

NOMINAL COMPOSITION

Grade	Co-Ni-Cr-Mo	WC
KAR85-AM-K	13.5	Balance

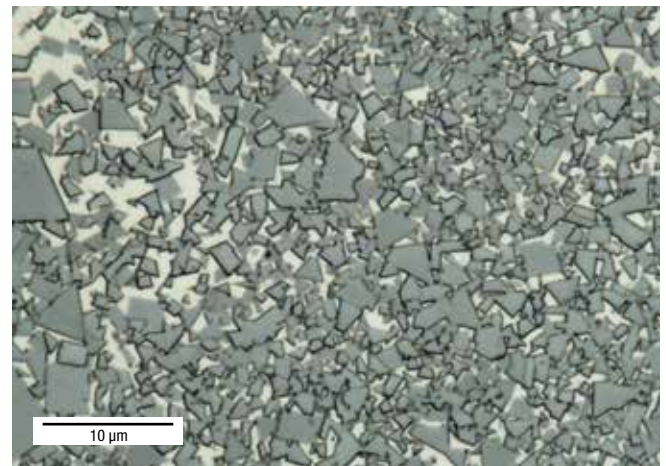


PRODUCT DESCRIPTION

Kennametal's second carbide grade specifically engineered and developed for the Additive Manufacturing of carbide components. The mixed binder 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 corrosion resistance, strength, and thermal properties.

PHYSICAL PROPERTIES

KAR85-AM-K	
Hardness (HRA)	88–89
Density (g/cc)	13.9–14.1
Porosity Rating (max)	A02B00C00



Micrograph of KAR85-AM-K

THERMAL PROPERTIES

	RT	100° C	300° C	500° C	700° C	900° C
Thermal Expansion Coefficient (μm/mK)	—	5.5	6.0	6.4	6.9	7.5
Thermal Conductivity (W/mK)	73	67	69	65	62	57
Specific Heat (J/gK)	0.2	0.2	0.3	0.3	0.3	0.3

KAR85-AM-K

NOMINAL STRENGTH

Transverse Rupture Strength	ksi	MPa
Horizontal	399 ± 36	2750 ± 250
Vertical	403 ± 36	2775 ± 250

Compressive Strength	ksi	MPa
Horizontal	623 ± 22	4296 ± 150
Vertical	633 ± 22	4356 ± 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
KAR85-AM-K	Horizontal	15 ± 2	16 ± 2	83 ± 7	507 ± 50
	Vertical	15 ± 2	16 ± 2	82 ± 7	565 ± 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	5 ± 2
Erosion Rate (mm ³ /kg)	ASTM G76	18 ± 5
	Modified G76*	3 ± 1

* Slurry erosion test utilizing silica sand at 2000 psi.

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