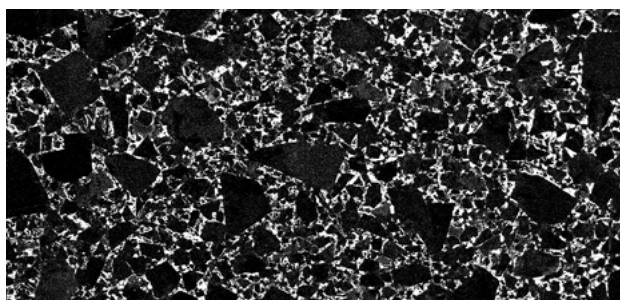


# PCBN

## Grade: AMK90

### Key material characteristics

- Class: high content
- 90% vol cBN
- 10 - 60 µm avg. grain size
- AlN binder



Typical microstructure of AMK90

For similar application areas as AMB90, but providing higher wear resistance. Exhibits particularly high performance in abrasive work materials such as high chrome cast irons. Usable edges on both faces of insert.

### Sizes and format available

AMK90						
Conductive/non-conductive				non-conductive		
Outside disc diameter (mm)				99		
PCBN usable area (mm)				97		
PCBN layer				solid		
Overall thickness (+/- 0.05 mm)						
1.00	1.60	2.38	3.18	4.76	6.35	7.94
			x	x		
Other sizes and formats available on request						

### Application space

H35

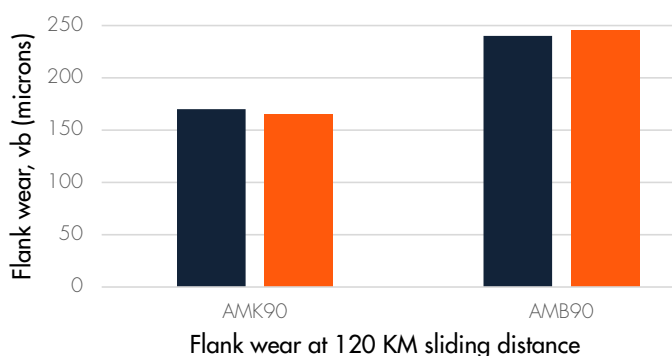
Hard metals

K01-K30

Cast irons

### Performance data

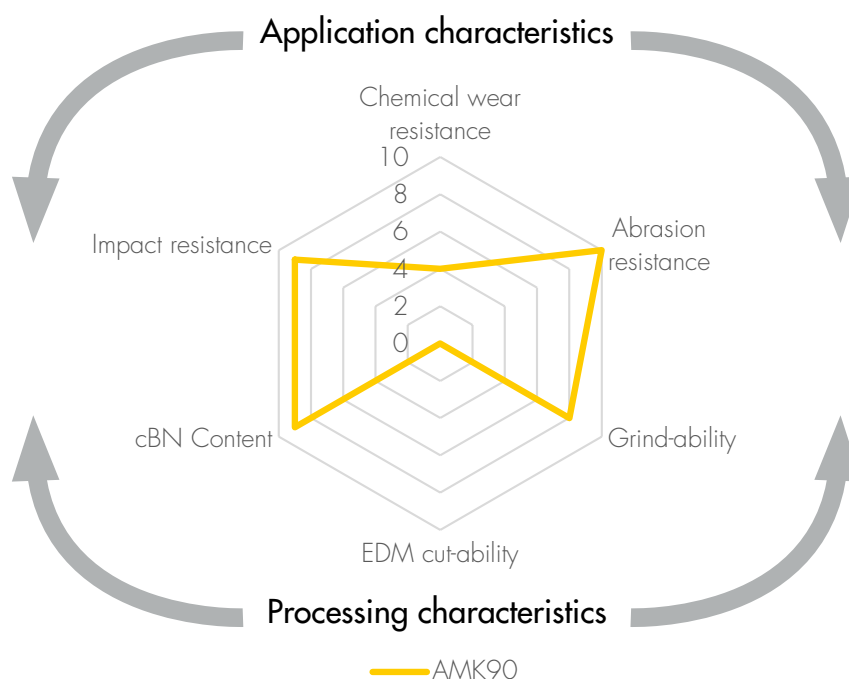
When machining a mildly interrupted brake disc of GG25 Cast Iron, AMK90 delivers a 30% improvement in flank wear resistance while maintaining a similar thrust force to AMB90. Cutting speed, Vc: 1,200 m/min, feed rate, f: 0.2 mm/rev and depth of cut, ap: 0.2 mm.



### 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 (µm)	Nose radius (mm)
		Min	Max	Min	Max	Min	Max	Recommended ranges			
Grey cast iron	K10-K25	600	2500	0.1	0.2	0.1	5.0	15 - 25	0.2 - 1.0	0 - 20	0 - 3.2
Austempered Ductile Iron (ADI)	K20-K30	200	400	0.2	0.4	0.2	0.4	25	0.3	20	1.6
White and chrome irons	K10-K30	50	100	0.1	2.0	0.2	3.0	20 - 30	0.2 - 1.0	20 - 30	> 9.0
Hard metals	H35 (hard milling)	100	190	-	0.5	-	0.3	25 - 35	0.1 - 0.2	10 - 30	0.4 - 3.2

## Characteristics



## Mechanical properties

Property	Grade: AMK90	Description
cBN content, vol %	90	Amount of cBN within the product
cBN size, $\mu\text{m}$	10	Average grain sizes of cBN
Binder chemistry	AlN	Type of binder used
Density, $\text{g}/\text{cm}^3$	3.39	The substance's mass per unit of volume
Young's Modulus, E, GPa	696	How easily the material stretches or deforms under applied stress
Hardness HV1, GPa	43.6	The resistance to localised plastic deformation
Transverse Rupture Strength, TRS 3-point bend, MPa	677	The stress the material can withstand before it yields
Thermal diffusivity, $\text{mm}^2/\text{S}$	65.7	Measures the ability of the material to conduct thermal energy relative to its ability to store thermal energy
Specific heat capacity, $\text{J}/(\text{g}^{\circ}\text{K})$	0.64	The quantity of heat (J) absorbed per unit mass (kg) of the material when its temperature increased by 1 K (or 1 $^{\circ}\text{C}$ )
Thermal conductivity at 25 $^{\circ}\text{C}$ , $\text{W}/(\text{m}^{\circ}\text{K})$	140.6	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)
370-200-0108-01	AMK90 R973-360 010	3.18
370-200-0158-01	AMK90 R974-360 010	4.76

### ISO segment shapes

Code	Description
370-300-0258-01	SNMN1203 G05
370-300-0274-01	SNMN0903 G05
370-300-0271-01	RNMN1203 G05
370-300-0338-01	RNMN0903 G05
370-300-0377-01	CNMN0903 G05
370-300-0261-01	TNMN1103 G05
370-300-0270-01	SNMN1204 G05
370-300-0250-01	SNMN0904 G05

Additional sizes and shapes available upon request.

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