ILJIN DIAMOND

IBON Application (Ferrous - Application)

Hard Cast Iron
- Pumps
- Impellers
- Shafts
- Rolls

Soft Cast Iron
- Engine Blocks
- Brake Rotors
- Brake Drums
- Clutch Plates
- Transfer Housings

SB100
SB95N
SB95S2
SB950
SB800

Powder Metal
- Valve Seats
- Cam Shafts
- Gears

Hardened Steel
- Pinion Gears
- Side Gears
- Transmissions
- Shafts
- Bearings

Superalloy
- Turbine Disk
- Turbine Blade
- Turbine
- Engine Shafts
- Turbine Vanes

SB700
SB600
SB500

Edge Preparation Guidelines of IBON

By cBN Contents

Materia	High content cBN		Low content cBN	
	Roughing	Finishing	Roughing	Finishing
Hardened Steel	20° × 0.2 - 5.0mm			25° × 0.1mm
Hard Facing Alloys	20° × 0.2mm	20° × 0.2mm		25° × 0.1mm
Soft Gray Cast Iron	20° × 0.2mm	20° × 0.2mm 0.025mm hone		
Superalloy	20° × 0.2mm	0.025mm hone		

By Depth of Cut

High content cBN	Roughing(> 0.5mm DOC)	Finishing (< 0.5mm DOC)
Hardened Steel	20° × 0.2 - 5.0mm	25° × 0.1mm
Hard Facing Alloys	20° × 0.2mm	20° × 0.2mm
Soft Gray Cast Iron	20° × 0.2mm	20° × 0.2mm 0.025mm hone
Superalloy	20° × 0.2 - 5.0mm	20° × 0.2mm

Quality Control

- Implementing Strict Quality Management System
- Certificated by Quality Assurance Standard (ISO9001)
  And Environmental Management Standard (ISO14001)

Sales Network

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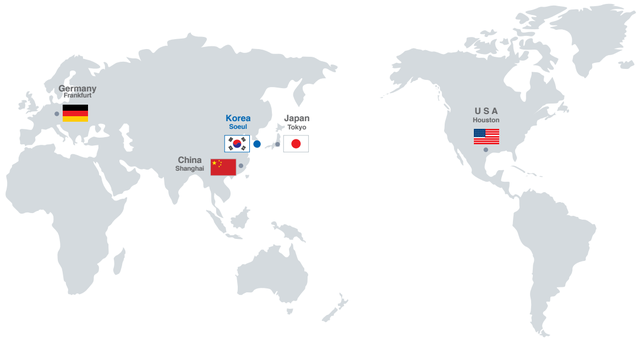

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PCBN IBON

ILJIN Polycrystalline Cubic Boron Nitride

- Best Solution for Longer Tool Life
- Excellent Thermal & Chemical Stability
- Extreme Wear & Abrasion Resistance

ILJIN Diamond

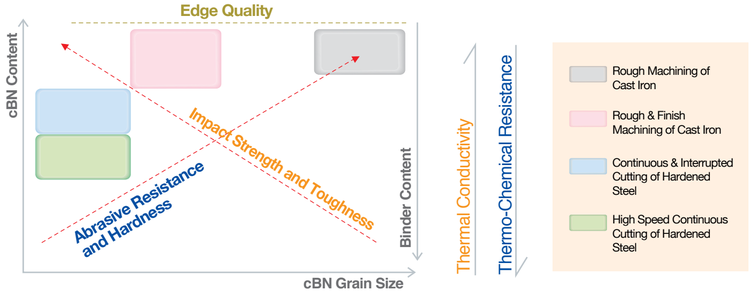
IBON

ILJIN Polycrystalline Cubic Boron Nitride

Grade

Solid Type	SB100	-			SBS650	SBS630	SBS600*	SBS500
Carbide Backed	-	SB95N	SB95S2	SB700	SB650	SB630	SB600**	SB500
cBN(vol%)	93	95	95	65	65	60	60	50
Grain Size(㎛)	10	3	2	<1	3	1	2* / 1**	1
Major Binder	Aluminum Nitride	Titanium Alloy	Titanium Alloy	Titanium Nitride	Titanium Nitride	Titanium Nitride	Titanium Carbonitride	Titanium Carbide
Hardness	3,700-3,900	3,700-3,900	3,700-3,900	2,600-2,800	2,700-2,900	2,500-2,700	2,500-2,700	2,500-2,700
Characteristics & Applications	• Extreme wear resistance with high content of coarse cBN grain • Rough machining of cast iron and powder metal alloy	• Extreme wear resistance with high content of cBN and metal binder • Machining most kinds of cast iron	• Extreme wear resistance and high chipping resistance • Hard milling most kinds of cast iron and powder metal alloy	• High degree of toughness with fine cBN and ceramic binder matrix • Heavy interrupted machining of hardened steel	• Combination of wear resistance and thermal stability • High speed and interrupted machining of hardened steel	• Combination of wear resistance and impact strength • General usage and interrupted machining of hardened steel	• Combination of wear resistance and thermal stability • General usage and light interrupted machining of hardened steel	• Good thermal stability and crater wear resistance • High speed continuous machining of hardened steel

