

PRECISION MACHINING & GRINDING

*Synthetic Diamond Grit Product Range*



# DISCOVER RELIABLE COMPETITIVE ADVANTAGE

——— *Element Six helps tool makers keep their competitive advantage with a comprehensive range of uncoated and coated synthetic diamond grits, offering unrivalled performance, consistency and operational efficiencies to meet their cutting, grinding and abrasion tool needs.*

**elementsix**<sup>™</sup>  
a De Beers Group Company

# STAY AHEAD OF THE COMPETITION

Element Six offers a wide range of synthetic diamond grits and coatings technologies for use in high performance tools to suit a wide variety of applications in construction, stone and extraction.

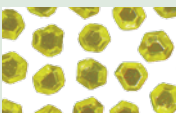

## OUR QUALITY AND CONSISTENCY ASSURANCE

Element Six is an ISO9001 2008 registered company with over 40 years of manufacturing experience. We practice rigorous quality controls to ensure complete batch traceability and the highest levels of product consistency and performance.

## OUR PARTNERSHIP APPROACH

Element Six offers industry-leading service and unrivalled technical support.

We partner with customers to understand their needs and develop complete solutions tailored to meet their precise requirements. Supporting this is our Global Innovation Centre near Oxford in the United Kingdom – the world’s leading facility for synthetic diamond research and development.

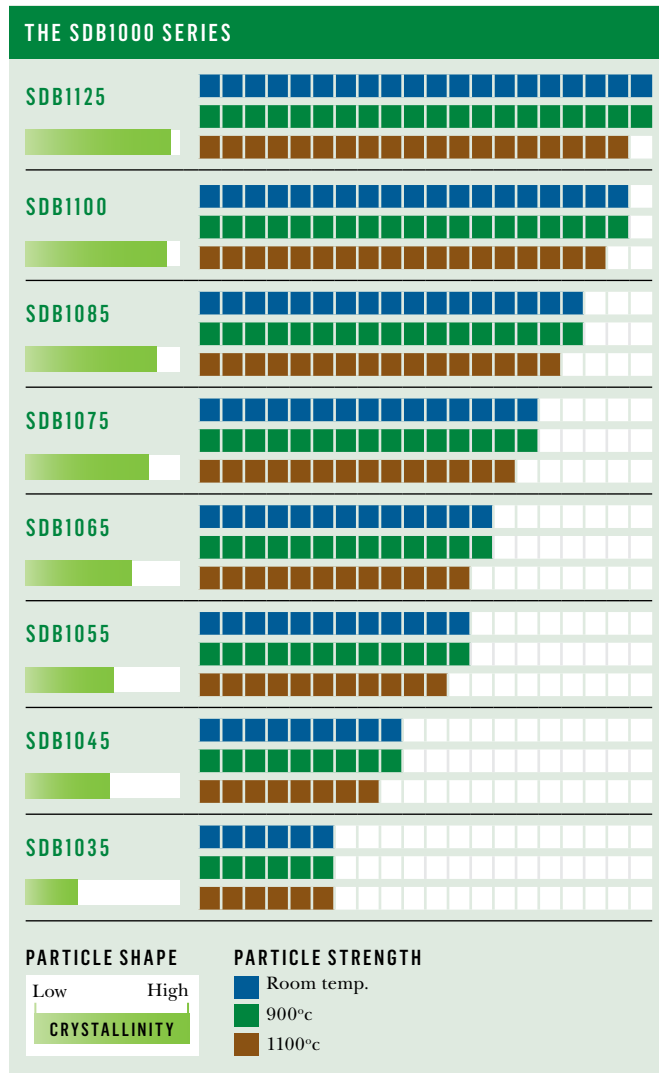
RANGE	GRADE	APPLICATIONS	ADVANTAGES
<b>UNCOATED</b> 	<b>MAXIGRIT SERIES:</b> <b>NDG120, NDG100, NDG80</b>	Designed for tough operations in construction, stone and extraction industries.	Proven performer in the market. Highest degree of control over particle shape, size, strength and thermal properties.
	<b>SDB1125+</b>	Designed for general use in construction, stone and extraction industries.	Highest thermal strength value when tested at %R(1200)* In general greater friability index & lower metallic content.
<b>COATED</b> 	<b>SDB1000 SERIES:</b> <b>SDB1125, SDB1100, SDB1085, SDB1075, SDB1065, SDB1055, SDB1045, SDB1035</b>	Designed for general use in construction, stone and extraction industries.	Proven performer in the market.
	<b>SDBTCP+</b>	Hot pressing pre-alloyed cobalt replacement bonds.	Highest thermal strength value when tested at %R(1200)* In general greater friability index & lower metallic content.
	<b>SDBTC</b>		50%* faster cutting rate.
	<b>SDBTF</b>	Free sintering high cobalt, nickel or iron.	50%* extended tool life.
	<b>SDBTB</b>	Infiltration sintering liquid phase bonds.	Significantly improved synthetic diamond retention in tool.
	<b>SDBTN</b>	Soft bronze hot pressing.	10%-20%* reduction in cost of bonding and sintering raw materials.
	<b>SDBTZ</b>	Brazing synthetic diamond in air.	

