N-BRAND
NISSIN DIAMOND Co.,Ltd.

NISSIN DIAMOND

DIAMOND
PcBN
CUTTING
TOOLS

N-BRAND
NISSIN DIAMOND Co.,Ltd.

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ND-NS2311 Vol.2 E

Introduction of N-BRAND

N-BRAND

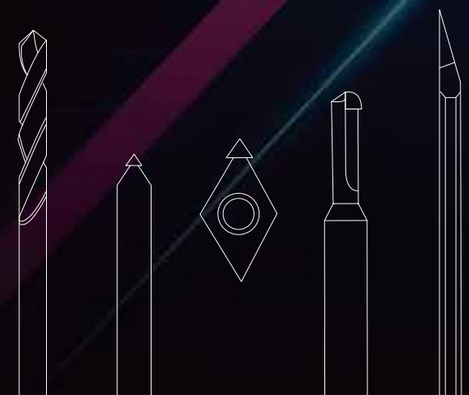
The latest diamond cutting tools are
now available for
immediate delivery!

About N-BRAND

Nissin Diamond presents Niche products by New Market-Creation Tools

Explore the latest processing techniques that we've been eager to explore
However, there were significant barriers such as time and
cost associated with taking on these challenges.
Nissin Diamond is committed to providing rapid delivery and cost-effective pricing for
our next-generation processing solutions to meet
the needs of those embracing these challenges.
Transforming new technology into future value!

S Single Crystal Diamond
P PCD
C CBN



Single Crystal Diamond Inserts

N-Insert

For turning resin and non-ferrous metals
achievable mirror finish

Fig1

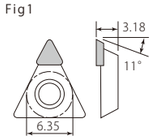


Fig2

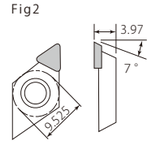


Fig3

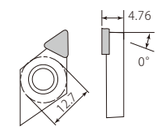


Fig4

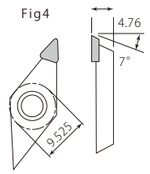
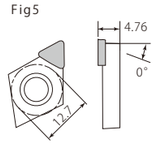


Fig5



Product Lineup

Model Part Number	R	Stock	Fig
TPGW110302-MCD	0.2	●	Fig1
TPGW110304-MCD	0.4	●	Fig1
TPGW110308-MCD	0.8	○	Fig1
TPGW110310-MCD	1	○	Fig1
DCGW11T302-MCD	0.2	●	Fig2
DCGW11T304-MCD	0.4	●	Fig2
DCGW11T308-MCD	0.8	○	Fig2
DCGW11T310-MCD	1	○	Fig2
DNGA150404-MCD	0.4	●	Fig3
DNGA150408-MCD	0.8	●	Fig3
DNGA150410-MCD	1	○	Fig3
DNGA150412-MCD	1.2	○	Fig3
VCGW160402-MCD	0.2	●	Fig4
VCGW160404-MCD	0.4	●	Fig4
VCGW160408-MCD	0.8	○	Fig4
CNGA120404-MCD	0.4	●	Fig5
CNGA120408-MCD	0.8	●	Fig5

Machining Conditions

Work Material	Vc Cutting Speed	ap (mm) Depth of Cut	Coolant
Silver	50～300	0.005～0.05	Cutting Fluid
Aluminum	100～2,500	0.005～0.05	Emulsion
Magnesium	100～2,500	0.005～0.05	Emulsion
Gold	50～300	0.005～0.05	Cutting Fluid
Copper	50～500	0.005～0.04	Cutting Fluid
PC	50～200	0.01～0.1	Emulsion/Air
PE	80～350	0.01～0.1	Emulsion
PEEK	60～250	0.01～0.1	Emulsion
PMMA	80～300	0.01～0.1	Emulsion/Air
POM	80～350	0.01～0.1	Emulsion
PTFE	70～300	0.01～0.1	Emulsion
PVC	60～250	0.01～0.1	Emulsion

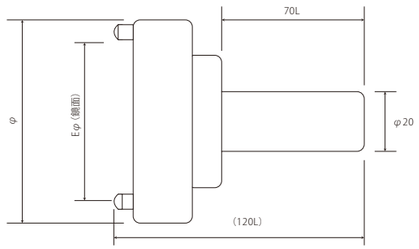
○ is a semi-stock item (Delivery time: approx. 40 days)
Other shapes are available upon request. (Delivery time: approx. 40 days).

