

ALLOY W-Cu

Technical Datasheet

| DIN-Material-No. | Code | Chemical Composition (weight %) | | Standard-Classification | |
|--------------------------|--|------------------------------------|------------|-------------------------|--------------------|
| | | W | Cu | | |
| | W-Cu 80/20 | 80 | 20 | as to ISO 5 182 | Group B, Class 1 1 |
| | W-Cu 75/25 | 75 | 25 | as to ISO 5 182 | Group B, Class 1 0 |
| | W-Cu 70/30 | 70 | 30 | as to ISO 5 182 | |
| Material Characteristics | 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 | <ul style="list-style-type: none"> Electrodes for projection- and butt-welding Electrodes for electrical riveting Wear resistant electrodes for spark erosion High performance contacts for hot upsetting machines | | | | |
| Mechanical Values | | | W-Cu 80/20 | W-Cu 75/25 | W-Cu 70/30 |
| | Hardness | HV | 230 | 200 | 170 |
| | Tensile strength | N/mm ² | 490 | 440 | 390 |
| | Modulus of elasticity | kN/mm ² | 230 | 225 | 225 |
| Physical Properties | | | | | |
| | Electrical conductivity 293 K (20 °C) | $\frac{m}{\Omega \cdot mm^2}$ | 15 | 22 | 29 |
| | Electrical resistance 293 K (20 °C) | $\frac{\Omega \cdot mm^2}{m}$ | 0,07 | 0,04 | 0,03 |
| | Coefficient of electrical resistance | $\frac{1}{K}$ | - | - | - |
| | Coefficient of thermal expansion | $\frac{1}{K}$ | - | - | - |
| | Thermal conductivity 293 K (20 °C) | $\frac{W}{m \cdot K}$ | 130 | 140 | 150 |
| | Density | $\frac{g}{cm^3}$ | 15,3 | 14,6 | 14,0 |

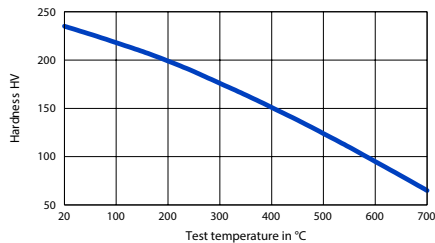
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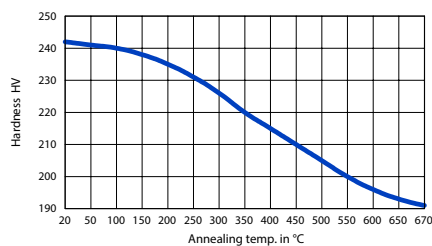
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Hardness at elevated temperatures
from W-Cu 80/20



Softening from W-Cu 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 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 | whatever is choosen |
| Machining | dry |

| | |
|-----------------------------|-----------------------------------|
| 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 |
| 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 |

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.

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