Application Area by PCBN Properties

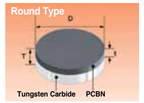


Selection

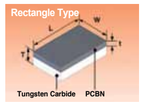
R	360	57.0	3.2
Shape	**Angle or Width**	**Diameter or Length**	**Thickness**
R : Round L : Rectangle S : Segment T : Triangle	Angle(deg.) : Round, Triangle Segment Width(mm) : Rectangle	Diameter(mm) : Round, Radius : Segment Length(mm) : Triangle, Rectangle	Total thickness(mm)

Carbide Backed

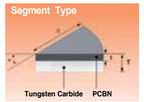
*Various Shapes of Cut Pieces Available.
*Various Thickness of cBN Layer Available.



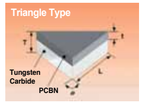
Nomenclature	°(Degree)	D(mm)	T(mm)	t(mm)	Grade
R 360/57.0-T R 360/13.0-T	360	57.0 13.0	1.6 2.0 2.4 3.2 4.8	0.75	All



Nomenclature	°(Degree)	D(mm)	T(mm)	t(mm)	Grade
L 4.0/2.0 -T	4.0	2.0	1.6	0.75	All
L 6.0/2.0 -T	6.0	2.0	2.0		
L 7.0/2.0 -T	7.0	2.0	2.4		
L 4.0/3.0 -T	4.0	3.0	3.2		
L 6.0/3.0 -T	6.0	3.0	4.8		



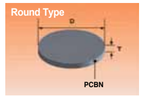
Nomenclature	°(Degree)	D(mm)	T(mm)	t(mm)	Grade
S 60/3.8 -T	60.0	3.8	1.6	0.75	All
S 60/6.4 -T	60.0	6.4	2.0		
S 90/3.9 -T	90.0	3.9	2.4		
S 90/6.5 -T	90.0	6.5	3.2		
S 180/13.2 -T	180.0	13.2	4.8		



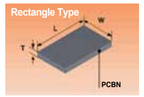
Nomenclature	°(Degree)	D(mm)	T(mm)	t(mm)	Grade
T 60/4.0 -T	60.0	4.0	1.6	0.75	All
T 60/5.0 -T	60.0	5.0	2.0		
T 60/7.0 -T	60.0	7.0	2.4		
T 90/6.5 -T	90.0	6.5	3.2		
T 90/4.0 -T	90.0	4.0	4.8		

Solid (SB100)

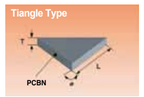
*Low Content Solid cBN Available Upon Request



Nomenclature	°(Degree)	D(mm)	T(mm)	Grade
R 360/10.3 -T R 360/13.0 -T	360	10.3 13.0	3.2 4.8	SB100



Nomenclature	°(Degree)	D(mm)	T(mm)	Grade
L 4.0/2.0 -T	4.0	2.0	3.2 4.8	SB100
L 6.0/2.0 -T	6.0	2.0		
L 7.0/2.0 -T	7.0	2.0		
L 4.0/3.0 -T	4.0	3.0		
L 6.0/3.0 -T	6.0	3.0		



Nomenclature	°(Degree)	D(mm)	T(mm)	Grade
T 60/4.0 -T	60.0	4.0	3.2 4.8	SB100
T 60/5.0 -T	60.0	5.0		
T 60/7.0 -T	60.0	7.0		
T 90/4.0 -T	90.0	4.0		
T 90/5.0 -T	90.0	5.0		

