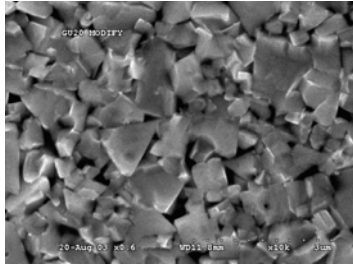
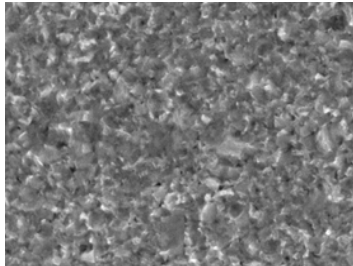
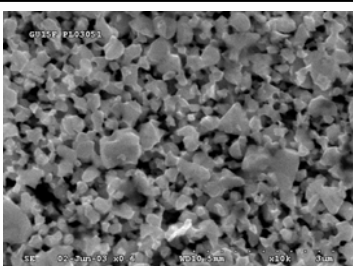
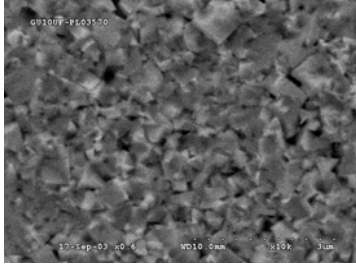
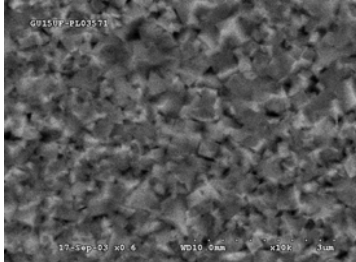
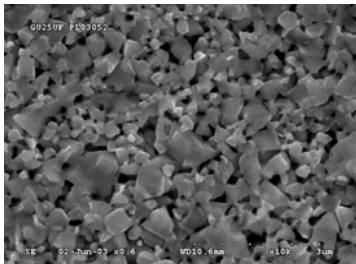


Ultramat ® GESAC cemented carbide rod grades, physical and mechanical properties, applications

Grade	(%) Chemical Composition			Hardness HRA±0.5	Density g/cm ³ ± 0.1	TRS* MPa Min	Grain size µm	Microstructure	Applications recommended
	WC	Co	Other						
GU20	89.5	10	0.5	91.8	14.40	3500	0.8		For making all micro-drills, twist drills, vertical milling cutters, indexable files, etc. For milling and drilling chilled cast iron, nodular cast iron, grey cast iron and heat-resisting alloy.
GU10F	93.5	6	0.5	93.5	14.80	3800	0.6		For Ø0.8-3.2mm drills and routers of printed circuit boards. For drilling, milling and routing of GRP composite and ceramic filled resin materials.
GU15F	91.4	8	0.6	93.0	14.65	4200	0.6		For Ø0.8-3.2mm drills and routers of printed circuit boards. For drilling, milling and routing of GRP composite and ceramic filled resin materials.

*Ground cylindrical test specimen 3.25mm dia. ×38mm long. Testing conditions according to ISO3327.

Grade	(%) Chemical Composition			Hardness HRA±0.5	Density g/cm ³ ± 0.1	TRS* MPa Min	Grain size µm	Microstructure	Applications recommended
	WC	Co	Other						
GU10UF	93.1	6	0.9	94.2	14.80	4000	0.4		For Φ0.8-3.2mm drills and routers of printed circuit boards For making other micro-drills, twist drills, vertical milling cutters, indexable files, etc.
GU15UF	91.0	8	1.0	93.8	14.60	4200	0.4		For micro-drills of printed circuit boards. For making other micro-drills, twist drills, vertical milling cutters, indexable files, etc.
GU25UF	86.9	12	1.1	93.0	14.10	4000	0.4		This cutting material is especially well suited for high cutting rates with high speed machining. For machining titanium alloys, heat-resistant alloys, stainless steels, hardened steels, grey cast iron, fiberglass reinforced plastics, etc.

*Ground cylindrical test specimen 3.25mm dia. ×38mm long. Testing conditions according to ISO3327.