

**TUNGSTEN  
COPPER**  
Technical Datasheet



DIN-Material-No. Code	Chemical Composition (weight %)		Standard-Classification	
	W	Cu		
TUCO 80/20	80	20	as to ISO 5182	Group B, Class 11
TUCO 75/25	75	25	as to ISO 5182	Group B, Class 10
TUCO 70/30	70	30		

Material Characteristics	A powder-metallurgical produced tungsten-copper composite material. It combines tungsten's high resistance to arc erosion with the extremely good electrical conductivity of copper in the matrix..			
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Applications	<ul style="list-style-type: none"> <li>• Electrodes for projection- and butt-welding</li> <li>• Electrodes for electrical riveting</li> <li>• Wear resistant electrodes for EDM-sinking.</li> <li>• High performance contacts for hot upsetting machines</li> </ul>			
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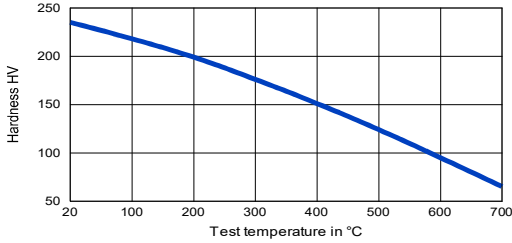
  

Mechanical Values			TUCO 80/20	TUCO 75/25	TUCO 70/30
	Hardness	HV		230	200
Tensile strength	N/mm <sup>2</sup>		490	440	390
Modulus of elasticity	kN/mm <sup>2</sup>		230	225	225

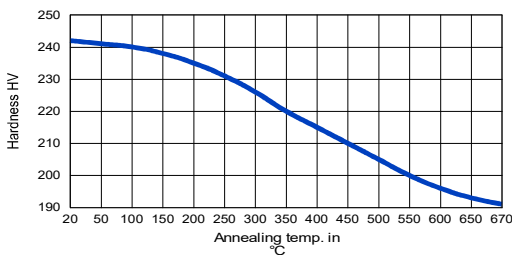
  

Physical Properties			TUCO 80/20	TUCO 75/25	TUCO 70/30	
	Electrical conductivity 293 K (20 °C)	m/Ω.mm <sup>2</sup>		15	22	29
	Electrical resistance 293 K (20 °C)	Ω.mm <sup>2</sup> /m		0,07	0,04	0,03
	Coefficient of electrical resistance	1/K		-	-	-
	Coefficient of thermal expansion	1/K		-	-	-
	Thermal conductivity 293 K (20 °C)	W/m.K		130	140	150
Density	g/cm <sup>3</sup>		15,3	14,6	14,0	

Hardness at elevated temperatures  
from TUCO 80/20



Softening from TUCO 80/20



\*) Vickers hardness at R.T. after 5 hours anneal, air cooling.

## Machining Instructions

Drilling	Tungsten Carbide ISO K 05	Twist drills in acc. with DIN 338
Cutting speed (m/min)	40	15 - 20
Lip angle	118 – 120°	like steel machining
Machining	dry	dry

Turning	Tungsten Carbide ISO K 05
Cutting speed (m/min)	80 – 120
Rake angle	6 – 10°
Clearance angle	7 – 10°
Feed at depth of cut	what ever is choosen
Lubricant	No, dry mashining

Milling	Tungsten Carbide ISO K 10 or K 05
Cutting speed (m/min)	80 – 100
Rake angle	10°
Clearance angle	12°
Angle of incidence	6°
Setting angle at main tooth	45°
Machining	dry

Grinding	Silicon Carbide Wheels
Hardness	J, K
Structure	medium
Binder	ceramic
Cutting speed (m/sec)	30
Infeed	max. 0,02 mm
Machining	cooling with soluble oil coolant mixtures

All statements as to the properties or utilization of the materials and products mentioned in this data sheet are only for the purpose of description. Guarantees in respect of the existence of certain properties or utilization at the material mentioned are only valid if agreed upon in writing.