

DIANAMIC® Abrasive Products, Inc.

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www.dianamic.com

“OPTIMIZED SOLUTIONS for GRINDING PROBLEMS”

**2023 General Information Catalogue
Electroplated Single Layer Superabrasive
Resin, Metal and Vitrified Bonds
Sintered and Reverse Plated Dressing
cBN and Diamond Inserts**

Made in Michigan since 1985

Quality Assurance Statement

Since 1985 we have adhered to a strict quality assurance program. All incoming work is inspected and assigned a tracking number that is permanently etched to each wheel. This job number is used for SPC control and for any possible inquiries, and we keep both hard copy and electronic copies of all work shipped as reference.

Our processes are well documented in writing. We have SPC controls governing our Diamond and cBN as well as all the ingredients used in all our processes. We keep hard copy reports for all procedures governing safety and plant operations.

Our building is secured by state of the art security and video camera systems, and only invited guests can enter the building, which is always locked. Copies of electronic records are kept offsite and backed up in a cloud service. Records are kept under lock and key, and are only available to authorized personnel.

All manufacturing and coating processes are accomplished under the most stringent parameters. No products are shipped until they pass rigorous inspection in our quality assurance department. All our inspection tooling and optical comparators are traceable to National Standards.

Dianamic subscribes to the following quality standards:

1. Written document systems are in place directly affecting quality activities.
2. Document systems qualifying suppliers as well as prospective and active customers are in place and reviewed periodically.
3. Methods are in place for controlling and monitoring the quality of supplier materials and outsourced jobs.
4. Procedures exist for the identification and tracking of all shipped products.
5. All products are traceable to individual lots or jobs by job number, quote number, shipper and invoice numbers. All jobs are marked with a visible job number.
6. Procedures are in place for non-conforming materials and jobs.
7. Procedures are in place for the maintenance and calibration of our constant current rectifiers as well as inspection equipment, traceable to National Standards.
8. Procedures are in place for analyzing and correcting potential quality problems and documenting corrective actions.
9. Customer requirements are periodically reviewed for accuracy and updated during the quote process.
10. Procedures are in place for the receipt of jobs; handling, storage, preservation and delivery of all products shipped.

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Why choose DIANAMIC Single Layer Products?

DIANAMIC Abrasive Products, Inc. manufactures consistent **QUALITY ASSURED** single layer Superabrasive products, (commonly known as electroplated or galvanic bond) and metal bond products using only **VIRGIN DIAMOND and cBN** (cubic boron nitride commonly known as Borazon). Our products are designed and manufactured employing state-of-the-art equipment. and the finest quality materials. All manufacturing and coating processes are accomplished under the most stringent parameters. No products are shipped until they pass rigorous inspection in our quality assurance department. All out inspection tooling and optical comparators are traceable to National Standards.

DIANAMIC specializes in the design and manufacture of custom grinding products based upon individual requirements and specifications. For fast quotation on all your custom grinding products, either fax, call or write us with your requirements. **Strip and recoating** service is available on all products in steel, stainless or aluminum; or strip of brazed cores. Coating is available on supplied cores.

DIANAMIC Quality and Efficiency

The **single layer Superabrasive products** manufactured by **DIANAMIC** have many advantages over other abrasives. Due to their high quality, **DIANAMIC's Single Layer Superabrasive products** offer extended wheel life with no truing or dressing, fast and immediate removal of stock and re-coatable cores (which lower replacement costs).

Usage and Safety Recommendations

Optimum performance is achieved with flood coolant and filtration at 5 micron or finer. Care must be exercised in grinding, as with any other machining operation. Always wear NIOSHA approved safety glasses, use proper ventilation and follow each suppliers and manufacturer's guideline for safe operation. Prior to use, read applicable MSDS and follow ANSI B7.1-1988 standards. Adherence to all Federal, State and Local regulations regarding your particular industry is required.

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What are SINGLE LAYER SUPERABRASIVES?

