

NOMINAL COMPOSITION

Grade	Co	WC
KAC89-AM-K	17	Balance

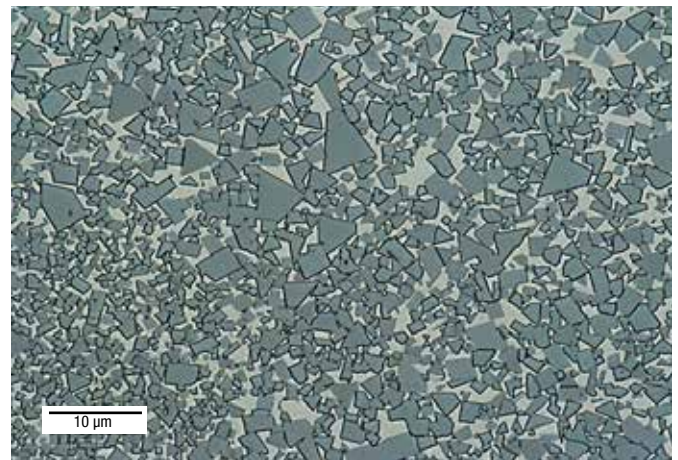


PRODUCT DESCRIPTION

Kennametal's first carbide grade specifically engineered and developed for the Additive Manufacturing of carbide components. The cobalt-based grade has physical and mechanical properties comparable to its conventional grade counterpart. This grade provides excellent wear- and erosion-resistant properties while still providing good strength and thermal properties.

PHYSICAL PROPERTIES

KAC89-AM-K	
Hardness (HRa)	85–87.4
Density (g/cc)	13.5–13.9
Coercive Force (Oe)	55–105
Porosity Rating (max)	A02B00C00



Micrograph of KAC89-AM-K

THERMAL PROPERTIES

	RT	100° C	300° C	500° C	700° C	900° C
Thermal Expansion Coefficient (um/mK)		5.7	6.2	6.4	6.8	7.1
Thermal Conductivity (W/mK)	114	105	89	79	73	64
Specific Heat (J/gK)	0.2	0.3	0.3	0.3	0.3	0.3

NOMINAL STRENGTH

Transverse Rupture Strength	ksi	MPa
Horizontal	445 ± 36	3070 ± 250
Vertical	437 ± 36	3010 ± 250

Compressive Strength	ksi	MPa
Horizontal	521 ± 22	3591 ± 150
Vertical	519 ± 22	3581 ± 150



NOMINAL MECHANICAL PROPERTIES AT ROOM TEMPERATURE

		Fracture Toughness B771		Young's Modulus	
		ksi in ^{0.5}	MPa m ^{0.5}	psi x 10 ⁶	GPa
KAC89-AM-K	Horizontal	16 ± 2	18 ± 2	82 ± 7	565 ± 50
	Vertical	16 ± 2	18 ± 2	83 ± 7	569 ± 50

CORROSION RESISTANCE

Reagent	Temp	Rating
5% HCl	104° F	G
10% H ₂ SO ₄	150° F	N
10% HNO ₃	150° F	N
10% NaCl	104° F	E

E = Excellent, less than 10 mdd (2 mpy).

G = Good Resistance, 11–100 mdd (2–20 mpy).

N = Not Recommended, >250 mdd (50 mpy).

WEAR RESISTANCE

		Printed
Wear Resistance (mm ³)	ASTM G65 @ 6000 revs	16 ± 5
Erosion Rate (mm ³ /kg)	ASTM G76	30 ± 6
	Modified G76*	4 ± 1

* Slurry erosion test utilizing silica sand at 2000 psi.

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