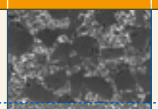
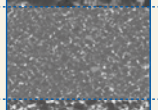
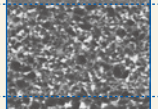
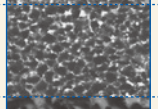
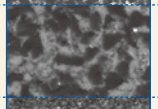
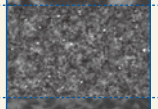
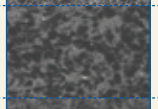
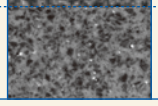
ILJIN Diamond

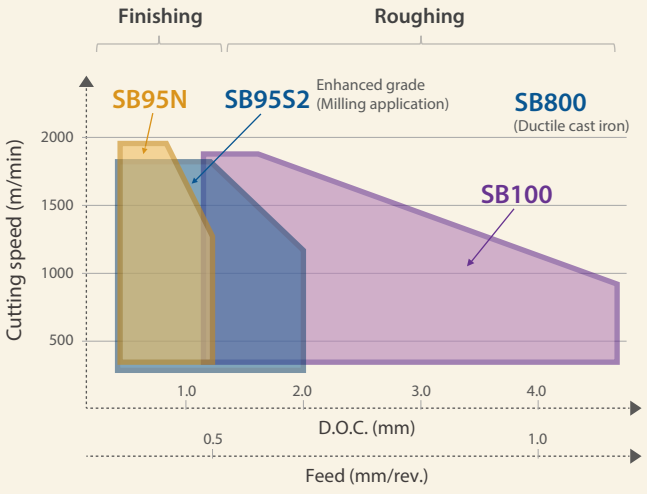
IBON

ILJIN Polycrystalline Cubic Boron Nitride

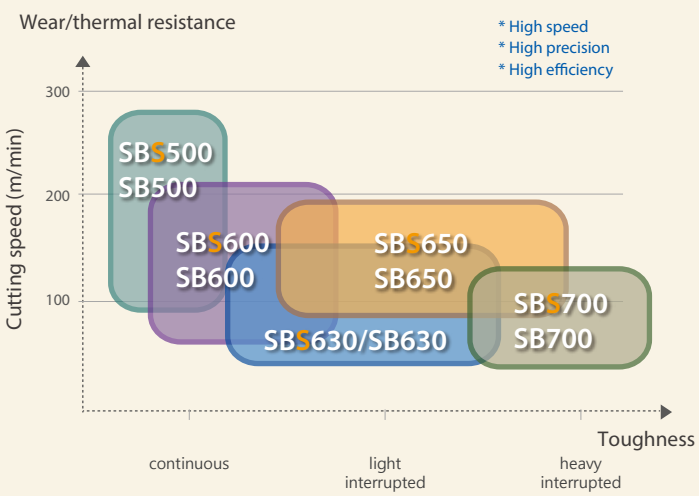
Grade

Carbide backed Solid form

Type	Grade	SEM	cBN size(μm)	cBN content(%)	Major binder	Hardness (Hv)	Characteristics & Applications	
■	SB100		10	93	Aluminum nitride	3,700-3,900	Extreme wear resistance due to high content of coarse cBN grain	Rough machining of cast iron and powder metal alloys
■	SB95S2		2	95	Titanium alloy	3,700-3,900	Extreme wear resistance and high chipping resistance due to high content cBN and fine cBN size	Machining most kinds of cast iron and powder metal alloy
■	SB950		2	95	Tungsten cobalt alloy	3,700-3,900	Extreme wear resistance and high chipping resistance due to high content cBN and fine cBN size	Machining most kinds of cast iron and powder metal alloy
■	SB95N		3	95	Titanium alloy	3,700-3,900	Extreme wear resistance due to high content of cBN and metal binder	Machining most kinds of cast iron
■	SB800		3	80	Titanium carbide	3,500-3,700	Combination of wear resistance and thermal properties	Machining non- homogeneous cast iron and ductile cast iron
■■	SB700 SBS700		<1	65	Titanium nitride	2,600~2,800	High degree of toughness due to fine cBN and ceramic binder matrix	Heavy interrupted machining of hardened steel
■■	SB650 SBS650		3	65	Titanium nitride	2,700-2,900	Combination of wear resistance and thermal stability	High speed and interrupted machining of hardened steel
■■	SB630 SBS630		1	60	Titanium nitride	2,500-2,700	Combination of wear resistance and impact strength	General use in continuous and light interrupted machining of hardened steel
■■	SB600 SBS600		1	60	Titanium carbonitride	2,500-2,700	Combination of wear resistance and thermal stability	General use in continuous and light interrupted machining of hardened steel
■■	SB500 SBS500		1	50	Titanium carbide	2,500-2,700	Good thermal stability and crater wear resistance	High speed continuous machining of hardened steel