DIANAMIC Single Layer Superabrasive (electroplated) grinding wheels and products consist of a single layer of either **Virgin Diamond** or **cBN** which is nickel bonded to a steel or aluminum core. The exact form required is manufactured directly onto the steel core. Most larger OD form grinding wheels are manufactured with an indicating ring to align the wheel to individual spindle eccentricity and to minimize any possible run out. Our standard and custom ID grinding pins and mandrels have a maximum run out of .0002" between head and shank. Because the form holds true throughout the life of a **DIANAMIC Single Layer Superabrasive** product, reduced down time is experienced.

An advantage of **DIANAMIC Single Layer Superabrasives** is that the steel core(s) are re-coatable if not damaged. In most cases damaged wheels can be repaired and re-qualified for a fraction of the original wheel blank cost. As the Superabrasive (either Virgin Diamond or CBN) wears and becomes dull, the individual crystals micro fracture, thereby re-sharpening and exposing new cutting edges until their life is totally expended. Once the Superabrasive is expended, grinding pressures sharply increase and the wheel has seen its total useful life. The wheel core can be returned to **DIANAMIC** for stripping and recoating with Virgin Superabrasive. The cost of recoating a **DIANAMIC Single Layer Superabrasive product** is considerably less than the original cost. Savings range anywhere from 20% to 50%, depending on the complexity of the wheel form in comparison to purchasing a new wheel.

DIANAMIC Single Layer Superabrasive products excel when used to remove stock quickly at high and immediate feed rates, such as creep feed operations, hedge grinding, CNC grinding, jig grinding, etc. They also perform extremely well when precision form grinding is necessary such as carbide insert form grinding. **DIANAMIC Single Layer Superabrasive products** grind at a very fast rate and at a very cool temperature in comparison to other conventional abrasives and bonded Superabrasives. Even with very high feed rates, there is very little heat build-up. Using Virgin CBN on hardened steel of Rc 52+, under normal circumstances, will not cause burning or metallurgical damage.

DIANAMIC Single Layer Superabrasive products can be used to grind ferrous and non-ferrous materials. Exceptional results are received when grinding carbide, hardened steels and alloys, glass, glass reinforced plastics (GRP), composites, brake pads, ceramics in the green and sintered state, epoxy resin composites and other hard to machine and exotic non-ferrous materials.

The following are some of the possible processes where **DIANAMIC Single Layer Superabrasives** have been used successfully: OD-ID Grinding, Jig Grinding, Surface Grinding, CNC Form Grinding, Creep Feed Grinding, Hedge Grinding, Flute Grinding, Honing, Brake Pad Grinding, Single Pass Honing, Lapping, Sawing, etc.

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Diamond and cBN Resin, Metal and Vitrified Grinding Wheels
Sintered / Reverse plated dressing tools
Diamond and cBN inserts

Dianamic Abrasive Products, Inc. offers grinding wheels in Resin, Metal and Vitrified Bonds. All our bonded grinding wheels are manufactured in the USA. We also offer sintered and reverse plated dressing wheels and of course Diamond and cBN inserts new and re-lap service.

All the bonds offered by Dianamic have been developed for optimum performance. Only Virgin Diamond and cBN is use. We never use a mix of reclaim Superabrasives in any of our bonds.

Each wheel or tool is produced to exacting standards and ISO / FEPA shapes. Our grinding wheels meet all safety recommendations for normal use.

As there are hundreds of shapes and styles available as well as bond specifications and combinations, it is best if a wheel shape is designated along with any current bond information you have. Prints in AutoCAD release 2005 or sooner are best for accurate quoting and manufacturing purposes. We do have complete blank drawings for most common shapes available for you use to specify sizes.

Dianamic can assist you in qualifying the type of cBN and Diamond based on our 100+ years of application experience.

Required information for accurate quotes and manufacture include the following information and specifications:

1. Diameter and Arbor Hole Size
2. Width / form / radii
3. Current bond type if available
4. Diamond or cBN
5. Type of material ground
6. Type of machine
7. Type of coolant and delivery system
8. Expected micro finish required
9. As all our grinding wheels are made to your specifications, on the shelf stock is not available.

