

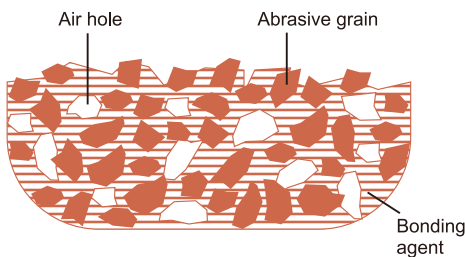


A type of precision processing method where a cutting wheel spinning at high speed is used to grind the material being processed via the extremely hard particles (abrasive grains) which the wheel consists of. The material can be gently processed without being damaged, while the superior precision cutting realizes a finely finished surface.

Characteristics

- 1 Utilizes extremely hard mineral grains and hence, in addition to ordinal metal materials and hard brittle materials such as hardened steel and cemented carbide/ceramics can be cut.
- 2 Excellent finish and superior size precision are realized by the extremely fine grinding process.
- 3 The cutting speed is extremely high, thus making the overall cutting efficiency (volume of chips ground per hour) high even though the size of the chips is very small.

Mechanism



The body of the cutting wheel, as revealed by the illustration on the left, consists of 3 elements: abrasive grains, bonding agent, and air holes. The large number of abrasive grains on the working surface grinds the material away little by little because of their roughness. The abrasive grains gradually dull, get crushed, and eventually come away from the working surface. However, as grains fall off new abrasive grains sequentially appear on the surface. This means that the edge of the wheel remains at the end, although the external diameter does decrease in size.

Labeling and Characteristics of Cutting Wheels

A	100	N	B	205 ×	0.8 ×	25.4
Abrasive Grain	Grain Size	Degree of Bond	Bonding Agent	Outer Diameter	Thickness	Internal Diameter
A (Alundum) WA (White Alundum) HA/NA (Heiwa Alundum) GC (Green Carborundum) TC (Diamond) AC (Alundum & Carborundum)	# 80 #100 #150 #220 #320 #400 #600	H, J, L, N, P, R (Soft ← → Hard)	B: Resinoid Bond	φ75 mm - φ305 mm	0.3mm - 1.2mm	φ6 mm - φ31.75 mm

Abrasive Grains

We have the following types of abrasive grain available, which depends on the material to be processed.

Classification	Symbol	Name	Characteristics and Application
Alumina System	A	Alundum	Bauxite is used as the major raw material and thus it is suitable for cutting iron or steel that is very tough (adhesiveness) and tensile.
	WA	White Alundum	The edge is likely to remain sharper than the A abrasive grain. A sharp edge is quickly generated and hence the overall resistance is low and very little heat generated. Superior to A with some materials.
	HA NA	Heiwa Alundum	Original abrasive grain. The sharp edge and moderate crushing characteristic ensure high cutting capabilities. Suits the cutting of hard products.
Carbide System	GC	Green Carborundum	Utilizes silica and carbon as the major raw materials and hence very hard but of a low level of toughness. Typically suits the cutting of non-ferrous materials.
	TC	Diamond	Hardest abrasive grain of all and thus suits the difficult-to-cut materials with which other abrasive grains do not work very well. Vulnerable to any heat generated during the processing.
Miscible System	AC	Alundum & Carborundum	Mixture of A and C abrasive grains. Suits the cutting of malleable cast iron.