PCBN Turning Application

ROUGHING: >0.64mm (0.025") DOC FINISHING: <0.64mm (0.025") DOC

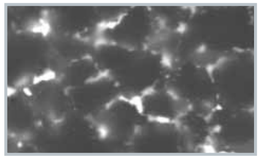
WORKPIECE MATERIAL		CUTTING SPEED		FEED RATE		CUTTING SPEED		FEED RATE		TOOL MATERIAL	EDGE PREP	COOLANT
		m/min	ft/min	mm/rev	in/rev	m/min	ft/min	mm/rev	in/rev			
NON FERROUS	WC <16% Cobalt	XX	XX	XX	XX	15-30	50-100	0.10-0.25	0.004-0.010	CXL / CXLII ※Refer to PCD(IPOL)	NONE/HONE	DRY/WET
	WC >16% Cobalt	XX	XX	XX	XX	20-45	75-150	0.10-0.25	0.004-0.010	SB95N	NONE/HONE	DRY/WET
FERROUS	Hardened High Carbon Steel	60-90	200-300	0.10-0.30	0.004-0.012	120-180	400-600	0.10-0.20	0.004-0.008	SB630 / SB650 /SB700	CHAMFER	WET/DRY
	Hardened Alloy Steel	60-90	200-300	0.10-0.30	0.004-0.012	120-170	400-550	0.10-0.20	0.004-0.008	SB630 / SB650 /SB700	CHAMFER	WET/DRY
	Hardened Tool and Die Steel	60-90	200-300	0.10-0.30	0.004-0.008	75-105	250-350	0.10-0.20	0.004-0.008	SB600 / SB500	CHAMFER	WET/DRY
	Pearlitic Gray Cast Iron < 300HBN	600-1070	2000-3500	0.15-0.50	0.006-0.020	600-1070	2000-3500	0.15-0.50	0.006-0.020	SB100 / SB95N / SB95S2	CHAMFER	DRY
	White Alloy Cast Iron	60-137	200-450	0.20-0.50	0.008-0.020	90-180	300-600	0.20-0.50	0.010-0.020	SB100 / SB95N	CHAMFER	DRY
	Cobalt-Chrome Alloys	30-120	100-400	0.15-0.30	0.006-0.012	120-180	400-600	0.08-0.20	0.003-0.008	SB95N	CHAMFER	WET
	Superalloys (Ni-Based)	150-250	500-850	0.10-0.20	0.004-0.008	150-250	500-850	0.10-0.20	0.004-0.008	SB95N / SB600	HONE	WET
	Thermal Spray (Ni-based)	60-180	200-600	0.08-0.20	0.003-0.008	90-300	300-1000	0.08-0.20	0.003-0.008	SB95N / SB600	CHAMFER HONE	WET
	Thermal Spray (Co-based)	120-210	400-700	0.05-0.30	0.002-0.006	150-300	500-1000	0.05-0.20	0.002-0.008	SB95N / SB600	CHAMFER HONE	WET
	Powdered Metal	90-240	300-800	0.10-0.25	0.004-0.010	90-240	300-800	0.08-0.20	0.003-0.008	SB95S2 / SB600 / SB500	CHAMFER	DRY/WET

PCBN Milling Application

ROUGHING: >0.64mm (0.025") DOC FINISHING: <0.64mm (0.025") DOC

WORKPIECE MATERIAL		SURFACE SPEED		FEED PER TOOTH		SURFACE SPEED		FEED PER TOOTH		TOOL MATERIAL	EDGE PREP	COOLANT
		m/min	ft/min	mm/tooth	in/tooth	m/min	ft/min	mm/tooth	in/tooth			
FERROUS	Soft Cast Iron (Pearlitic)	550-1200	1800-4000	0.10-0.20	0.004-0.008	600-1220	2000-4000	0.10-0.15	0.004-0.006	SB95N / SB95S2	CH/HONE OPTIONAL	DRY
	Hard Cast Iron (Ni-hard)	75-170	250-550	0.10-0.20	0.004-0.008	90-220	300-700	0.10-0.15	0.004-0.006	SB100	CHAMFER	DRY
	Hard Steel	75-170	250-550	0.10-0.20	0.004-0.008	90-220	300-700	0.10-0.15	0.004-0.006	SB95N	CHAMFER	DRY
	Medium Hard Steel (30-45 HRc)	180-275	600-900	0.10-0.20	0.004-0.008	180-370	600-1200	0.08-0.20	0.003-0.008	SB700	CHAMFER	DRY
	Thermal Spray (Ni-based)	50-200	150-650	0.10-0.20	0.004-0.008	60-250	200-800	0.05-0.13	0.002-0.005	SB95N / SB95S2	CHAMFER	DRY

Products of ILJIN Diamond



Customer-oriented technology is our tradition