Tungsten Carbide Grade Chart

Cemented carbide (WC-Co/Ni) typical properties — all grades HIP sintered · Typical values, not guaranteed minima

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Product family	ISO	Grade	Binder %	Grain μm	Density g/cm³	Hardness HRA	Hardness HV30*	TRS MPa	Typical applications
Carbide rods (endmills, drills)	K20–K40	**YU20**	10	0.7	14.45	91.8	1610	3800	Endmills & drills: alloy steel, aluminium, heat-resistant alloys, cast iron
	K05–K10	**YU092**	9	0.2	14.44	94.0	2010	4100	Finishing hardened steel (>HRC 58), high-gloss surfaces
	K20–K40	**YU25UF**	12	0.4	14.10	92.6	1720	4200	Milling stainless steel, Ti alloys, superalloys, HRC 50–58
	K05–K10	**YU10UF**	6	0.4	14.80	94.0	2010	3800	PCB tools, gravers, composite finishing
Dies & EDM blocks (stamping)	—	**YF40H**	12.5	1.0–2.0	14.20	89.5	1300	3700	Silicon-steel high-speed stamping dies (motor rotors)
	—	**YF50H**	14	1.5–3.0	14.00	88.5	1180	3800	Complex rotor cores, brushless/servo motors
	—	**YA20**	13.5	0.5–1.5	14.50	90.0	1360	3700	Copper & thin stainless stamping dies
	—	**YA30**	12	1.0–2.0	14.17	91.2	1520	3600	High-speed precision stamping ≤0.2 mm strips
Wear parts & saw tips	—	**YF06N**	6 Ni	1.5	15.00	92.5	1710	2050	Corrosive service: seals, valve balls, acid pumps
	K10	**YG6**	6	1.5	15.50	92.5	1710	2720	Saw tips, nozzles, low-stress wear parts
	K20	**YG8**	8	1.5	14.70	90.0	1360	2900	General wear parts, plates, saw tips
	K40	**YG15**	15	1.5	14.05	87.0	1070	2700	High-stress structural components
	G40	**YG20**	20	1.5	13.60	85.0	910	2500	Stamping / battery-shell dies, cold heading
Roll rings (steel industry)	—	**YGR20**	10.5	3.0	14.50	84.0	840	2400	Roll rings: 13–14 finishing; 17–18 reducing/sizing mill
	—	**YGR30**	15+Oth	3.0	14.00	84.5	880	2350	Roll rings: 10–12 finishing
	—	**YGR40**	18+Oth	3.0	13.70	83.0	770	2200	Roll rings: 8–9 finishing
	—	**YGR45**	20+Oth	3.2	13.60	82.0	690	2150	Roll rings: 5–7 finishing
	—	**YGR55**	25+Oth	3.2	13.10	79.5	550	2100	Pre-finishing mill, 1–4 passes
	—	**YGR60**	30+Oth	3.5	12.65	77.5	420	2000	Intermediate mill, threaded steel bars (rebar)
Mining tools	—	**YK06**	6	Fine	14.95	90.0	1360	2600	DTH bits, medium-hard rock
	—	**YK10**	10	Medium	14.50	88.0	1160	2850	Cone bits & reamer bits, medium-hard rock
	—	**YK11**	11	Medium	14.40	87.7	1130	2900	Large-diameter cone bits
Cold heading & forming tools	—	**CG5**	12	Medium	14.30	88.3	1190	3300	High-toughness cold heading dies
	—	**CG6**	14	Medium	14.12	87.3	1090	3140	High-toughness cold heading dies
	—	**CA18**	18	Coarse	13.75	85.1	920	2940	Screw dies, bore <Ø20
	—	**CA24**	24	Coarse	13.25	82.5	730	2650	Screw dies Ø20–Ø50
	—	**CT15**	5	Coarse	13.80	86.0	990	2700	Stainless screw dies, bore <Ø2
	—	**CT20**	20	Coarse	13.60	84.5	880	2660	Stainless screw dies, bore >Ø2
	—	**CA20**	20	Coarse	13.55	84.1	850	2740	Warm / hot forging dies
Binderless WC	—	**YC55**	0	0.1	15.20	—	2700 (HV)	1500	Blanks & preforms, nozzles, optics molds

Product family	ISO	Grade	Binder %	Grain µm	Density g/cm³	Hardness HRA	Hardness HV30*	TRS MPa	Typical applications
	—	**YC25**	0	0.1	14.30	—	2400 (HV)	2000	Binderless blanks & preforms

Note on data: * HV30 values are typical figures converted from HRA by standard hardness-scale conversion (rounded to the nearest 10 HV); binderless grades are listed by measured HV. All values are typical, not guaranteed minima, and may vary slightly between production batches. Certified density, hardness (HRA/HV), TRS and magnetic-saturation data accompany every batch datasheet. Grain-size classes: N <0.2 | U 0.2–0.5 | S 0.5–0.8 | F 0.8–1.3 | M 1.3–2.5 | C 2.5–6.0 | E >6.0 µm.