Grain Size

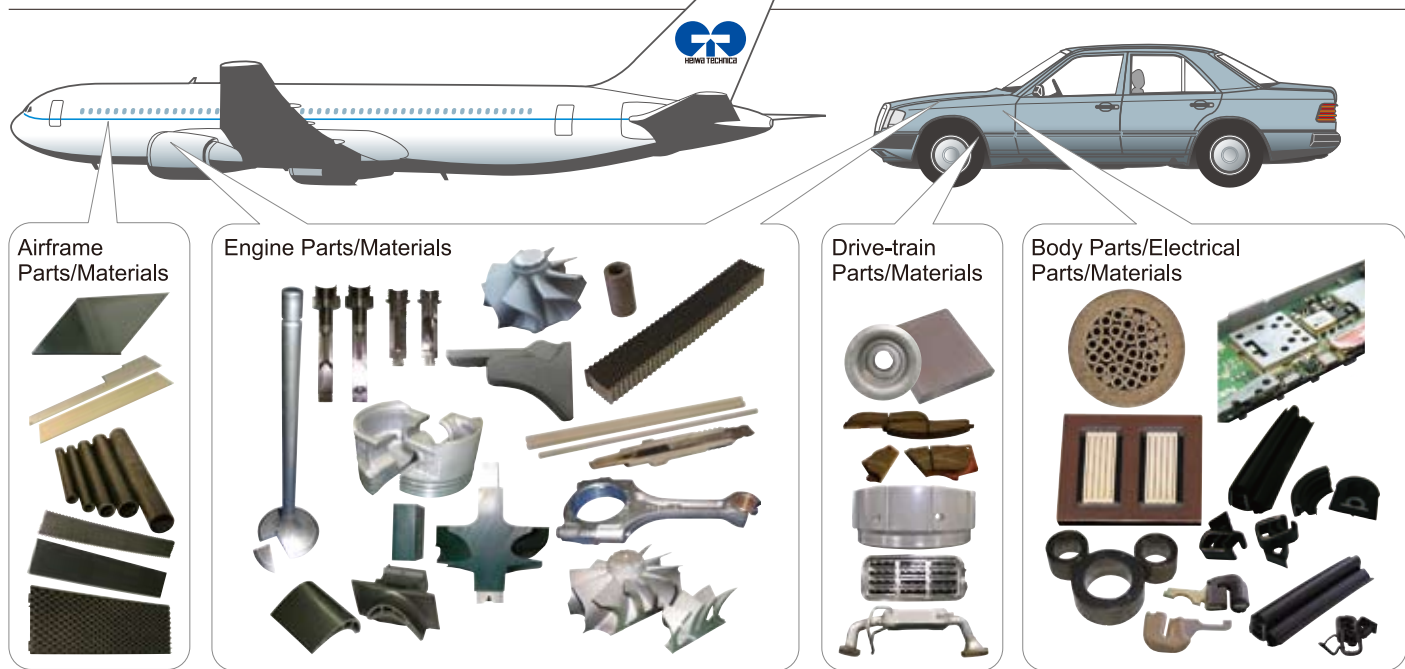
The grain size denotes the size of the abrasive grains used, with #80 through to #600 being available. The size of the grain and degree of the bond decide the roughness of the finished surface of the material to be processed.

Degree of Bond (hardness of cutting wheel move)

The degree of the bond denotes the strength of the bonding agent to the abrasive grains. The degrees range from A to Z, with the range we have available ranging from H to R. The degree of the bond is the weakest (softest) with A and the strongest (hardest) with Z. The degree of the bond affects its abrasive qualities, and hence the cutting effect of the cutting wheel, and therefore is the second most important factor after the abrasive grains themselves. A weak (soft) bond means that the abrasive grains come off easily as the bond that holds them in place is weak, and thus a new cutting edge is constantly appearing. This means that the wheel cuts well but wears out relatively quickly. A strong (hard) bonding means that not many abrasive grains so come off and hence the cutting speed decreases as their roughness becomes dull. It therefore has less cutting capabilities but is quite durable.

Examples of **トクダストイン** Utilization

NASTON



Application of **トクダストイン** (Material/Product Name)

NASTON

		Material	Product Name
Quality Control		Special alloy	Jet turbines
		difficult-to-cut compound materials	Vehicle engine parts
		Titanium	Golf-club heads
Production Division		Cemented carbide materials	Cemented carbide tools
		Tungsten/Nickel	PCB/joints
		Stainless steel	Guides and rails
Research and Development		Phenol and epoxy resin	Sample embedding materials
		Single-crystal material	Ceramic products
		Precision aluminum casting	Cylinder heads
Cost Reduction		Extra-hard-tempered material	Regrinding products
		Stainless steel pipes	Electrical components
		Titanium	Medical products



