

material property

Carbide Grade	ISO-Classification	Co (%)	WC+other (%)	Density (g/cm³)	HV30	HRA	Bending strength (N/mm²)	WC Grain Size (μ m)	Notes	Recommended Applications
GK03M	K01	3.0	97.0	15.10	2020	94.5	2700	0.8	excellent abrasive wear resistance, good toughness	Appropriate for rotating tools in machining of hard woods, plastics, fiber reinforced composites and casting aluminum alloys.
GK05UF	K05/K10	5.0	95.0	14.82	2000	94.0	3600	0.4	excellent wear resistance, very good strength and toughness	Recommend for rotating tools for high speed machining hardening steels, plastics, fiber reinforced materials, and aluminum alloys. Highly recommend using in PCB router for routing difficult boards.
GK10UF	K05/K10	6.0	94.0	14.74	1900	93.6	3800	0.4	very good wear resistance, excellent balance of strength and toughness	Recommend for rotating tools for high speed machining plastics, fiber reinforced materials, and hardening aluminum alloys. Highly recommend using in PCB router and larger PCB drill (>0.6mm dia.) applications.
GK10A	K05/K10	6.0	94.0	14.75	2080	94.5	3600	0.4	ultra wear resistance with the highest hardness balanced by great	Recommend for rotating tools for high speed machining hardening steels, plastics, fiber reinforced materials, and hardening aluminum alloys. Highly recommend using in PCB router for routing very difficult boards.
GK10	K20	6.0	94.0	14.90	1500	91.0	3200	1.0	excellent toughness with very good wear resistance	Recommend using in rotating tools for milling, drilling and reaming at a high speed. Appropriate for machining of gray cast irons, chilled cast irons, steels, high silica aluminum alloys and graphite. Specially recommend using in diamond coated cutting tools.
GK20UF	K05/K30	8.0	92.0	14.65	1850	93.1	4000	0.4	super balanced hardness and strength	Recommend for rotating tools for high speed machining hardening steels, plastics, fiber reinforced materials, and aluminum alloys. Specially recommend using in small PCB drill (0.25-0.4mm in dia.).

GK20A	K05/K20	8.0	92.0	14.60	1890	93.6	3800	0.4	extremely high hardness supported with excellent strength and toughness	Recommend for rotating tools for high speed machining hardening steels, plastics, fiber reinforced materials, and aluminum alloys. Specially recommend using in small PCB drill (0.25-0.6mm in dia.) for the difficult boards.
GK33UF	K20/K30	10.0	90.0	14.35	1750	93.0	4000	0.4	extremely high hardness supported with excellent strength and toughness	Recommend using in rotating tools for high speed machining. Appropriate for machining hard steels, carbon steels, stainless steels, nickel-base alloys, titanium alloys, heat-resistant alloys, casting irons and the hard steels with HRC between 45-65.
GK30UF	K20/K30	10.0	90.0	14.45	1570	91.9	3800	0.7	good toughness and hardness	Recommend economically using in rotating tools for generally milling and drilling at a moderate speed. Appropriate for machining carbon steels, alloy steels, stainless steels, nickel-base alloys, titanium alloys, casting irons and the steels with HRC between 30-45.
GK40UF	K30/K40	12.0	88.0	14.10	1680	92.4	4100	0.4	excellent strength and toughness supporting very good wear resistance	Recommend using in rotating tools for high speed machining. Appropriate for machining glass fiber reinforced materials, carbon steels, stainless steels, nickel-base alloys, titanium alloys and the hard steels with HRC between 45-58.
GK44UF	K30/K40	12.0	88.0	14.05	1700	93.0	4100	0.4	excellent strength and toughness supporting excellent wear resistance	Highly recommend using in rotating tools for high speed machining. Appropriate for machining glass fiber reinforced materials, carbon steels, stainless steels, nickel-base alloys, titanium alloys, composite and the hard steels with HRC between 55-60 and the impact resistance needed.

material application. (◎Best; ○Better) 。

Grade	tools					material machined													
	router	drill	reamer	PCB drill	PCB router	mild steels	steels	hard steels	stainless steels	titanium alloys	nickel-base alloys	casting irons	aluminum alloy	copper alloys	wood	composite	acrylics	graphite	
GK03M					◎								◎	◎	◎	◎	◎		
GK05UF			◎	◎	◎								◎	◎	◎	◎	◎		
GK10UF	◎	◎	◎	◎	◎			○	○	◎	◎	○	◎	◎	◎	◎	◎		
GK10A	◎				◎			○	○	◎	◎	○	◎	◎	◎	◎	◎		
GK10	◎		◎			◎	◎	○	○	○	○	◎	◎	◎	○	◎	◎	◎	
GK20UF	◎	◎	◎	◎		○	○	◎	○	○	○		○	○					
GK20A		◎	◎	◎		○	○	◎	○	○	○		○	○					
GK33UF	◎		◎	◎		○	○	◎	◎	○	○	◎	○	○	○	○	○		
GK30UF	◎	◎				◎	◎	○	○	○	○	◎	○	○	○	○	○		
GK40UF	◎	◎	◎			◎	◎	○	◎	◎	◎	○	◎	◎	○	◎	◎		
GK44UF	◎	◎	◎			◎	◎	◎	◎	◎	◎	○	◎	◎	○	◎	◎		

material property and application.