Single Crystal Diamond Face Milling Tools

N-Face Mill

Face milling operations enable mirror cutting
on materials such as resin.

Fig1



Eφ is
Effective Finishing Diameter (Mirror Finish)

Cutter body + Arbor

Blade

Product Lineup

Cutter body + Arbor

Model Part Number	φ	Eφ	Stock	Fig
N-FM080	φ80	φ73	●	Fig1
N-FM100	φ100	φ93	●	Fig1
N-FM125	φ125	φ118	●	Fig1

Arbor Diameter：φ20

Other shapes are available upon request.
(Delivery time: approx. 45 days).

Blade

Model Part Number	Material	Stock	Application
N-FM-MCD	Single Crystal Diamond	●	Finishing
N-FM-PCD	PCD	●	Coarse
N-FM-WC	Carbide	●	Coarse

Machining Conditions

Work Material	Vc Cutting Speed	ap (mm) Depth of Cut	Coolant
Silver	50～300	0.005～0.05	Cutting Fluid
Aluminum	100～2,500	0.005～0.05	Emulsion
Magnesium	100～2,500	0.005～0.05	Emulsion
Gold	50～300	0.005～0.05	Cutting Fluid
Copper	50～500	0.005～0.04	Cutting Fluid
PC	50～200	0.01～0.1	Emulsion/Air
PE	80～350	0.01～0.1	Emulsion
PEEK	60～250	0.01～0.1	Emulsion
PMMA	80～300	0.01～0.1	Emulsion/Air
POM	80～350	0.01～0.1	Emulsion
PTFE	70～300	0.01～0.1	Emulsion
PVC	60～250	0.01～0.1	Emulsion

End Mills for Rounding and Chamfering

N-InnerR Mill

Mirror surface cutting is possible with resin R chamfering

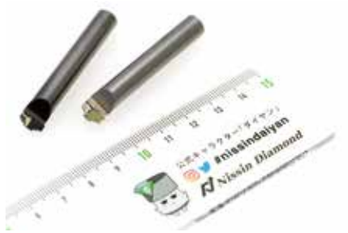
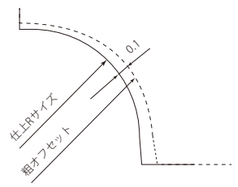


Fig1



Product Lineup

R0.75

Model Part Number	BD	Material	Stock	Application
N-RM R0.75 - PCD	Φ4.0	PCD	○	Coarse
N-RM R0.75 - MCD	Φ4.0	Single Crystal Diamond	○	Finishing

R1.0

Model Part Number	BD	Material	Stock	Application
N-RM R1.0 - PCD	Φ4.0	PCD	●	Coarse
N-RM R1.0 - MCD	Φ4.0	Single Crystal Diamond	●	Finishing

R1.25

Model Part Number	BD	Material	Stock	Application
N-RM R1.25 - PCD	Φ4.0	PCD	○	Coarse
N-RM R1.25 - MCD	Φ4.0	Single Crystal Diamond	○	Finishing

R1.5

Model Part Number	BD	Material	Stock	Application
N-RM R1.5 - PCD	Φ4.0	PCD	●	Coarse
N-RM R1.5 - MCD	Φ4.0	Single Crystal Diamond	●	Finishing

R1.75

Model Part Number	BD	Material	Stock	Application
N-RM R1.75 - PCD	Φ4.0	PCD	○	Coarse
N-RM R1.75 - MCD	Φ4.0	Single Crystal Diamond	○	Finishing

R2.0

Model Part Number	BD	Material	Stock	Application
N-RM R2.0 - PCD	Φ4.0	PCD	●	Coarse
N-RM R2.0 - MCD	Φ4.0	Single Crystal Diamond	●	Finishing

R2.25

Model Part Number	BD	Material	Stock	Application
N-RM R2.25 - PCD	Φ4.0	PCD	○	Coarse
N-RM R2.25 - MCD	Φ4.0	Single Crystal Diamond	○	Finishing

R2.5

Model Part Number	BD	Material	Stock	Application
N-RM R2.5 - PCD	Φ4.0	PCD	●	Coarse
N-RM R2.5 - MCD	Φ4.0	Single Crystal Diamond	●	Finishing

○ is a semi-stock item (Delivery time: approx. 45 days)
Other shapes are available upon request. (Delivery time: approx. 45 days).