Sample Application of Standard Models

Standard Products Other Optional Products

Material Cut	Processing Example	Parts No.	φ150・φ160	Code No.	φ205	Code No.
			Size (mm) O.D. x T (I.D. 25.4)		Size (mm) O.D. x T (I.D. 25.4)	
Alloy tool steel (SKS) Die steel (SKD) Hardened products such as spring steel (SUP)	Drill rods and various other types of hardened products Metal flake for electronic microscope Gauge plates for hardened products and machine parts Small dia. Drills and cutting endmills	31-N	160 x 0.7	31N-16007	-	-
		A100N	150 x 0.5	A100N-15005	205 x 0.8	A100N-20508
			150 x 1.0	A100N-15010	205 x 1.0	A100N-20510
General carbon steel (S-C) Tool steel (SK) Soft steel (SS)	Extrusion pins of dies and key gauges Drawn profile materials, springs pipes, and wire	31-P	160 x 0.7	31P-16007	-	-
		A100P	150 x 0.5	A100P-15005	205 x 0.8	A100P-20508
			150 x 1.0	A100P-15010	205 x 1.0	A100P-20510
Applicable to a wide range of materials including steel, mentioned above, as well as extremely durable Ideal for cutting solid bar materials of larger diameter such as SCM, SKD, and SUS		31-A	160 x 0.7	31A-16007	205 x 0.8	31A-20508
		STAIN-A	160 x 0.8	SUSA-16008	205 x 1.0	SUSA-20510
		HA80P	-	-	205 x 0.8	HA80P-20508
Extra-hard-tempered materials such as special steel (SNCM) and high-speed steel (SKH)		HA100J	160 x 0.7	HA100J-16007	205 x 0.8	HA100J-20508
		NA100J	-	-	205 x 0.8	NA100J-20508
Molybdenum and stainless steel	Electrical parts and metal parts for bags and pouches	WA100R	150 x 0.5	WA100R-15005	205 x 0.8	WA100R-20508
		WA220R	150 x 0.5	WA220R-15005	205 x 0.8	WA220R-20508
Ordinary casting (FC), magnetic steel, malleable cast iron, and ductile iron		AC100J	-	-	205 x 0.8	AC100J-20508
		GC100P	-	-	205 x 0.8	GC100P-20508
Titanium Glass epoxy and resin Bakelite and stone General non-ferrous materials Quartz, Crystals, and hard glass General soda glass Ceramics	Parts made of composite materials Hard ornaments and denture specimens Processed glass products in general (syringe barrel)	GC100N	-	-	205 x 0.8	GC100N-20508
		GC150N	150 x 0.3	GC150N-15003	205 x 0.8	GC150N-20508
			150 x 0.5	GC150N-15005	-	-
			150 x 1.0	GC150N-15010	-	-
		GC150L	150 x 0.5	GC150L-15005	205 x 0.8	GC150L-20508
		GC150H	150 x 0.5	GC150H-15005	205 x 0.8	GC150H-20508
Stainless steel, and general non-ferrous metals, Tungsten and molybdenum Noble metals such as gold and silver etc.	Various types of precise pipes and shafts Electrical contacts and injector needles Thin pipes and small ornamental artifacts	GC320P	150 x 0.3	GC320P-15003	-	-
		GC320R	150 x 0.5	GC320R-15005	205 x 0.8	GC320R-20508
		STAIN-B	160 x 0.5	SUSB-16005	205 x 0.7	SUSB-20507
		GC400L	150 x 0.5	GC400L-15005	205 x 0.7	GC400L-20507

* Please place orders in the available minimum quantity of one box (contains 25 disks).

Diamond Abrasive Cutting Wheel for Hard Brittle Materials



The NASTON GOLD enables extremely precise cutting of hard brittle materials, including cemented carbide/ceramics/semiconductors/glasses, magnetic materials including ferrite/sendust, and difficult-to-cut compound materials. Has superior processing qualities that allow soft cutting with minimal chipping.



