

PCBN Recommendations For Hardened Steel

RECOMMENDED RUNNING CONDITIONS (SFM)

Material	Application	Hardness	Grade	Low	Low Opt.	High Opt.	High
INDUCTION HARDENED STEEL	Continuous	45-65 HrC	BNX10	400	500	650	700
			BNC80	400	500	650	700
			BNX20	300	450	550	600
			BNC200	350	400	650	750
			BNC150	400	525	675	850
	Interrupted (DRY)	45-65 HrC	BN250	300	400	550	600
			BNX25	400	550	700	750
			BN300	300	400	550	600
			BNC300	300	400	550	600

Material	Application	Hardness	Grade	Low	Low Opt.	High Opt.	High
CARBURIZED HARDENED STEEL BEARING STEEL	Continuous	45-65 HrC	BNX10	350	400	600	650
			BNC80	350	450	550	600
			BNX20	250	300	500	600
			BNC200	300	350	550	600
			BNC150	350	425	550	675
	Interrupted (DRY)	45-65 HrC	BN250	300	400	550	600
			BNX25	400	550	700	750
			BN300	300	400	550	600
			BNC300	300	400	550	600

Material	Application	Hardness	Grade	Low	Low Opt.	High Opt.	High
DIE STEEL HIGH SPEED STEEL	Continuous	55-65 HrC	BNX10	250	300	400	500
			BNC80	250	300	400	500
			BNX20	150	200	300	450
			BNC200	200	250	350	450
			BNC150	250	300	400	500
	Interrupted (DRY)	55-65 HrC	BN250	150	200	250	300
			BNX25	300	400	500	550
			BN300	150	200	250	300
			BNC300	200	250	300	350

FEED RATE

FEED RATE (IPR)		
Finishing	General Purpose	Roughing
0.002 - 0.004	0.004 - 0.006	0.006 - 0.008

Note: Use above speeds for threading and grooving applications.
The recommended feed rate for grooving is 0.001 - 0.002 IPR, while your threading feed rate should be based upon the thread form, but not to exceed 0.006 IPR.

Grade	General Running Parameters* (SFM)			
	Low	Low Opt.	High Opt.	High
BNX10	400	450	650	700
BNC80	400	450	650	720
BNX20	250	400	600	650
BNC200	200	350	650	820
BN250	200	250	400	500
BNX25	450	500	650	700
BN300	200	300	500	550
BNC150	400	525	675	850
BNC300	200	250	400	500

* The above are a general range of running parameters based on grade and material. Please contact your local Sumitomo Sales Representative or the Sumitomo Engineering Department to obtain more application specific running parameters.

Note: Running wiper inserts at the above feed rates will produce a higher quality surface finish when compared to a non-wiper insert.

DEPTH OF CUT

Mini-Tip (NU, NS, NC)	D.O.C. ≤ 0.015"
Medium-Tip (MD)	D.O.C. ≤ 0.020"
Full-Tip	D.O.C. ≤ 0.020"

Note: Depth of cut per pass



Higher feed rates are attainable with wiper inserts while maintaining the same quality of surface finish as a non-wiper insert.

General Info

Negative Inserts

Positive Inserts

Ace-Fix Inserts

Threading, Grooving, & Cut-Off Inserts

Ceramic Inserts

PCBN & PCD Inserts

Toolholders

Swiss Toolholders

Boring Bars

Technical Info

ALMT

PCBN Recommendations for Iron Machining

RECOMMENDED RUNNING CONDITIONS (SFM)

Material	Application	Grade	Low	Low Opt.	High Opt.	High
GRAY CAST IRON	Continuous & Interrupted	BN100	800	1000	1500	2000
		BN500	800	1000	1750	2300
		BN250	600	850	1200	1500
		BN600	1500	2000	5500	6000
		BNS800	1500	2000	5500	6000
		BN700	1500	2000	5500	6000

Material	Application	Grade	Low	Low Opt.	High Opt.	High
NODULAR CAST IRON 150 - 300 HBn	Continuous & Interrupted	BN500	500	650	1300	1500

Material	Application	Grade	Low	Low Opt.	High Opt.	High
AUSTEMPERED DUCTILE IRON	Continuous & Interrupted	BN500	300	450	600	900

Material	Application	Grade	Low	Low Opt.	High Opt.	High
POWDERED METAL	Continuous & Interrupted	BN700	400	550	800	1000

Material	Application	Grade	Low	Low Opt.	High Opt.	High
CHILLED CAST IRON	Continuous & Interrupted	BNX20	100	150	250	300
		BN250	100	150	250	300
		BN600	100	150	250	300
		BNS800	400	450	650	800

FEED RATE

FEED RATE (IPR)		
Finishing	General Purpose	Roughing
0.002 - 0.004	0.004 - 0.006	0.006 - 0.008

Note: Use above speeds for threading and grooving applications.
The recommended feed rate for grooving is 0.001 - 0.002 IPR, while your threading feed rate should be based upon the thread form, but not to exceed 0.006 IPR.

Grade	General Running Parameters* (SFM)			
	Low	Low Opt.	High Opt.	High
BN100	600	650	1000	1500
BN500	500	800	1500	2000
BN600	2000	3000	5000	6000
BNS800	2000	3000	5000	6000
BN700	2000	3000	5000	6000

* The above are a general range of running parameters based on grade and material. Please contact your local Sumitomo Sales Representative or the Sumitomo Engineering Department to obtain more application specific running parameters.
Coolant should not be used for any interrupted cutting when using PCBN tools

DEPTH OF CUT

Mini-Tip (NU, NS, NC)	D.O.C. ≤ 0.020"
Medium-Tip (MD)	D.O.C. ≤ 0.040"
Full-Tip	D.O.C. ≤ 0.040"
Solid CBN**	D.O.C. ≤ 0.150"

** Depth of cut based on gray cast iron material. For chilled iron, depth of cut should not exceed 0.080".

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