\* Performance figures based on Element Six application testing.

# MAKE THE RIGHT SELECTION FOR YOUR APPLICATION

## SELECTING THE RIGHT UNCOATED PARTICLE STRENGTH AND SHAPE

Our indicator system supports with the selection of the best uncoated synthetic diamond grit particle strength and shape for your application.



## ADVANTAGES OF OUR COATINGS

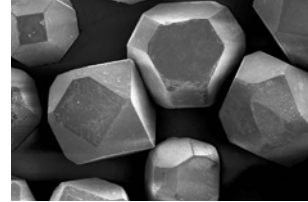
Our coating technology is chemically bonded to each synthetic diamond particle providing a number of performance benefits:

### ENHANCED RETENSION IN THE BOND

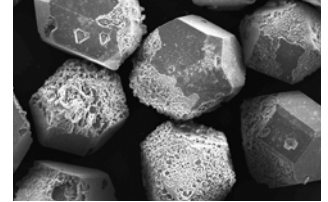
- Extends tool life by up to 50%\*
- Increases cutting rates by 50%\* for the same tool life
- Enhances crystal protrusion for faster, cleaner cutting

### AN OPTIMISED SINTERING PROCESS

- Protects the diamond crystals allowing sintering at higher temperatures
- Protects the exposed diamond surface from any degradation caused at high temperature in aggressive material bonds
- Enables the use of lower cost matrix materials, which can account for nearly 50% of the tool price



Coated synthetic diamond recovered after sintering.



Uncoated synthetic diamond recovered after sintering.

## OUR COATING TECHNOLOGY

Element Six's coating range is designed to ensure compatibility across a wide range of tool applications, bond compositions and sintering conditions.

	SDBTC	SDBTF	SDBTB	SDBTN	SDBTZ
<b>BOND</b>	 High copper or pre-alloyed bonds	 Bonds with high iron, cobalt or nickel	 Infiltration/liquid phase sintering	 Soft bronze bonds	 Allows brazing of synthetic diamond in air
<b>SINTERING</b>	Hot pressing	Free sintering	Infiltration sintering	Hot pressing or free sintering	Brazing

## **ELEMENT SIX**

Element Six is a synthetic diamond supermaterials company and a member of the De Beers Group of Companies.

Element Six designs, develops and produces synthetic diamond supermaterials, and operates worldwide with its head office registered in Luxembourg, and primary manufacturing facilities in China, Germany, Ireland, South Africa, US and the UK.

Element Six supermaterial solutions are used in applications such as cutting, grinding, drilling, shearing and polishing, while the extreme properties of synthetic diamond beyond hardness are already opening up new applications in a wide array of industries such as optics, power transmission, water treatment, semiconductors and sensors.

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