Cutting condition of PCBN with high cBN content



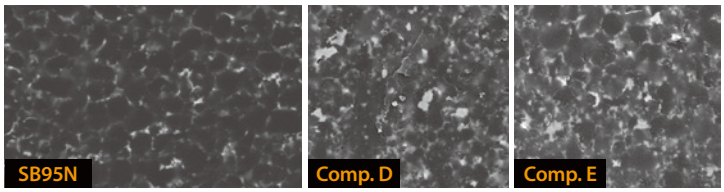
Cutting condition of PCBN with low cBN content

SB95N

ILJIN Diamond

Introduction

- cBN size: 3㎛
- cBN content: ~95%
- Major binder: Titanium alloy
- Hardness: 3,700~3,900(Hv)

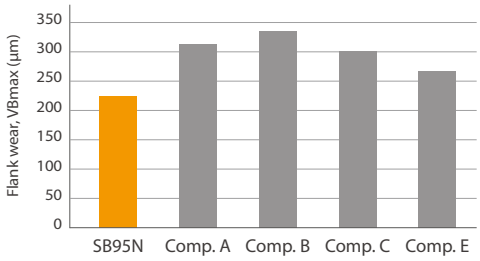


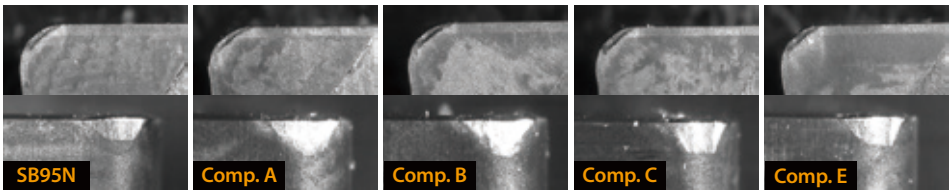
Characteristics

- Extream wear resistance due to high content of cBN

Perfomance - Continuous turning

Material	Gray cast iron
Speed	500m/min
D.O.C	0.25mm
Feed	0.1mm/rev
Coolant	Dry
Insert type	CNMA120408
Holder type	PCLNR2525-M12



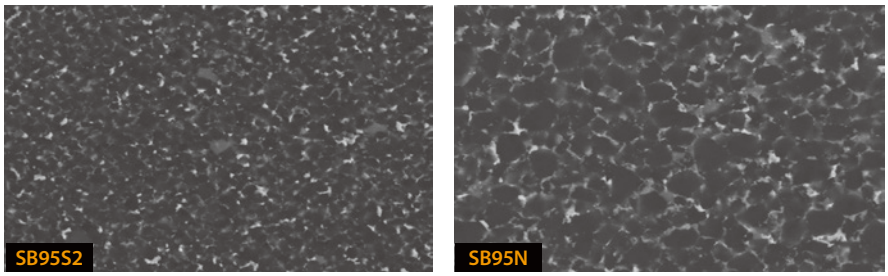


SB95S2

ILJIN Diamond

Introduction

- cBN size: 2㎛
- cBN content: ~95%
- Major Binder: Titanium alloy
- Hardness: 3,700~3,900(Hv)



Characteristics

- Extreme wear resistance and high chipping resistance due to high content cBN and fine cBN size

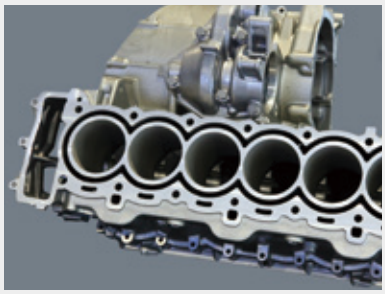
Perfomance - CV Joint ball track milling

Grade	cBN	Grain	Benchmark test
SB95S2	95%	2㎛	160%
Comp. A	?	?	100%

Application guidline

- Machining most kinds of cast irons
- Gray cast iron
  - V : 500~1,500 m/min
  - D.O.C : 0.2~1.0 mm

Cylinder head surfacing



Cylinder bore finish boring

- Powder metal
  - Hardness : <HRc 45
- Hardened steel
  - Hardness : <HRc 45
  - V : 100~200m/min
  - Interrupted cutting
- Bearing steel
  - Hardness : <HRc 50

