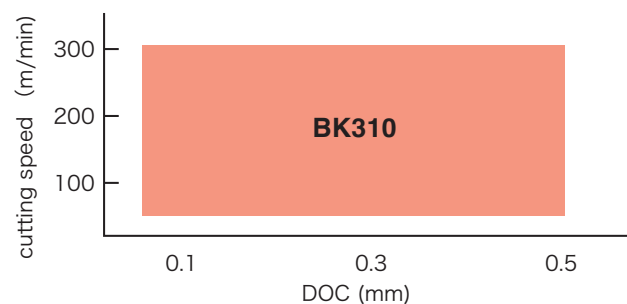


Recommended cutting conditions

●: First recommendation
○: Second recommendation

Grade	Cutting speed	Feed	D.O.C	Coolant	
	(m/min)			DRY	WET
BK310 BK320	400 to 1,200	up to 0.5	up to 0.2	○	●

Sintered powder metal

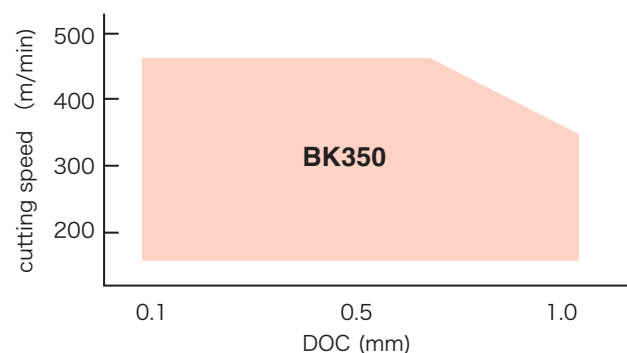


Recommended cutting conditions

●: First recommendation
○: Second recommendation

Grade	Cutting speed	Feed	D.O.C	Coolant	
	(m/min)			DRY	WET
BK310	40 to 300	up to 0.5	up to 0.5	○	●

Ductile cast iron - Finishing

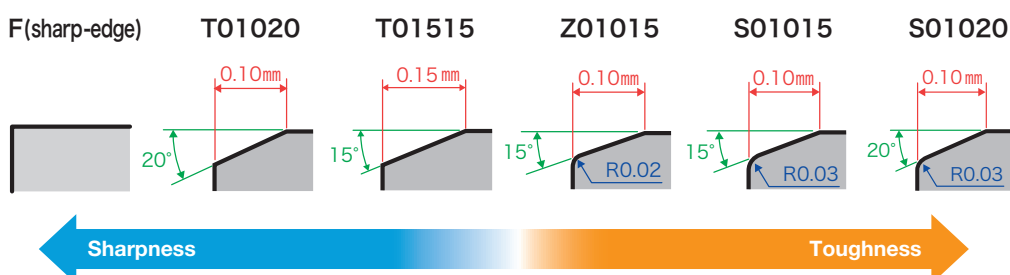


Recommended cutting conditions


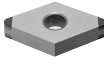
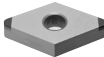



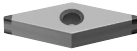
●: First recommendation
○: Second recommendation

Grade	Cutting speed	Feed	D.O.C	Coolant	
	(m/min)			DRY	WET
BK350	100 to 450	up to 0.2	up to 1.0	●	○

