



Cemented Carbide

Balls

T&D Materials manufactures and supplies **cemented tungsten carbide balls** and **cemented titanium carbide balls** ranging from 0.5mm(0.020”) to 57.15mm(2 1/2”). They can be used for **valves, flow meters, ball screws and linear bearings, ballizing, gauging and ballpoint pens.**



Grade and Binder Options

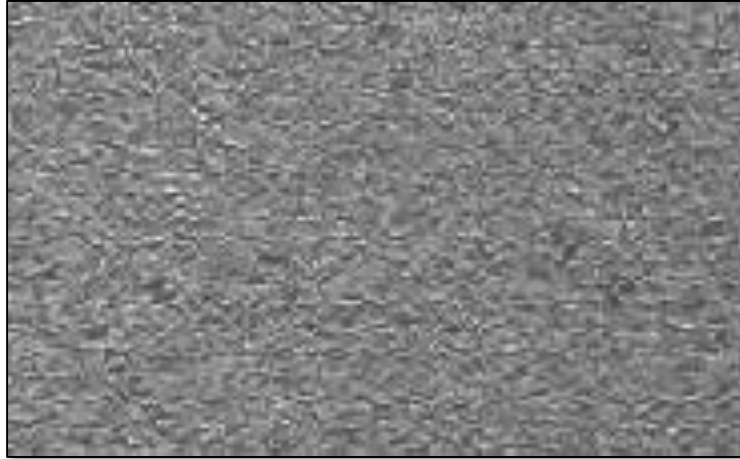
GRADE	BINDER
5	Cobalt or Nickel
10	Cobalt or Nickel
25	Cobalt or Nickel
100	Cobalt or Nickel

Properties of Our 94%WC + 6%CO Carbide Balls

Hardness	92Ra
Density	14.95 g/cc
Transverse Rupture Strength	210,000psi
Ultimate Compressive Strength	790,000psi
Ultimate Tensil Strength	210,000psi
Ductility	0.2%



Grade and Property



GU	Ultra-Fine and Sub-Micron Grain Carbide
GK	Ultra-Fine and Sub-Micron Grain Carbide
GF	Carbide for General Purpose of Wear Resistance and Forming Dies.
GD	Carbide for Mining and Construction.
GT	Carbide for Steel Cutting.

GRADE DETAILS AND PROPERTIES

Grade	Equivalent Grade	ISO grade	WC %	Co %	TiC %	TaC %	Other %	Hardness HRA ±0.5	Density g/cm ³ ±0.1	TRS Mps Min	Characteristics & Application
GU15UF	YG8X		90.5	8.0			1.5	93.2	14.60	3500	Ultra-fine grain, for fibreglass reinforced plastics, titanium alloys, hardened steel.
GF25UF	YG12X		86.0	12.0		1.2	0.8	93.0	14.10	4000	Ultra-fine grain, for grey cast iron & heat_resistant alloys.
GU10	YG6X	K01	94.0	6.0				93.0	14.85	2700	Sub-micron grain, for non-ferous precision cutting and wood cutting.



GRADE DETAILS AND PROPERTIES

Grade	Equivalent Grade	ISO grade	WC %	Co %	TiC %	TaC %	Other %	Hardness HRA ±0.5	Density g/cm ³ ±0.1	TRS Mps Min	Characteristics & Application
GU20	YG10X	K20	90.0	10.0				92.0	14.45	3400	Sub-micron grain,for endmill and drill.
GU30	YG13X	K20	86.5	13.5				90.5	14.00	3500	Sub-micro grain,excellent wear resistance and toughness,for wood cutting.
GK02	YG4	K02	96.0	4.0				92.5	15.15	2300	Fine grain,for hard grey cast iron precision cutting.
GK05	YG6A	K10	94.0	6.0				92.0	14.95	2450	Fine grain,for drawing dies and wood cutting.
GK10	YG6X	K10	94.0	6.0				91.5	14.95	2500	Fine grain,for general purpose of non-ferrous applications
GK20	YG6	K20	94.0	6.0				91.0	14.95	2600	Medium grain,for non-ferrous rough cutting.
GK30	YG8	K30	92.0	8.0				90.0	14.70	2700	Medium grain,for drawing dies.
GK40	YG9	K40	91.0	9.0				89.0	14.60	2800	Medium grain,for soft grey cast iron cutting.
GF20	YG6		94.0	6.0				90.0	14.95	2600	Medium grain,high anti-abrasion for mining inserts.
GF25	YG8		92.0	8.0				89.5	14.70	2750	Medium grain,high anti-abrasion and good toughness,for percussion bits.
GF25D	YG8		92.0	8.0				89.0	14.70	2800	Coarse grain,for mining and construction inserts.
GF35	YG11	K40	89.0	11.0				88.5	14.45	2900	Medium grain,for wear parts and mining tools.
GF40	YG12	K40	88.0	12.0				89.0	14.40	3000	Medium grain, for heavy roughing non-ferrous.
GF45	YG13	K40	87.0	13.0				88.5	14.20	3100	Medium grain,for wear and light shock resistance.



GRADE DETAILS AND PROPERTIES

Grade	Equivalent Grade	ISO grade	WC %	Co %	TiC %	TaC %	Other %	Hardness HRA ±0.5	Density g/cm ³ ±0.1	TRS Mps Min	Characteristics & Application
GF55	YG18C		82.0	18.0				85.5	13.85	3000	Coarse grain, for impact resistance forging dies & roll.
GF60	YG20C		80.0								Coarse grain, for φ20-φ50 bolt header dies.
GF65	YG22C		78.0	22.0				84.0	13.40	2700	Coarse grain, for stainless bolt header dies and roll.
GF70	YG25		75.5	24.5				82.5	13.18	2500	Coarse grain, for nut forming dies.
GF70A	YG25C		75.0	25.0				81.5	13.15	2400	For high impact resistance forging dies.
GD10	YG6C		94.0	6.0				89.0	14.95	2500	Coarse grain, for percussion bits and inserts for hard rock or coal mining.
GD20	YG8C		92.0	8.0				88.5	14.70	2700	Coarse grain, for percussion bits and mining inserts.
GD25	YG10C		90.0	8.0				88.5	14.70	2700	Coarse grain, for oil bits and mining inserts.
GD40	YG13C		87.0	13.0				96.5	14.20	3200	Coarse grain, good toughness, for oil bits.
GD50	YG15C		85.0	15.0				86.0	14.00	3100	Good wear & impact resistance, for forming die and oil bits.
GT20		P20	72.0	8.0	8.0	12.0		92.2	12.55	1900	Good general purpose for turning and finishing of ferrous metal.
GT30		P30	75.8	8.0	6.2	10.0		91.5	12.90	2100	Excellent general purpose for rough machining of ferrous metal.
GT40		P40	80.0	10.0	5.0	5.0		90.5	13.10	2200	Good impact resistance, for rough cutting of ferrous metal.