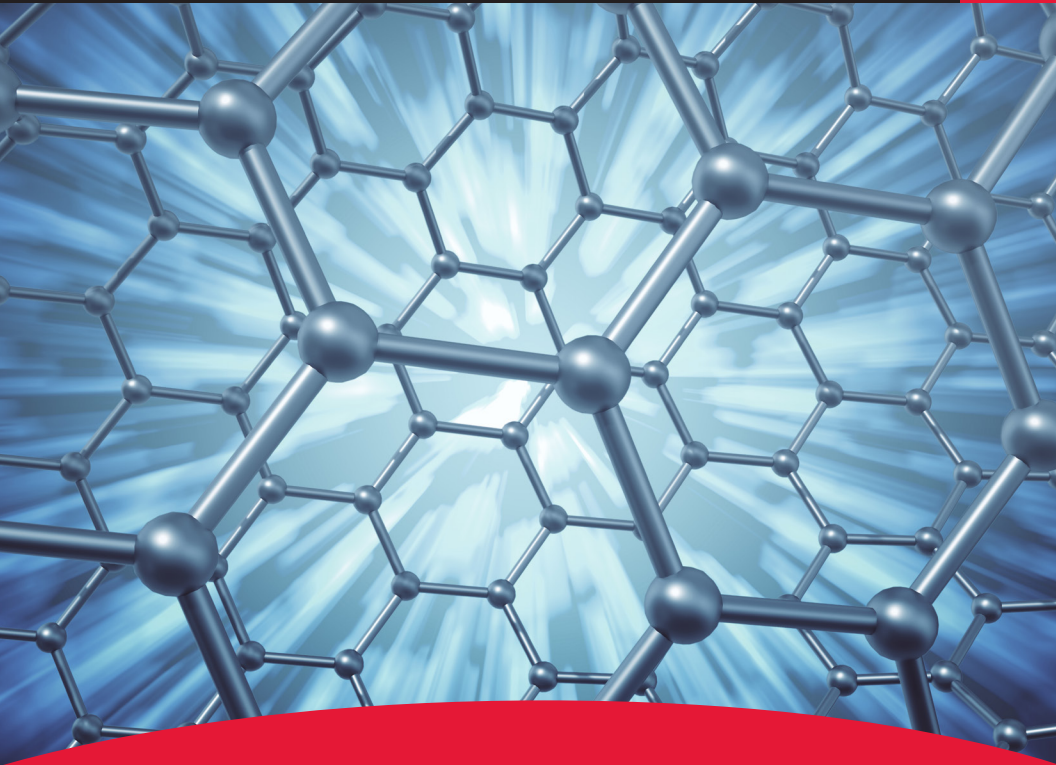




GENERALCARBIDE®

REDEFINING POSSIBLE



TUNGSTEN CARBIDE GRADES

From Powder to Polish

Specialty Grades

	CHEMICAL COMPOSITION WEIGHT PERCENT				HARDNESS (HRA)	DENSITY (g/cm ³)	AVERAGE TRANSVERSE RUPTURE STRENGTH (psi)
	WC	Co	TaC	Other			
GC-010CR*	89	10		1	91.9 - 93.4	14.12 - 14.38	530,000
GC-0004	89	7	4		91.7 - 93.2	14.65 - 14.87	465,000
GC015CR*	84	15		1	90.5 - 92.2	13.73 - 13.88	550,000
GC018CR*	81	18		1	89.3 - 90.8	13.46 - 13.61	550,000
GC-813CT*	86.5	10.5	2	1	90.0 - 91.5	14.17 - 14.37	460,000
GC-411CT*	86	11	2	1	89.1 - 90.6	14.11 - 14.32	490,000
GC-712C*	86	13		1	87.8 - 89.3	13.92 - 14.14	480,000
GC-613CT*	83	13	3	1	87.8 - 89.3	13.92 - 14.11	465,000
GC-415CT*	82	15	2	1	87.5 - 89.0	13.70 - 13.93	450,000
GC-618CT*	78	18	3	1	86.5 - 88.0	13.46 - 13.65	450,000
GC-420CT*	75	21	3	1	85.5 - 87.0	13.15 - 13.39	450,000
GC-425CT*	70	25	4	1	84.4 - 85.9	12.87 - 13.11	470,000
GC-432CT*	63	32	4	1	82.0 - 83.5	12.28 - 12.5	450,000

