

SYNTHETIC DIAMONDS



Engineered To Meet Your Needs.

While retaining the durability and strength of natural diamonds, synthetic diamonds offer superior consistency and a cost-effective alternative to natural diamonds for industrial tool manufacturers. From PCD and TSP, through to single crystal diamond products, we can offer you a synthetic diamond solution engineered to meet your specific needs. By taking the time to understand your precise operational needs, we work with you to supply a tailored solution, offering fast turn-around times and a team dedicated to building long-term working relationships.

PCBN (Polycrystalline Cubic Boron Nitride)

PCBN (Polycrystalline Cubic Boron Nitride) is the cutting-edge solution for machining high hardness and hard processed ferrous materials. PCBN finds extensive use in a range of industries, including the metallurgical industry, automotive sector, aerospace field, bearing and gear manufacturing, die and mould production, mining, and construction machinery. Its versatility and superior performance make it a preferred choice across diverse applications.



GRADES

Our PCBN blanks are available in several grades, including SABN95S, SABN95J, SABN90, SABN85, and SABN60, offering a wide range of options to suit your specific machining needs.

SABN95S

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| <ul style="list-style-type: none"> • 90~95% vol cBN • 2µm avg. grain size • Al binder • Precision machining of gray cast iron and high temperature alloy, such as aero engine | <ul style="list-style-type: none"> • Light machining of nodular cast iron and powder metal alloys • Continuous cuts • High smooth finish • High chip resistance |
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SABN95J

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| <ul style="list-style-type: none"> • 90~95% vol cBN • -35µm avg. grain size • Al binder • Rough machining of wearable alloy cast steel, such as brake disc and brake drum | <ul style="list-style-type: none"> • Continuous to light interrupted cuts • High speed • Long tool life |
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SABN90

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| <ul style="list-style-type: none"> • 90% vol cBN • 10µm avg. grain size • Al binder • High toughness | <ul style="list-style-type: none"> • A good general purpose grade • Machining general gray cast iron at high speed • Engine cylinder and engine cover • Continuous to heavy interrupted cuts |
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SABN85

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| <ul style="list-style-type: none"> • 85% vol cBN • 25µm avg. grain size • Al binder • High toughness • Rough machining of alloy cast iron and alloy cast steel | <ul style="list-style-type: none"> • Gray cast iron, chilled cast iron and cast iron with high Chromium content • Slurry pump, roller and mine machines • Medium to heavy interrupted cuts with demanding environment • Long tool life |
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GRADES

SABN60

- 60% vol cBN
- 3µm avg. grain size
- TiN binder
- Fine machining of hardened steels, such as bearing steel and die steel
- Medium interrupted cuts
- Medium to high speed

SPECIFICATIONS

Our PCBN blanks are available in various standard shapes to accommodate different machining needs. Choose from hexagonal, diamond, triangle, round, and square shapes, ensuring versatility and compatibility with your specific machining operations. We also offer full disks of solid and carbide backed PCBN.

In addition to our standard offerings, we are proud to offer bespoke shapes and sizes of PCBN blanks to meet specific customer requirements. Whether you need custom shapes, dimensions, or hole patterns, our experienced team can work closely with you to create tailored solutions that perfectly align with your machining needs.

FEATURES

Our PCBN blanks possess a host of exceptional characteristics that ensure superior performance and reliability in demanding machining applications:

- High hardness and fracture resistance enable effective machining of hardened steels and high hardness metallic materials.
- High wear resistance and thermal stability ensure long tool life and consistent performance, even in high-speed machining.
- Good chemical stability makes PCBN inert to iron family elements, reducing the risk of chemical reactions during machining.
- Good weldability allows for easy tool reconditioning and extended tool life.
- Excellent dimensional control and consistent surface finish deliver precision and accuracy in machining operations.
- Higher material removal rate and increased efficiency result in improved productivity and reduced machining time.

APPLICATIONS

PCBN is widely used in various industries for machining high hardness and hard processed ferrous materials. PCBN is suitable for machining various workpieces, including brake discs, brake drums, engine blocks, engine cylinder liners, engine covers, flywheels, gears, and mould and die parts. No matter the complexity or hardness of the workpiece, PCBN tools provide precise cutting solutions, ensuring optimal results. Some of the key applications include:

- Machining of hardened steels and high hardness metallic materials, providing excellent cutting performance and precision.
- High-speed machining of grey and hard cast iron, high-strength cast iron, cold and hot-work tool steels for efficient and productive operations.
- Machining of powder metal alloys, such as heat-resistant sintered alloy and Iron-based materials, ensuring superior results in challenging machining scenarios.
- Machining of nickel and cobalt-based super alloys commonly used in aerospace and other high-performance applications, delivering exceptional performance and tool life.

QUALITY

Our commitment to excellence is evident in every stage of our production process. Before our PCBN inserts are approved for use, they undergo a series of stringent tests to ensure their performance and durability. Our dedicated quality control team meticulously inspects each insert, conducting tests such as hardness assessment, dimensional accuracy verification, edge integrity analysis, and surface finish evaluation. These tests enable us to maintain the highest standards and guarantee that our PCBN inserts meet the demanding requirements of precision machining. With our unwavering focus on quality, you can trust that our PCBN inserts will consistently deliver exceptional results, maximizing your productivity and minimizing downtime.

Talk To Our Experts About Your Industrial Diamond Needs



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