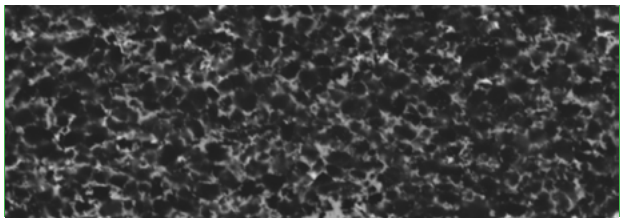
PCBN
Grade: DBS900

Key material characteristics

- Class: high content
- 90% vol cBN
- 2.5 µm avg. grain size
- Novel metal binder



Typical microstructure of DBS900

Ideal for applications where longer tool life is required. Excels in interrupted machining of grey and hard cast irons, hardened steel milling and in the machining of the majority of valve seat ring alloys. Excellent first choice grade for the majority of ferrous powder metals.

Sizes and format available

DBS900						
Conductive/non-conductive	conductive					
Outside disc diameter (mm)	75					
PCBN usable area (mm)	70					
PCBN layer	0.7					
Overall thickness (+/- 0.05 mm)						
1.00	1.60	2.38	3.18	4.76	6.35	7.94
	x	x	x	x		
Other sizes and formats available on request						

Application space

K01 - K30 Cast irons

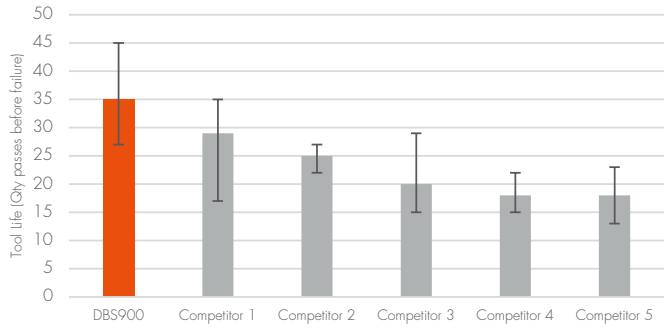
H25 - H30 Hard metals

S20 - S30 Superalloys and titanium

PM Powder metals

Performance data

The internal Element Six test mimics hardened steel milling, used to compare DBS900 to competitor high content PCBN materials. DBS900 provides superior tool life in a highly interrupted application, against competitors' grades.

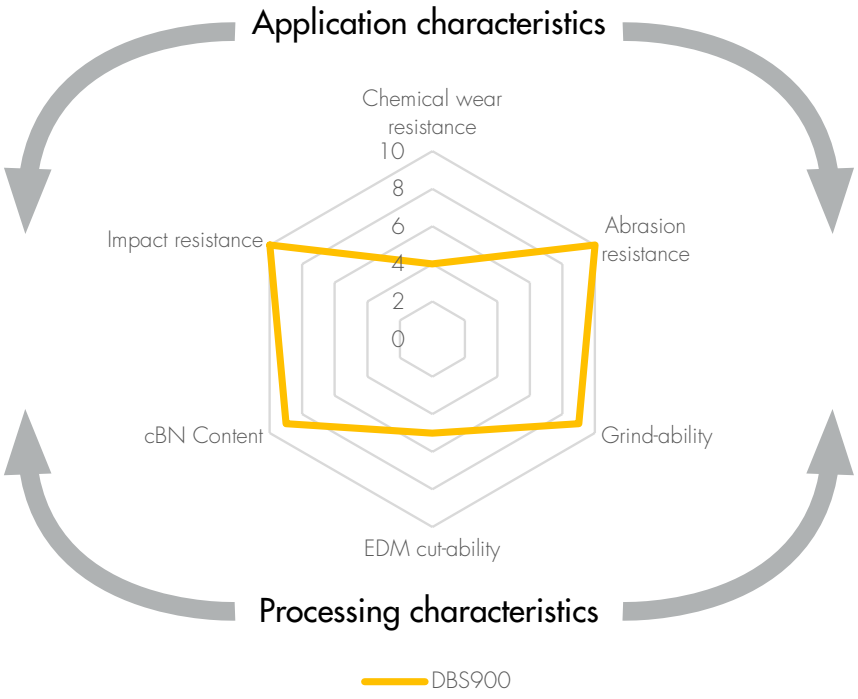


Work material	0.1 tool steel HRc 63 - 65 12 square inserts 26.5 mm side length
Conditions	v_c = 180 m/min f = 0.2 mm/rev a_p = 0.3 mm
Tool geometry	SNMN090408 S02020
Failure criteria	Edge fracture

PCBN application guide

Workpiece material	Grade recommendations	Cutting conditions						Edge geometry guide			
		Cutting speed, Vc (m/min)		Feed, f (mm)		Depth of cut, ap (mm)		Chamfer angle, Yb	Chamfer width, by (mm)	Edge radius (um)	Nose radius (mm)
		Min	Max	Min	Max	Min	Max	Recommended ranges			
Hardened steel	H30	130	250	0.05	0.5	0.05	0.3	20-35	0.12 - 0.2	15 - 35	0.4 - 1.6
Cast iron	K01 - K25	600	2500	0.1	2	0.1	5	15-25	0.2 - 1.0	0 - 20	0 - 3.2
Austempered Ductile Iron (ADI)	K10 - K20	150	500	0.15	0.5	0.15	0.5	15	0.1	10	0.8
White and chrome irons	K10 - K20	50	80	0.1	0.5	0.2	2	20-30	0.2 - 1.0	20 - 30	1.6+
Ferrous powder metals	PM	50	180	0.02	0.2	0.1	0.5	10-30	0 - 0.2	0 - 15	0 - 1.6
Superalloys	S20 - S30	50	150	0	0.3	0	1	0-20	0 - 0.3	20 - 40	1.6 - 3.2

Characteristics



Mechanical properties

Property	Grade: DBS900	Description
cBN content, vol %	90	Amount of cBN within the product
cBN size, µm	~ 2.5	Average grain sizes of cBN
Binder chemistry	Metal	Type of binder used
Density, g/cm^3	4.2	The substance's mass per unit of volume
Young's Modulus, E, GPa	-	How easily the material stretches or deforms under applied stress
Hardness HV1, GPA	40.2 ± 2.5	The resistance to localised plastic deformation
Transverse Rupture Strength, TRS 3-point bend, MPa	2040 ±185	The stress the material can withstand before it yields
Thermal diffusivity, mm^2/S	43.03	Measures the ability of the material to conduct thermal energy relative to its ability to store thermal energy
Specific heat capacity, J/(g*K)	0.53	The quantity of heat (J) absorbed per unit mass (kg) of the material when its temperature increased by 1 K (or 1 °C)
Thermal conductivity at 25 °C, W/(m*K)	94.10	The measure of the material's ability to conduct heat

All property measurements are carried out, where possible, in accordance with relevant international standards. The data quoted is for comparative purposes only and should not be viewed as a product specification. Element Six is constantly striving to improve its products and, therefore, reserves the right to alter product properties without prior notice.

Items available

Full round disc

Item code	Item description	Overall thickness, mm (solid product)
345-200-0014-01	DBS900-R70.0-360-1608 004	1.6
345-200-0015-01	DBS900-R70.0-360-2408 004	2.4
345-200-0016-01	DBS900-R70.0-360-3208 004	3.2
345-200-0017-01	DBS900-R70.0-360-4808 004	4.8

Additional sizes and shapes available upon request.

Contact: salesorders@e6.com
e6.com