



14. CARBIDE TOOL



Tungsten Carbide Grade Specification - CB Standard

Grade Series	Grade	WC (±0.5%)	Co (±0.5%)	Grain Size (µm)	Density (g/cm ³)	Hardness (HRA)	TRS (kgf/mm ²)	Compressive Strength (kgf/mm ²)	Thermal Expansion (Cal/cm sec)	Impact Strength (kgf-m/cm ²)	Thermal Conductivity (Cal/cm sec)
Metal Forming Tools	KG05	96	4	0.8-2	15.05	92.5	280	600	4.7	0.20	0.19
	KG1	95	5	1-2	15.00	92.0	310	580	4.8	0.26	0.19
	KG2	94	6	2-3	14.90	90.5	340	530	5.0	0.128	0.19
	KG3	91	9	2-3	14.61	89.3	350	500	5.2	0.52	0.17
	KG4	88	12	1-2	14.31	89.3	360	550	5.3	0.55	0.17
	KG5	88	12	2-3	14.31	88.3	350	470	5.4	0.58	0.17
	KG6	86	14	2-3	14.12	87.3	350	410	5.5	0.65	0.17
Impact Resistant Forging Tools	KG7	85	15	1	13.95	89.3	360	420	5.8	0.70	0.17
	ST6	85	15	3-6	13.80	86.0	270	370	5.6	0.78	0.16
	ST7	80	20	2-6	13.40	85.3	270	320	6.0	0.78	0.16
	EA65	82	18	2-6	13.75	85.0	300	380	6.0	0.80	0.16
	EA90	76	24	2-6	13.22	83.0	270	330	6.4	0.90	0.15
	VA70	85	15	3-6	14.02	85.0	270	370	5.6	0.78	0.17
	VA80	80	20	3-6	13.58	84.0	280	320	6.0	0.85	0.16
Non-Magnetic	VA90	78	22	6-9	13.39	82.5	240	310	6.2	0.90	0.16
	VA95	75	25	6-9	13.12	81.5	220	290	6.4	0.95	0.15
	NA10	91	9%Ni	0.8	14.40	91.7	280	400	5.2	0.20	0.17
ISO K Series	NA30	86	14%Ni	2-3	14.15	86.5	260	370	5.4	0.39	0.16
	NA70	80	20%Ni	2-3	13.60	82.0	240	330	5.6	0.55	0.16
	KR10	94	6	1	14.80	92.2	300	590	4.6	0.30	0.19
	KR15	93	7	1.5	14.75	91.8	300	50	4.7	0.33	0.18
Sub-Micron	KR20	93	7	1.5	14.75	91.3	300	550	4.7	0.35	0.18
	SK25	93	7	1-3	14.80	90.2	300	530	4.8	0.45	0.18
	WF03	95	5	≤0.6	14.80	94.0	360	600	4.6	0.20	0.19
	UF03	94	6	≤0.6	14.70	94.5	360	620	4.7	0.20	0.19
	WF05	93	7	≤0.6	14.60	93.0	360	620	4.7	0.20	0.19
	WF10	90	10	0.6	14.35	92.5	360	610	4.9	0.25	0.18
	WF15	90	10	0.7	14.35	91.8	380	580	5.2	0.30	0.18
	K200	90	10	0.7	14.40	91.5	380	580	5.2	0.30	0.18
	WF20	88	12	0.7	14.12	91.3	370	560	5.4	0.33	0.17
	WF25	88	12	0.6	14.12	92.5	380	570	5.5	0.35	0.17
Mining Tools	WF30	87	13	0.8	14.15	90.0	360	520	5.6	0.38	0.16
	WF40	85	15	0.8	13.95	90.0	360	500	5.8	0.40	0.15
	KE8	92	8	3-6	14.73	88.5	250	410	5.1	0.60	0.18
	KE9	91	9	3-9	14.61	87.8	260	400	5.2	0.67	0.18
	KE10	90	10	3-6	14.50	87.0	270	400	5.3	0.65	0.17
	KE11	89	11	3-9	14.42	86.5	270	390	5.4	0.72	0.17
	KE12	88	12	3-9	14.31	87.0	260	380	5.5	0.75	0.17
	KE13	87	13	6-9	14.22	85.5	280	360	5.6	0.80	0.17
Saw Tips	KE16	84	16	2-6	14.00	85.5	280	350	5.8	0.83	0.17
	KE18	82	18	6-9	13.75	83.5	270	320	6.0	0.85	0.17
	W05	97	3	0.6-0.8	15.05	94.5	260	600	4.4	0.20	0.20
	W2	97	3	1-3	15.08	93.0	280	600	4.5	0.20	0.20
	W3	95	5	1-3	14.90	92.0	280	580	4.6	0.30	0.19
	W4	94	6	1-3	14.80	91.0	310	550	4.7	0.35	0.18



Tungsten Carbide Grade Specification - CC Standard

Grade	Average Grain Size	Density	Hardness	Transverse Repture Strength	Linear Expansion Coefficient	Impact strength	Applications
CC	µm	g/cm³	HRA	Kgf/mm²	- °C	Kg/cm²	
C TYPE							
C 01	1~2	15.00	90~90.5	300	5.0X10	0.26	Wire Drawing Die, Nozzle, Powder Moulding, wear-resistant Tool, Electronic tool.
C 02	1~3	14.90	89~90	320	5.2X10	0.28	
C 03	1~3	14.61	88.5~89	330	5.8X10	0.52	
C 27	3~7	14.00	85~85.5	270	5.6X10	0.80	Heat-resistant Die, Hot Forging Die
C 28	3~7	13.58	85~85.5	270	5.6X10	0.80	Stainless Steel Screw Die, Self-drilling Die
C 29	1~3	13.90	87.5~88	270	5.6X10	0.75	Cold Forging Die, Screw Die.
SL TYPE							
SL55	2~3	14.30	87.8~88.3	350	5.8x10	0.70	Screw Die, Nut Die, Screw Triangle Die, Cutting Die, Impact Resistant Forging Tool, punch Tool
SL65	2~6	13.74	86~86.5	300	5.8x10	0.80	
SL75	3~6	13.43	84.7~85.2	280	6.0x10	0.82	
SL85	3~6	13.30	83.5~84	270	6.0x10	0.82	
SL95	6	13.35	82.3~82.8	250	6.0x10	0.85	
E TYPE							
E 36	0.5~1.5	13.85	86.5~87	290	5.6X10	0.80	Stainless Steel Cutting Die, Shock-resistance Tool
E 40	2~5	13.39	85.2~85.7	270	6.0X10	0.82	Stainless Steel Screw Die
E 55	7	13.35	82.3~82.8	250	6.3X10	0.95	Impact Resistant Forging Die

Rods Material Grade				
Grade	Hardness	Transverse Repture Strength	The Percentage of cobalt	Average Grain Size
CC	HRA	Kgf/mm²	%	µm
JH1	91.8	420	10	0.8
JH2	92	410	12	0.6
JH3	92.5	420	13	<0.6
JH4	92.2	400	12	0.6
Blanks Material Grade				
Grade	Hardness	Transverse Repture Strength	The Percentage of cobalt	Average Grain Size
CC	HRA	Kgf/mm²	%	µm
NC1	90	360	14	0.6~0.8
NC2	89	380	15	0.8~1.0
NC3	88	350	12	2.0~3.0