Nickel Grades

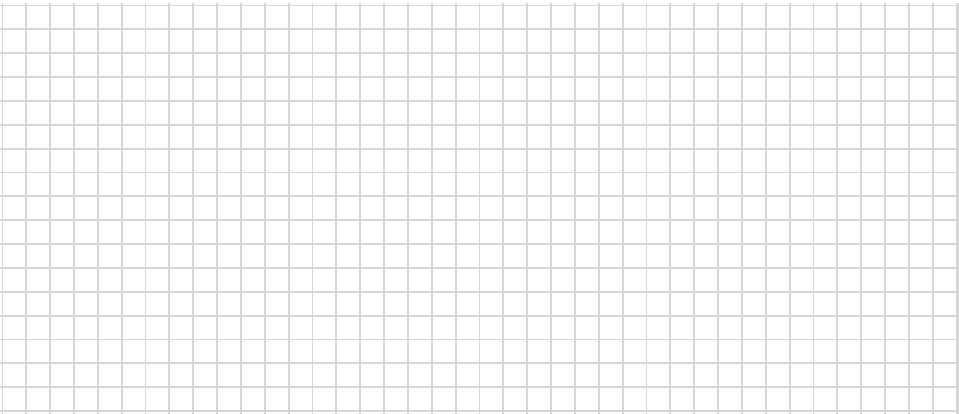
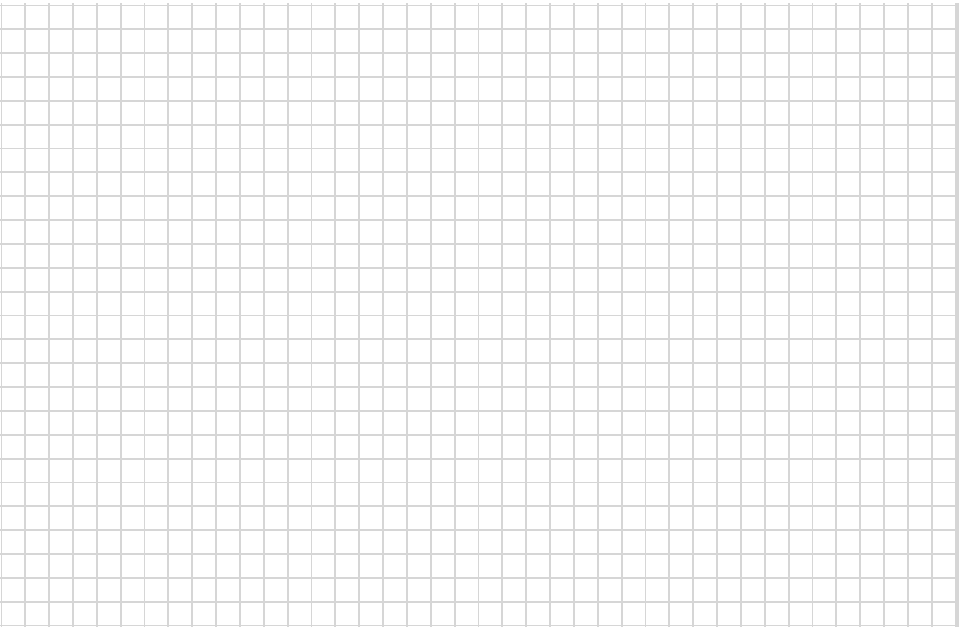
	CHEMICAL COMPOSITION WEIGHT PERCENT		HARDNESS (HRA)	DENSITY (g/cm ³)	AVERAGE TRANSVERSE RUPTURE STRENGTH (psi)
	WC	Ni			
GC-N061	92.5	7.5	90.6 - 92.1	14.64 - 14.86	400,000
GC-N101	90	10	89.0 - 91.0	14.39 - 14.59	425,000
GC-N121	88.5	11.5	87.5 - 89.5	14.25 - 14.45	410,000