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DIANAMIC Abrasive Products, Inc. Corporate Description

DIANAMIC Abrasive Products, Inc. was started as a new venture in January 1985. The corporation is privately held and was officially formed as a corporation in the State of Michigan on 15 March 1988.

DIANAMIC Quality Assurance Program incorporates continuous Statistical Process Controls (SPC) in all the manufacturing processes. We utilize state of the art specifically designed and manufactured for Dianamic in our production.

We guarantee that only VIRGIN Diamond and cBN are used, never a mix of reclaim or low quality superabrasives has ever, or will ever be used in 100% of our products.

DIANAMIC manufactures Diamond and cBN (commonly known as Borazon) true Single Layer grinding wheels and coatings. Some of the industries we service are listed below:

Turbine Vane Products	Aerospace Products
Carbide, Steel and From Grinding	APR Thread Grinding
Rare earth magnet Grinding	Ferrite Grinding
Brake Pad Grinding	Friction Material Grinding
Automotive Products	Wood Products
Computer Board Products	Semiconductor Products
Broach Grinding	Tool Grinding
Glass and Ceramics Grinding	Refractory Products Grinding
Composites and GRP grinding	Foundry Grinding Wheels
Medical Products	Surgical Products
Router and Hones	Wear Surfaces
Chuck Jaws wear surfaces	Single Pass Hones
Contour Grinding Wheels	Expandable Hones
ID Mandrels	Center Laps
CV Joint Grinding	Super alloy Grinding
Heavy Equipment Gear Grinding	Ogival Form Grinding

We occupy an 11,000 sq' (1,021 m2) industrial building in Troy Michigan, subdivided into 7,000 sq' of manufacturing, 1,000 sq' of inspection and quality and 3,000 sq' of offices. We are fully temperature controlled and fully alarmed. Our electronic records are cloud based and secured by industry standards.

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DIANAMIC® SUPERABRASIVE PARTICLE SIZE REFERENCE CHART				MESH SIZES
MESH	SIZE	FEPA**	OFFSET ALLOWANCE	APPLICATION
16/18	.047"	1181	.049"	EXTRA HEAVY STOCK REMOVAL
18/20	.040"	1001	.043"	EXTRA HEAVY STOCK REMOVAL
20/25	.034"	851	.036"	EXTRA HEVY STOCK REMOVAL
20/30	.034"	852	.036"	EXTRA HEAVY STOCK REMOVAL
25/30	.028"	711	.030"	VERY HEAVY STOCK REMOVAL
30/40	.023"	601	.025"	VERY HEAVY STOCK REMOVAL
40/50	.017"	437	.018"	HEAVY STOCK REMOVAL
50/60	.012"	301	.013"	COARSE ROUGHING
60/70	.010"	251	.011"	COARSE ROUGHING
60/80	.010"	252	.0105"	COARSE ROUGHING
80/100	.007"	181	.0075"	GENERAL PURPOSE SEMI ROUGH
100/120	.006"	151	.0063"	GENERAL PURPOSE SEMI ROUGH
120/140	.005"	126	.0053"	GENERAL PURPOSE
140/170	.004"	107	.0043"	GENERAL PURPOSE
170/200	.0036"	91	.0038"	SEMI FINISH
200/230	.003"	76	.0032"	SEMI FINISH
230/270	.0025"	64	.0027"	SEMI FINISH
270/325	.0022"	54	.0024"	FINISH
325/400	.0018"	46	.0019"	FINISH
400/500	.0016"	-	.0017"	FINE FINISH
500/600	.0012"	-	.0013"	FINE FINISH

