

## Technical Datasheet

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

### Material-Properties

A powdermetallurgically produced tungsten-copper composite material. It combines tungsten's high resistance to arc erosion with the extremely good electrical conductivity of copper in the same material.

### Applications

- Electrodes for projection- and butt-welding
- Electrodes for electrical riveting
- Wear resistant electrodes for sparc erosion
- High performance contacts for hot upsetting machines

### Mechanical Properties (Reference values)

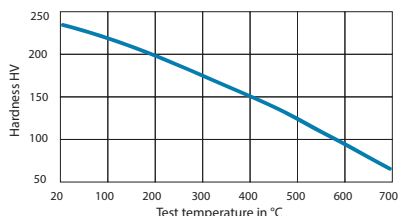
		TUCO 80/20	TUCO 75/25	TUCO 70/30
Hardness	HV	230	200	170
Tensile strength	N/mm <sup>2</sup>	490	440	390
Modulus of elasticity	kN/mm <sup>2</sup>	230	225	225

### Physical Properties

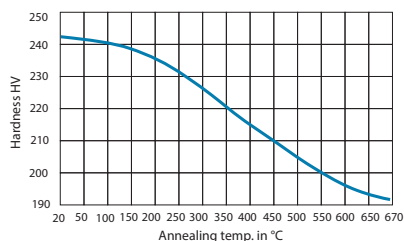
Electrical conductivity 20 °C (293 K)	$\frac{m}{\Omega \cdot mm^2}$	15	22	29
Electrical resistance 20 °C (293 K)	$\frac{\Omega \cdot mm^2}{m}$	0.07	0.04	0.03
Coefficient of electrical resistance	$\frac{1}{K}$	-	-	-
Coefficient of thermal expansion	$\frac{1}{K}$	-	-	-
Thermal conductivity 20 °C (293 K)	$\frac{W}{m \cdot K}$	130	140	150
Density	g/cm <sup>3</sup>	15.3	14.6	14.0

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Hardness at elevated temperatures  
from TUCO 80/20



Softening from TUCO 80/20



## 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 with 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
Machining	dry

Milling	Tungsten Carbide ISO K 10 or ISO 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
Grain size	40 – 120
Structure	medium
Binder	ceramic
Cutting speed m/sec.	30
Infeed	max. 0,02 mm
Machining	cooling with soluble oil coolant mixtures