CV joint
(outer race & inner race)

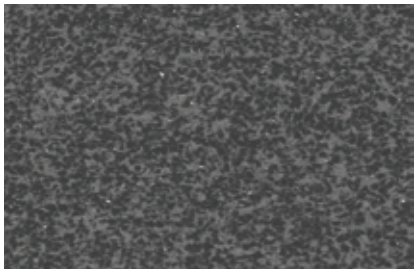
SB650 / SBS650

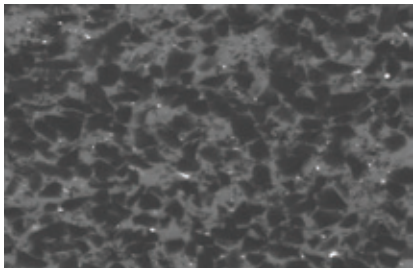
SB650 Carbide backed

SBS650 Solid form

Introduction

- cBN size: 3㎛
- cBN content: ~65%
- Major binder: Titanium nitride
- Hardness: 2,700~2,900(Hv)



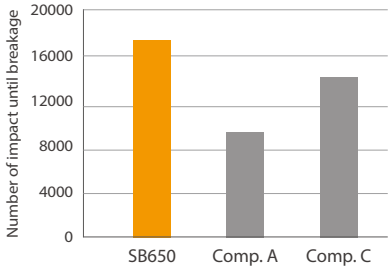


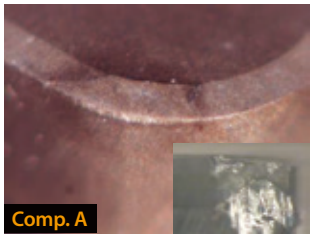
Characteristics

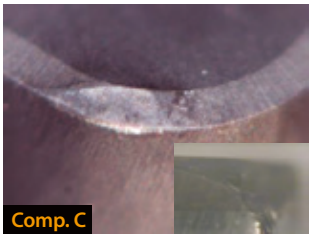
- Combination of wear resistance and thermal stability

Perfomance - Interrupted turning1

Material	Alloy steel / 42CrMo4 (SCM440H), HRc 58
Speed	200m/min
D.O.C	0.5mm
Feed	0.3mm/rev
Coolant	Dry
Insert type	CNGA120408
Holder type	PCLNR2525-M12



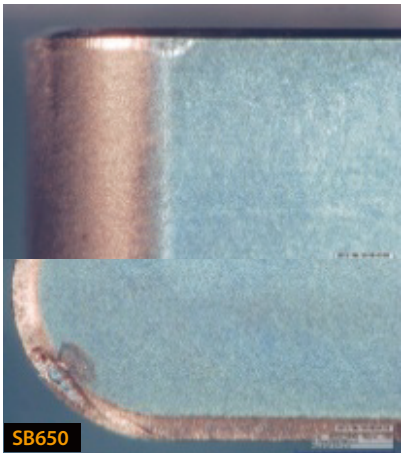




Perfomance - Interrupted turning2

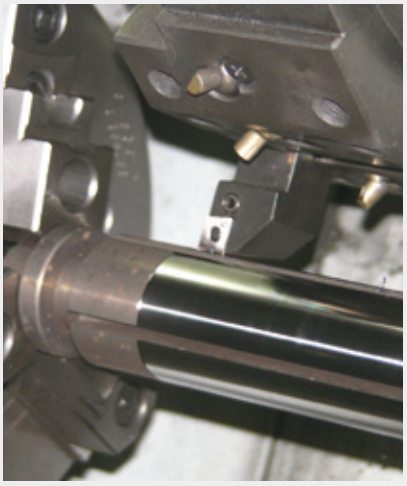
Material	SCM440(H)
Size	Ø100 × 300 mm
Hardness	55~60 HRc
Path	Flank wear after 10 path cutting
Designation	CNGA120408 T01225
Speed	150m/min
D.O.C	0.4mm
Feed	0.1mm/rev
Coolant	Dry

	Cutting time	Cutting length	Flank wear
SB650	17.90 min.	2.68 km	1,400 ㎛
Comp. A	6.02 min.	0.90 km	2,000 ㎛