Coarse Machining Conditions

Rotational Speed：S＝10,000～15,000rpm/min
Table Feed：Vf=300～1,000mm/min

Finish Machining Conditions

Acrylic Processing

For Polycarbonate, approximately 1/2 of the values below

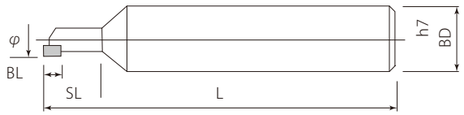
Rotational Speed：S＝10,000～15,000rpm/min
Table Feed：Vf=300～1,000mm/min
Depth of Cut：ap= ～ 0.1mm

Reference values, may vary depending on the material being cut and the machining equipment.

Single Crystal Diamond Square End Mills

N-Square Mill

Achieved high-quality mirror finish
on the outer perimeter and extended the tool lifespan.



Product Lineup

Model Part Number	φ	BL	SL	BD	L	Stock
N -SM0010	φ0.1	0.05	0.3	6	50	●
N -SM0020	φ0.2	0.1	0.6	6	50	●
N -SM0030	φ0.3	0.15	0.9	6	50	●
N -SM0040	φ0.4	0.2	1.2	6	50	○
N -SM0050	φ0.5	0.25	1.5	6	50	●
N -SM0060	φ0.6	0.3	1.8	6	50	○
N -SM0070	φ0.7	0.35	2.1	6	50	○
N -SM0080	φ0.8	0.4	2.4	6	50	●
N -SM0090	φ0.9	0.45	2.7	6	50	○
N -SM0100	φ1	0.5	1.5	6	55	●
N -SM0200	φ2	1.5	3	6	55	●
N -SM0400	φ4	2	4	6	55	●
N -SM0600	φ6	3	9	8	55	●
N -SM0800	φ8	4	12	8	55	●
N -SM1000	φ10	5	15	10	60	●
N -SM1200	φ12	6	18	12	60	●

○ is a semi-stock item (Delivery time: approx. 45 days)
Other shapes are available upon request. (Delivery time: approx. 45 days).

Machining of Resins and Non-Ferrous Metals
Reduce the rotational speed to
one-third for hard and brittle materials

Machining Conditions

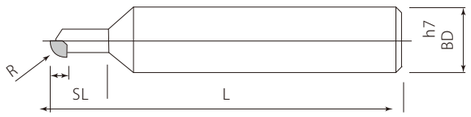
φ	(min-1) Rotational Speed	ap (mm) Depth of Cut
φ0.1	10,000～40,000	0.004
φ0.2	10,000～40,000	0.009
φ0.3	10,000～40,000	0.01
φ0.4	10,000～40,000	0.01
φ0.5	10,000～40,000	0.02
φ0.6	10,000～40,000	0.03
φ0.7	10,000～40,000	0.03
φ0.8	10,000～40,000	0.04
φ0.9	10,000～40,000	0.04
φ1	10,000～40,000	0.04
φ2	10,000～30,000	0.09
φ4	10,000～20,000	0.1
φ6	5,000～10,000	0.1
φ8	5,000～10,000	0.1
φ10	5,000～10,000	0.1
φ12	5,000～10,000	0.1

Recommend high-speed rotation whenever possible.
Reference values, may vary depending on the material being cut and the machining equipment

Single Crystal Diamond Ball End Mills

N-Ball Mill

Mirror Finish and Extended Lifespan
Achieved for Free-form Surfaces



Product Lineup

Model Part Number	φ	SL	BD	L	Stock
N -BM0010	0.1	0.6	6	50	●
N -BM0020	0.2	1.2	6	50	●
N -BM0030	0.3	1.8	6	50	●
N -BM0040	0.4	2.4	6	50	○
N -BM0050	0.5	3	6	50	●
N -BM0060	0.6	3.6	6	50	○
N -BM0070	0.7	4.2	6	50	○
N -BM0080	0.8	4.8	6	50	●
N -BM0090	0.9	5.4	6	50	○
N -BM0100	1	5	6	50	●
N -BM0150	1.5	5	6	50	○
N -BM0200	2	5	6	50	●
N -BM0250	2.5	5	6	50	○
N -BM0300	3	5	6	50	●
N -BM0350	3.5	8	8	50	○
N -BM0400	4	8	8	50	●
N -BM0450	4.5	10	10	50	○
N -BM0500	5	10	10	50	●

○ is a semi-stock item (Delivery time: approx. 45 days)
Other shapes are available upon request. (Delivery time: approx. 45 days).