NASTON GOLD

Parts No.	Size (mm)	Code No.	Application
	O.D. x T x I.D.		
TC-1 (#140)	150 x 0.5 x 25.4	TC1-15005	Cemented carbide Ferrite Tungsten Other magnetic materials
	180 x 0.6 x 25.4	TC1-18006	
	205 x 0.7 x 25.4	TC1-20507	
	230 x 0.8 x 25.4	TC1-23008	
	255 x 1.0 x 31.75	TC1-25510	
TC-2 (#180)	150 x 0.5 x 25.4	TC2-15005	Ceramics Hard glass Quartz/crystals etc.
	180 x 0.6 x 25.4	TC2-18006	
	205 x 0.7 x 25.4	TC2-20507	
	230 x 0.8 x 25.4	TC2-23008	
	255 x 1.0 x 31.75	TC2-25510	
TC-0	150 x 0.5 x 25.4	TC0-15005	Multipurpose ultra-hard materials
	205 x 0.7 x 25.4	TC0-20507	
MM-1	90 x 0.5 x 10.0	MM-1	S-5/MM-G models

* The minimum available order quantity is 1 box (1 disk).

NASTON GOLD "SUPER"

Parts No.	Size (mm)	Code No.	Application
	O.D. x T x I.D.		
CA-1	150 x 0.5 x 25.4	CA1-15005	Fine ceramics Difficult-to-cut materials such as SiC, Si ₃ N ₄ etc.
	180 x 0.6 x 25.4	CA1-18006	
	205 x 0.7 x 25.4	CA1-20507	

* The minimum available order quantity is 1 box (1 disk).

Size (mm) O.D. x T (I.D. 25.4)	Code No.	Size (mm) O.D. x T (I.D. 31.75)	Code No.	Size (mm) O.D. x T (I.D. 31.75)	Code No.
-	-	-	-	-	-
230 x 1.0	A100N-23010	255 x 1.2	A100N-25512	-	-
-	-	-	-	305 x 1.2	A100N-30512
-	-	-	-	-	-
230 x 1.0	A100P-23010	255 x 1.2	A100P-25512	-	-
-	-	-	-	305 x 1.2	A100P-30512
230 x 1.0	31A-23010	-	-	-	-
230 x 1.0	SUSA-23010	255 x 1.2	SUSA-25512	-	-
230 x 1.0	HA80P-23010	255 x 1.2	HA80P-25512	-	-
230 x 1.0	HA100J923010	255 x 1.2	HA100J-25512	305 x 1.2	HA100J-30512
230 x 1.0	NA100J-23010	255 x 1.2	NA100J-25512	305 x 1.2	NA100J-30512
230 x 1.0	WA100R-23010	-	-	-	-
230 x 1.0	WA220R-23010	255 x 1.2	WA220R-25512	-	-
230 x 1.0	AC100J-23010	255 x 1.2	AC100J-25512	305 x 1.2	AC100J-30512
-	-	-	-	-	-
-	-	-	-	-	-
230 x 1.0	GC150N-23010	255 x 1.2	GC150N-25512	305 x 1.2	GC150N-30512
-	-	-	-	-	-
-	-	-	-	-	-
230 x 1.0	GC150L-23010	255 x 1.2	GC150L-25512	305 x 1.2	GC150L-30512
230 x 1.0	GC150H-23010	255 x 1.2	GC150H-25512	-	-
-	-	-	-	-	-
230 x 1.0	GC320R-23010	255 x 1.2	GC320R-25512	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Standard Selection

Standard Selection	Focus on Edge Sharpness	Focus on Cutting Wheel Durability
Most standard selection	Selection prioritizes cutting ability	Selection prioritizes cutting wheel lifetime
31-N	HA100J	31-P
A100N	HA100J	A100P
31-P	31-N	HA80P
A100P	A100N	HA80P
31-A	31-N,A100N	STAIN-A, HA80P
STAIN-A	-	-
HA80P	STAIN-A, HA100J	-
HA100J	-	NA100J WA100R,HA80P
WA100R	HA100J	-
WA220R	WA100R	-
AC100J	-	-
GC100N	GC150N GC150L, GC150H	GC100P
GC150N	GC150L GC150H	GC100P
GC150L	GC150H	GC150N GC100P
GC150H	TC-2	GC150L GC150N TC-2
Standard Selection	Focus on Finished Surface	Focus on Cutting Wheel Life
GC320R	STAIN-B GC400L	-

NASTON H Series (25 disks/box)