* AVAILABLE IN WIRE EDM GRADE

Sinter-HIP process guaranteed



Notes



Standard Grades

	CHEMICAL COMPOSITION WEIGHT PERCENT			HARDNESS (HRA)	DENSITY (g/cm³)	AVERAGE TRANSVERSE RUPTURE STRENGTH (psi)
	WC	Co	Other			
Tungsten Carbide Grades with Cobalt Binder						
Ultrafine						
GC-012F*	87.5	12	0.5	92.2 - 93.7	14.04 - 14.24	475,000
GC-015F*	85	14.5	0.5	90.1 - 92.1	13.84 - 14.05	560,000
Submicron						
GC-005	94.5	5.5		93.0 - 94.5	14.82 - 15.04	445,000
GC-010*	90	10		91.5 - 93.0	14.32 - 14.56	520,000
GC-015*	85	15		89.4 - 91.0	13.82 - 14.05	535,000
Fine						
GC-106	94	6		91.2 - 93.0	14.79 - 15.02	510,000
GC-206	94	6		91.2 - 92.7	14.79 - 15.02	480,000
GC-209	91	9		90.5 - 92.0	14.49 - 14.70	515,000
GC-211*	89	11		89.8 - 91.3	14.29 - 14.49	530,000
Medium						
GC-313	87	13		88.0 - 90.5	13.90 - 14.30	515,000
GC-315	85	15		87.8 - 90.3	13.85 - 14.15	520,000
GC-320	80	20		85.1 - 86.6	13.46 - 13.64	470,000
GC-325	75	25		82.5 - 84.7	13.03 - 13.23	440,000
GC-330	70	30		81.4 - 82.9	12.61 - 12.82	420,000

* AVAILABLE IN WIRE EDM GRADE

Sinter-HIP process guaranteed



GENERALCARBIDE®

REDEFINING POSSIBLE

Definitions

WC: Tungsten Carbide

Co: Cobalt Binder

TaC: Tantalum Carbide

Ni: Nickel Binder

Cr: (Cr_3C_2) Chromium Carbide

Hardness: Measured using a Rockwell A Scale with a diamond penetrator in accordance with ASTM Standard B-294

Density: The measured mass per unit of volume tested in accordance with ASTM Standard B-311

Average Transverse Rupture Strength (TRS): The common method used to determine the mechanical strength of cemented carbide in accordance with ASTM Standard B-406

Grain Size: The average particle size (microns) in different grades of carbide

Ultrafine: 0.6 micron average grain size

Submicron: 0.8 micron average grain size

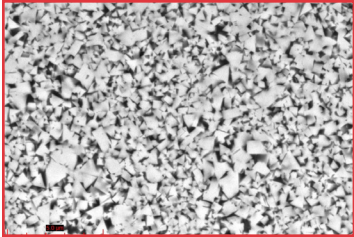
Fine: 1-2 micron average grain size

Medium Grain: 3-4 micron average grain size

Coarse Grain: 4-6 micron average grain size

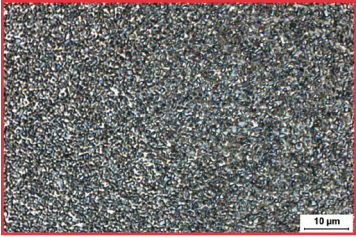
Photo Micrographs

Ultra Fine



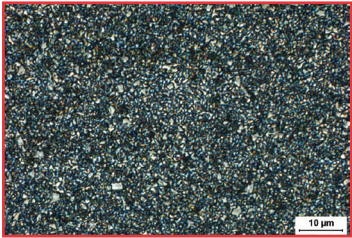
SEM Photograph

Submicron



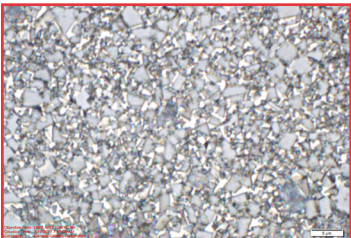
GC-010

Fine



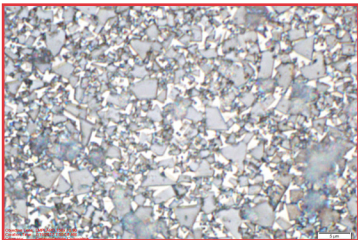
GC-0004

Medium



GC-411CT

Coarse



GC-613CT

SETTING THE STANDARD FOR EXCELLENCE IN TUNGSTEN CARBIDE TOOLING

General Carbide is a vertically integrated manufacturer of finished tooling for a wide range of industrial wear and metalforming applications. The company also produces many grades of tungsten carbide and shapes, sinters and finish-grinds the material to customers' specifications. We employ more than 250 highly-skilled professionals in our production operations. They enable us to sell our products throughout the United States, Canada, Mexico, Europe and Asia. The company was established in 1968 and is headquartered in Greensburg, PA, near Pittsburgh.

As a woman-owned business, General Carbide has achieved certification from the Women's Business Enterprise National Council (WBENC).



GENERALCARBIDE®

REDEFINING POSSIBLE™

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USA

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