Machining Conditions

Machining of Resins and Non-Ferrous Metals
Reduce the rotational speed to
one-third for hard and brittle materials

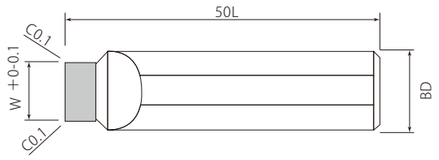
φ	Rotational Speed (min-1)	Depth of Cut ap (mm)
φ0.1	10,000～40,000	0.004
φ0.2	10,000～40,000	0.009
φ0.3	10,000～40,000	0.01
φ0.4	10,000～40,000	0.01
φ0.5	10,000～40,000	0.02
φ0.6	10,000～40,000	0.03
φ0.7	10,000～40,000	0.03
φ0.8	10,000～40,000	0.04
φ0.9	10,000～40,000	0.04
φ1	10,000～40,000	0.04
φ2	10,000～30,000	0.09
φ4	10,000～20,000	0.1
φ6	5,000～10,000	0.1
φ8	5,000～10,000	0.1
φ10	5,000～10,000	0.1
φ12	5,000～10,000	0.1

Recommend high-speed rotation whenever possible.
Reference values, may vary depending on the material being cut and the machining equipment

PCD / CBN Super Hale Bite

N-Super Hale

The Birth of Tools for Maximizing Surface Precision



Product Lineup

PCD

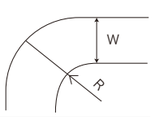
Model Part Number	W	BD	MinC	Stock
N-SH4-PCD	4	φ6	R8	●
N-SH5-PCD	5	φ6	R7	●
N-SH6-PCD	6	φ6	R6.5	●
N-SH7-PCD	7	φ8	R8	●
N-SH8-PCD	8	φ8	R8.5	●
N-SH9-PCD	9	φ10	R9.2	●
N-SH10-PCD	10	φ10	R10.5	●

CBN

Model Part Number	W	BD	MinC	Stock
N-SH4-CBN	4	φ6	R8	○
N-SH5-CBN	5	φ6	R7	●
N-SH6-CBN	6	φ6	R6.5	○
N-SH7-CBN	7	φ8	R8	○
N-SH8-CBN	8	φ8	R8.5	○
N-SH9-CBN	9	φ10	R9.2	○
N-SH10-CBN	10	φ10	R10.5	●

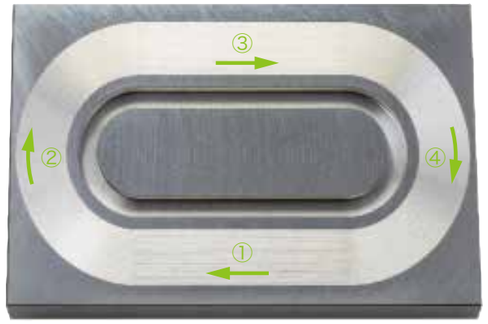
○ is a semi-stock item (Delivery time: approx. 40 days)
Other shapes are available upon request.
(Delivery time: approx. 40 days).

MinC is
The R-dimension of the curve in the machining path with the smallest radius



For interference prevention,verification is required

Examples of Aluminum Processing



←: Machining Direction

Machine : a61nx (Pro.6)
Work Material : Aluminum (A 5052)
Work Size : 90 × 55 × 10 mm
Tool Material : Carbide
Sealing Face Width : 10 mm
Groove Depth : 0.03 mm
Feed Rate : 6,000 mm/min

Surface Finish Our Achieved Values

① Ra0.304 μm	② Ra0.330 μm
③ Ra0.315 μm	④ Ra0.356 μm

General Hale Machining

Super Hale Machining