DIANAMIC® SUPERABRASIVE PARTICLE SIZE REFERENCE CHART				MICRON SIZES
MICRON	APPROX GRIT EQUIVALENT	SIZE RANGE mm	SIZE IN INCHES	APPLICATION
45	400/500	40-50	.0018"	FINE FINISHING
35	500/600	30-40	.0014"	FINE FINISHING
30	800	25-35	.0012"	VERY FINE FINSHING
15	1000	8-22	.0006"	VERY FINE FINISHING
9	1500	6-13	.00035"	VERY FINE FINISHING
6	1800	4-8	.00024"	EXTREME FINE FINISHING
3	2100	2-4	.00012"	EXTREME FINE FINISHING

1 micron = .0000395" **FEPA Standard for Superabrasive Grain Sizes 1997

Non-standard Diamond and cBN Mesh and Micron sizes that are scalped, halved, quartered or micronized available as special orders.

Standard Diamond and cBN Mesh and Micron sizes listed. Diamond is available in Synthetic, or Natural.

The **DIANAMIC®** Superabrasive (Diamond and cBN) Particle Size Chart should be used as a reference guide when manufacturing wheel cores for coating and for strip / recoat estimations.

1. A MALE RADIUS should finish SMALLER than the required finish size. SUBTRACT the particle size offset allowance size from the expected finish size to achieve the correct pre coat dimension.
2. A FEMALE RADIUS should finish LARGER than the required finish size. ADD the particle size offset allowance from the expected finish size to achieve the correct pre coat dimension.

DIANAMIC® recommends that we be contacted for technical support and coating offset recommendations when manufacturing wheel cores to confirm sizes.

DIANAMIC® Made in Michigan since 1985

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DIANAMIC

Diamond Grinding Wheels used to grind and shape Metallic and non-Metallic Composite Friction Material GRP and Graphite

The electroplated single layer Diamond friction material and brake pad grinding wheels manufactured by Dianamic offer excellent production results, with lower cost per piece production costs in comparison to brazed products.

Our single layer Diamond wheels are used to grind composites, composite sintered metal and non-metallic materials such as brake pads, brake shoes, clutch plates, oven bricks and foundry applications.

Brake grinding wheels, saw blades and drums are used for form grinding, chamfering one or two sides and for grooving both the internal and external arc on pads.

Saw blades and routers are used to size GRP (glass reinforced plastics), fiberglass and other composite materials not easily machined with other means.

Form grinding wheels and saw blades are used to grind graphite used for brushes in electric motors, electronics and for slicing electronic boards

Single layer Superabrasive grinding wheels manufactured by Dianamic are made in the USA, with our “**application oriented**” selection process for Diamond and cBN coating.

With the “**application oriented**” selection process, Dianamic selects not only the highest quality Diamond and cBN; but selects the most appropriate type of Superabrasive to be used on an application case by case basis, based on customer requirements and specifications.

Not all Diamond and cBN is created equal. Each type of Superabrasive has very specific ways it reacts during grinding / machining processes. Our selection process for the “**application oriented**” method is based on 33+ years of actual manufacturing experience.

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Diamond Lapping Paste, Slurries and Compound

DINAMIC® offers Diamond Compound, Diamond Slurries and Lapping Paste manufactured in North America to the most exacting standards. Specific grades of Micronized Virgin Diamond have been tested and chosen for their exceptional quality, durability and performance under all polishing and lapping conditions.

Particle Analysis

Each batch of micronized Diamond is tested and certified with a Grade Quality Certification using a proprietary Particle Analysis System that combines statistical and video analysis for exact evaluation. Test results by Lot Number are available on request to support your quality control measures such as ISO documentation requirements.

Available Compounds

Diamond compounds are available in three different carrying medias for varying applications:

M-based compounds (Oil Soluble) offer a wide thermal processing range of up to 400F° that allows this M-based compound to be used under the most demanding applications.

Applications and suggested uses are for 'M' base compound are for precision finishing of all types of dies and molds and polishing optical, ceramic and electronic components.

U-based compounds (Oil Soluble) are less viscous than 'M' based compound. This compound offers better flow-ability and is better suited for lapping and high speed applications.

Applications and suggested uses for 'U' base compound are for precision finishing of all types of dies and molds and polishing optical, ceramic and electronic components.

