

TUNGSTEN CARBIDE (WC) K20 Co BINDER (ALLOY) BALLS

K20 WC balls are used in applications where extreme hardness and resistance to wear, abrasion, collision and deformation are required. Virgin powder is strictly used into this production. As a general rule Tungsten Carbides with Cobalt binder show good corrosion resistance into basic solution while they are not resisting into acid solutions.

Applications

Special and hydraulic precision valves, special bearings, couplers, flow meters, sprayers, recirculating balls, ball splines, tool machines, sliding rails, ballpoint pens, pin and tips for indicators, precision measurement instruments, medical instruments. They are used in naval, mining, petrol and coining industry.

Chemical composition

Type	%WC	%Co	-	-	-	-	-	-	-
WC20	93.00-95.00	5.00-7.00	-	-	-	-	-	-	-

International standards

Type	ISO	USA	CHN	-	-	-	-
WC20	K20	C1	YG6	-	-	-	-

Physical / mechanical / thermal / electric / magnetic properties

Property	Symbol	U.o.M.	Type	Notes	Values
Density	δ	[g/cm ³]	Physical	Room temp.	14.95
Young's modulus	E	[GPa]	Mechanical	-	650
Specific heat	c	[J/kg-K]	Thermal	Room temp.	225
Coefficient of linear thermal expansion	α	[10 ⁻⁶ /°C]	Thermal	($\Delta T=0-100^\circ C$)	5.2
Thermal conductivity	λ	[W/(m·K)]	Thermal	Room temp.	83.0
Electric resistivity	ρ	[$\Omega \cdot m \cdot 10^{-9}$]	Electric	-	180
Relative magnetic permeability	μ	-	Magnetic	Slightly ferrom.	max 12

Technical data

Property	Type	U.o.M.	Values	U.o.M.	Values
Grain size	Physical	[μm]	~ 1.2	-	-
Hardness	Mechanical	[HRA]	90.0 - 91.5	[HV]	1550 - 1780
Ultimate compressive strength	Mechanical	[MPa]	4600 - 5800	[psix10 ³]	797 - 841
Service temperature	Thermal	[°C]	-196 / 500	[°F]	-320.8 / 932

Range

Diameters (min/max)	U.o.M.	Diameters (min/max)	U.o.M.	Precision grades (ISO 3290 / AFBMA)
0.300 - 127.000	[mm]	1/64 - 5	["]	G5-10-16-20-25-28-40-60-100