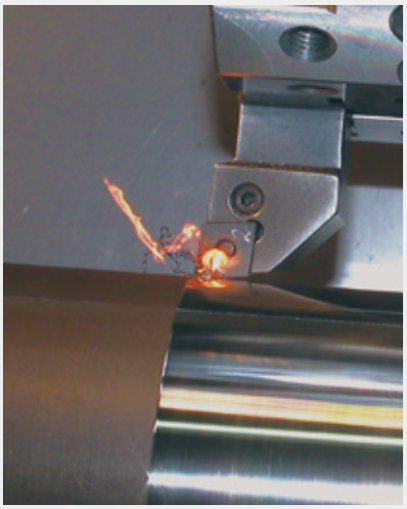


Application guidline

- High speed and interrupted machining of hardened steel
- Good chucking system (no chattering)
- General interrupted cutting
- Hardened steel
  - Hardness : HRc 60
  - V : 150~200m/min
  - D.O.C : 0.3 ~0.5mm



Alloy steel interrupted turning



Interrupted turning

SB700 / SBS700

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SB700 Carbide backed

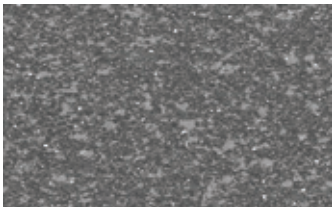
SBS700 Solid form

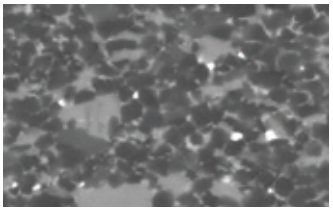
Introduction

- cBN size: <1㎛
- cBN content: ~65%
- Major binder: Titanium nitride
- Hardness: 2,600~2,800(Hv)

Characteristics

- High toughness with fine cBN size and ceramic binder matrix





Perfomance

- Valve seat turning

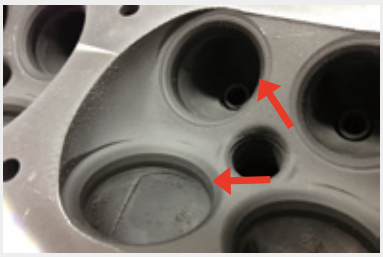
Grade	cBN (vol.%)	Grain size	Major binder	Benchmark test
SB700	60%	<1㎛	TiN	140%
Comp. A	?	?	TiN	100%

- CV joint ball track milling

Grade	cBN (vol.%)	Grain size	Major binder	Benchmark test
SB700	65%	<1㎛	TiN	112%
Comp. B	?	?	TiN	100%

Application guidline

- Heavy interrupted machining of hardened steel
- Powder metal
  - Hardness : >HRc 45



Exhausted part of valve seat turning

- Bearing steel

CV joint ball track milling

SB600 / SBS600

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SB600 Carbide backed

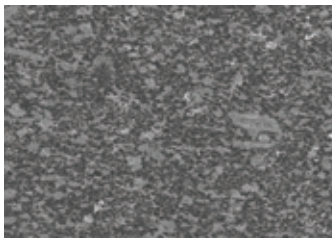
SBS600 Solid form

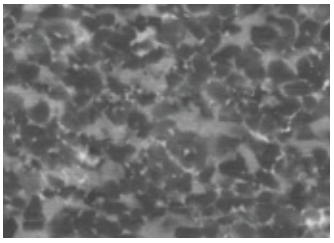
Introduction

- cBN size: 1㎛
- cBN content: ~60%
- Major binder: Titanium carbonitride
- Hardness: 2,500~2,700(Hv)

Characteristics

- Combination of wear resistance and thermal stability
- General use in continuous and light interrupted machining of hardened steel

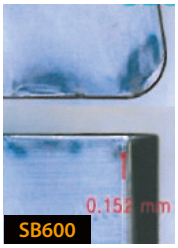


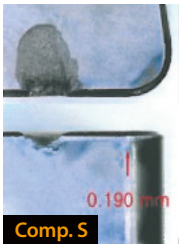


Perfomance - Cross section, Internal rough machining

Material	Annulus gear(Ø145) SCr420H
Hardness	>HV650
Speed	80m/min
N	180 rev/min
Feed	0.12mm/rev
Coolant	Wet

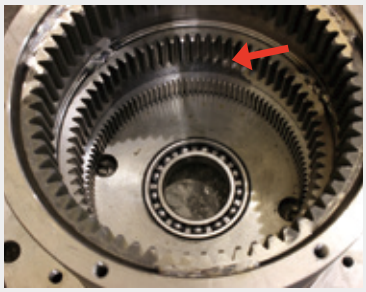
Grade	Tool life
SB600	4,000
Comp. S	2,500





Application guidline

- Powder metal
  - Hardness : >HRc 45
- Heavy interrupted machining of hardened steel



Annulus gear