Parts No.	Size (mm) O.D. x T	Code No.	Size (mm) O.D. x T	Code No.	Material to be Cut
H-10	205 x 0.5	H10-20505	230 x 0.6	H10-23006	Steel materials in general
H-12	205 x 0.5	H12-20505	230 x 0.6	H12-23006	Heat-treated materials and special steel
H-15	205 x 0.5	H15-20505	230 x 0.6	H15-23006	Non-ferrous materials in general
H-22	205 x 0.5	H22-20505	230 x 0.6	H22-23006	Copper, brass and stainless steel
H-32	205 x 0.5	H32-20505	230 x 0.6	H32-23006	Stainless steel, tungsten, molybdenum, non-ferrous materials, and noble metals such as gold and silver etc.
H-40	205 x 0.5	H40-20505	230 x 0.6	H40-23006	Stainless steel, tungsten, molybdenum, non-ferrous materials, and noble metals such as gold and silver etc.

Metal Bond Diamond Wheel

Parts No.	Size (mm) O.D. x T x I.D.	Code No.	This cutting wheel uses a metal bond around a heavy-duty alloy to form the diamond abrasive grain layer.
SD	150 x 0.5 x 25.4	SD-15005	
	200 x 0.8 x 25.4	SD-20008	

* The minimum available order quantity is 1 box (1 disk).

Paper Filter (Filter paper)

Size (mm)	Code No.	Applicable Model
165x165 (20 sheets)	SF-01	SS-31, M-30, (former 31), Birdie II
350x450 (20 sheets)	SF-02	N-7, SS-33, (former 32), HS-45AC, 32F-200/300
410x490 (20 sheets)	SF-03	HS-100, HS-45, ACE-20/30 Super Seven/310, 32F-500
410x100m (1 roll)	SF-11	For filter separator tank
410x50m (1 roll)	SF-12	

For Dry-type BIRDIE (25 sheets/box)

Parts No.	Size (mm)	Code No.	Material
NASTON-A	160 x 0.7	BDA-16007	General carbon steel and tools steel
NASTON-B	160 x 0.7	BDB-16007	Resin and Bakelite
NASTON-C	160 x 0.7	BDC-16007	Copper, brass, and stainless steel

For S-5/MM-G (50 sheets/box)

Parts No.	Size (mm)	Code No.	Material
A100P	90 x 0.5	A100P-09005	General carbon steel and tools steel
GC320P	90 x 0.5	GC320P-09005	Stainless steel, resin, and noble metals such as gold and silver etc.
WA120P	90 x 0.5	WA120P-09005	Copper, brass, and stainless steel

For Baby-size Wheel for FiNECUT S-2 (50 sheets/box)

Parts No.	Size (mm)	Code No.	Material
A100P	75 x 0.5	A100P-07505	General carbon steel and tools steel
GC150P	75 x 0.5	GC150P-07505	Resin and Bakelite
WA120P	75 x 0.5	WA120P-07505	Copper, brass, and stainless steel

Segment Grinding Stones for Face Grinder LM-P/LM-O

Parts No.	Finish	Set	Code No.	Material
Medium mesh	Medium finish	6 pcs	B-6-6	Hard/soft iron alloys Cast iron and a wide range of precise cut steels etc. Difficult-to-cut of tool steel, die steel, and tempered alloys
		8 pcs	B-6-8	
Fine mesh	Fine finish	6 pcs	B-12-6	
		8 pcs	B-12-8	

Water Soluble Cutting fluid Exclusively for NASTON GOLD/NASTON



FC-018	FC-036	FC-180	NC-018	NC-036	NC-180
1.8ℓ	3.6ℓ	18.0ℓ	1.8ℓ	3.6ℓ	18.0ℓ

Its superior permeability/lubricity/cooling characteristics enable clogging to be prevented, thus prolonging the useful lifespan of the cutting wheels. It also features an improved antirust effect. Dilute FINECOOL about 40 times and FINECOOL 21 about in 30 times with water before using.



Performance	FINECOOL	NEW FINECOOL 21
Antirust	○	◎
Cutting wheel lifetime	◎	◎
Antiseptic	○	◎
Post-treatment (removal)	◎	◎
Machine contamination	○	○