Cutting edge preparation according to processing purposes







Lineup: Negative insert

Shape	Item number	BK310	BK320	BK350	Wiper	Length of Edge	corner R	No. of corners	IC	S		
						mm	mm		mm	mm		
	CNGA120404PQT01020	●		●		2.3	0.4	4	12.7	4.76		
	CNGA120404PQF (sharp edge)	●				2.3						
	CNGA120408PQT01020	●		●		2.2	0.8					
	CNGA120408PQS01020		●			2.2						
	CNGA120408PQF (sharp edge)	●				2.2						
	CNGA120408QWS01015			●	Yes	2.2						
	CNGA120412PQT01020	●		●		2.4	1.2					
	CNGA120412PQS01020		●			2.4						
	CNGA120412PQF (sharp edge)	●				2.4						
	CNGA120416PQT01020	●				3.3					1.6	
	DNGA150404PQT01020	●		●		2.5	0.4	4	12.7	6.35		
	DNGA150404PQF (sharp edge)	●				2.5						
	DNGA150408PQT01020	●		●		2.1	0.8					
	DNGA150408PQS01020		●			2.1						
	DNGA150408PQF (sharp edge)	●				2.1						
	DNGA150412PQT01020	●		●		2	1.2					
	DNGA150612PQT01020	●				2						
	DNGA150412PDF (sharp edge)	●				2	1.2	2	9.525	4.76		
	SNGA120408PET01020	●				2.4	0.8	8				
	SNGA120412PET01020	●				2.4	1.2					
 	TNGA160404PHT01020	●		●		2.2	0.4	6			9.525	4.76
	TNGA160404PTF (sharp edge)	●				2.2		3				
	TNGA160408PHT01020	●		●		1.9	0.8	6				
	TNGA160408PTF (sharp edge)	●				1.9		3				
	TNGA160412PHT01020	●		●		2.4	1.2	6				
	TNGA160412PHF (sharp edge)	●				2.4						
		VNGA160404PQT01020	●		●		3.1	0.4				
VNGA160408PQT01020		●		●		2.2	0.8					
VNGA160412PQT01020		●		●		3	1.2					



| Lineup: Positive insert

Shape	Item number	BK310	BK320	BK350	Wiper	Length of Edge	corner R	No. of corners	IC	S
						mm	mm		mm	mm
	CCGW060204PDF (sharp edge)	●				2.3	0.4	2	6.35	2.38
	SCGW09T304PQZ01015	●				2.4	0.4	4	9.525	3.97
	TPGN110304PTT01020	●				2.2	0.4	3	6.35	3.18
	TPGN110308PTT01020	●				2.2	0.8		9.525	
	TPGN160308PTT01020	●				2.2				
	TPGW110304PTT01020	●				2.2	0.4	3	6.35	
	TPGW110304PTT01515	●				2.2				
	TPGW110308PTT01020	●				1.9	0.8			



Coated CBN

BHN320

Component	Automotive parts	
Insert	VNGA160408PQS01015	
Grade	BHN320	
Workpiece material	Carbon steel (HRc60)	
Workpiece image		
cutting onditions	Cutting speed (m/min)	150
	Feed (mm/rev)	0.12
	D.O.C. (mm)	0.2
	Coolant	WET
Result	<p>Conventionally, Competitor's CBN would reach the end of its tool life due to a deterioration in the machined surface roughness, but BHN320 suppresses notch wear and achieved double tool life.</p>	

Uncoated

BH340

Component	Automotive parts	
Insert	DNGA150412PQS01535	
Grade	BH340	
Workpiece material	Alloy steel (HRc62)	
Workpiece image		
cutting conditions	Cutting speed (m/min)	100
	Feed (mm/rev)	0.1
	D.O.C. (mm)	0.1
	Coolant	DRY
Result	<p>Conventional CBN frequently suffered from sudden chipping, but BH340 can be stably machined up to a certain point.</p>	



Uncoated

BK310 / BK350

Component	Agriculture Parts	
Insert	TNGA160408PHT01020	
Grade	BK310	
Workpiece material	Gray cast iron (FC250)	
Workpiece image		
cutting onditions	Cutting speed (m/min)	700
	Feed (mm/rev)	0.1
	D.O.C. (mm)	0.2
	Coolant	WET
Result	<p>Conventionally, Competitor's CBN would experience chattering at the corners and reach the end of their tool life, but BK310 maintains its sharpness and achieved 1.5 times longer tool life.</p>	

Component	Machinery parts	
Insert	CNGA120408PQT01020	
Grade	BK350	
Workpiece material	Ductile cast iron (FCD450)	
Workpiece image		
Cutting condition	Cutting speed (m/min)	400
	Feed (mm/rev)	0.05
	D.O.C. (mm)	0.5
	Coolant	WET
Result	<p>Conventional CBN develop burrs in the hole and reach the end of its tool life, but BK350 maintains its sharpness and achieves twice the tool life.</p>	



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