W-based compounds (Water Soluble) offer specific characteristics ideally suited for the preparation of tools and dies that will be subsequently electroplated or chemically or physically coated. No thinner or solvents are required with 'W' based compound. There is no impregnation by the compound in the substrate prior to coating.

Applications and suggested uses are the polishing of tools and dies prior to CVD and PVD coatings. This compound is also suited when environmental issues are important.

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Concentrations

Compounds, Paste and Slurries are available in extra light, light, medium, heavy, extra heavy and super heavy concentrations. The concentrations by carat weight are the highest available on the market. Specific carat weight concentrations are available by special order.

Special Concentrations and Medias

Specially formulated concentrations are available for your special requirements in U, M or W base.

Applications:

- a. Specially formulated concentrations used in production lapping machines used to radius carbide inserts.
- b. Specially formulated concentrations used in edge preparation where very small radii are required with limited stock removal.
- c. Specially formulated concentrations used to ring gears for final fit prior to assembly in transmissions.
- d. Specially formulated Water Based Media where environmental concerns prevent the use of oil based products.

Thinners

Compound thinner specifically designed and manufactured for thinning 'M' and 'U' based compounds is available. The thinner is non-toxic and non-hazardous and offers an excellent method to spread the diamond media evenly while keeping it moist and offering efficient clean up. This thinner works well with other manufacturers' media.

Packaging

Compound and Lapping Paste is available in standard 5 gram and 18 gram tubes or jars. Larger containers and dispensers are available upon request, such as 454-gram tubs (1 pound).

Thinner is available in 200cc, 500cc or 4 liter bottles.

Slurries are available in 500 gram, 1000 gram and 5000 gram containers.

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DIANAMIC Diamond Compound and Lapping Paste

Standard Grade Micron Sizes available in M, U or W bases

DIANAMIC DIAMOND PASTE AND COMPOUND		AVAILABLE IN JAR, SYRINGE OR TUB
GRADE	MICRON SIZE	COLOR
100	100-150 MICRON	BLACK
170	80-100 MICRON	GRAY-BLACK
230	54-80 MICRON	PURPLE
45	36-54 MICRON	BROWN
30	22-36 MICRON	RED
15	12-22 MICRON	BLUE
9	6-12 MICRON	GREEN
6	4-8 MICRON	ORANGE
4	2-6 MICRON	PINK
3	2-4 MICRON	YELLOW
2	1-3 MICRON	LAVENDER
1	0-2 MICRON	IVORY
.5	0-1 MICRON	LIGHT GRAY
0 - .5	0-.5 MICRON	GRAY
0 - .1	0-.2 MICRON	WHITE

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MISSION STATEMENT

DIANAMIC Abrasive Products, Inc. is focused to provide the finest, consistent quality assured single layer and bonded and sintered Superabrasive products manufactured and available in the global marketplace. We strive to deliver our products in a timely method and with cost awareness geared around the needs and production requirements of our individual customers. We are committed to remain technologically abreast and to maintain the highest of ethical business standards and practices.

ORDERING INFORMATION

Purchase Orders may be placed by email, fax, conventional mail or telephone. Include on the purchase order the ship to and attention of information, part number if applicable, Diamond or cBN, Mesh and quantity.

SHIPMENT and TERMS

For companies that qualify, Terms are NET 30 Days F.O.B. Troy Michigan. Orders may be shipped via open account, in the USA by COD, pre-payment, Visa, MasterCard, American Express or wire transfers. Our standard and quoted prices do not include transportation or insurance costs, which are added to your invoice. Shipments outside the USA are made via air courier and prepaid.

SPECIAL APPLICATIONS

DIANAMIC will meet ALL your special Diamond and cBN requirements. Our sales and engineering staff work closely with our customers to develop
“OPTIMIZED SOLUTIONS for GRINDING PROBLEMS”

For FAST, RELIABLE and PERSONAL SERVICE meeting ALL your single layer, bonded and sintered Diamond and cBN needs, call DIANAMIC

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