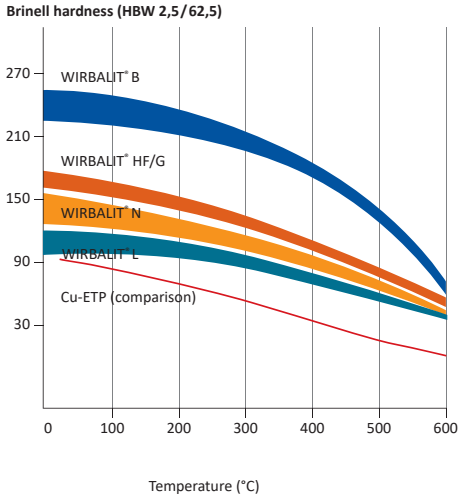
# Technological values

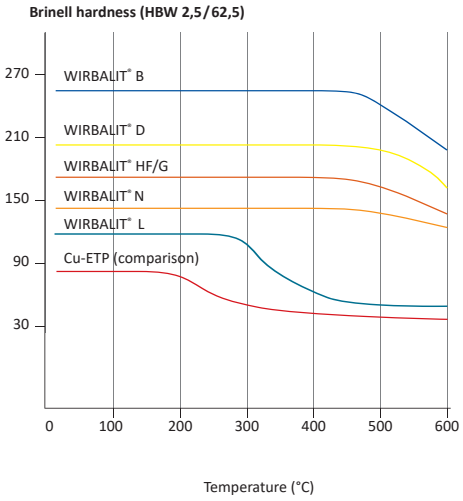
| Chemical, mechanical and physical properties (nominal values) | | | | | |
|---|---|---|---|---|---|
| **SVS Alloys** | | **WIRBALIT® HF / N / G** | **WIRBALIT® D** | **WIRBALIT® B** | **WIRBALIT® L** |
| Nominal composition | wt - % | CuCr1Zr | CuNi2,5SiCr | CuCo2Be | CuAg0,10P |
| Density at 20°C | g/cm3 | 8,9 | 8,9 | 8,8 | 8,9 |
| Melting temp. (liquidus) | °C | 1075 | 1060 | 1056 | 1082 |
| Mean coefficient of linear thermal expansion (20°C - 300°C) | 10-6/K | 18,0 | 18,0 | 17,8 | 17,7 |
| Modulus of elasticity | kN/mm2 | 120 | 140 | 120 | 120 |
| Thermal cond. at 20°C | W/(m · K) | 330 | 220 | 230 | 380 |
| Softening temperature | °C | 475 | 475 | 500 | 350 |

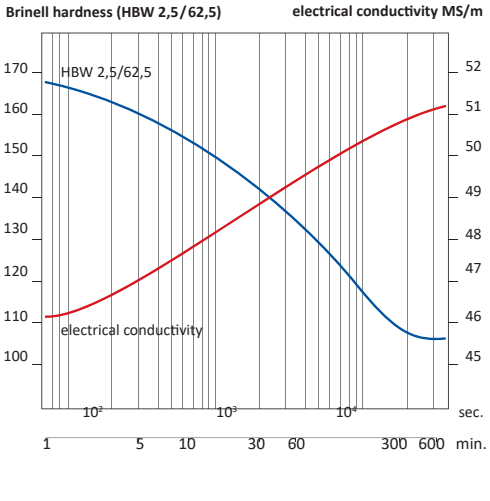
**High-temperature properties**
Nominal hardness at elevated temperatures.

**Resistance of softening**
Nominal hardness at ambient temperature after heating for 30 minutes to the temperatures shown.

**Resistance to softening**
Nominal hardness and electrical conductivity of WIRBALIT® HF at ambient temperature, after heating to 600°C for the given times.




- WIRBALIT® B
- WIRBALIT® HF/G
- WIRBALIT® N
- WIRBALIT® L
- Cu-ETP (comparison)

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- WIRBALIT® D
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- electrical conductivity
- HBW 2,5/62,5

Pictures and words by KME


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# Applications & standards

Depending on the particular type of alloy, WIRBALIT® materials are supplied either in cold-worked condition, or in cold-worked and age-hardened condition. A rise in temperature above the softening temperatures indicated for the different electrode materials will significantly lower their mechanical and physical properties.

Where brazed joints are inevitable, careful consideration should be given to the likely loss of hardness in alloys of the age-hardened type, and to the fact that localized rises in temperature (hot spots) in non-symmetrical bodies can lead to cracking. This is why such alloys should preferably be transformed by machining or cold forming - extrusion, bending.

If the material is to undergo extrusion or bending, a special grade of the HF, G and N types of WIRBALIT® can be furnished featuring somewhat lower hardness.

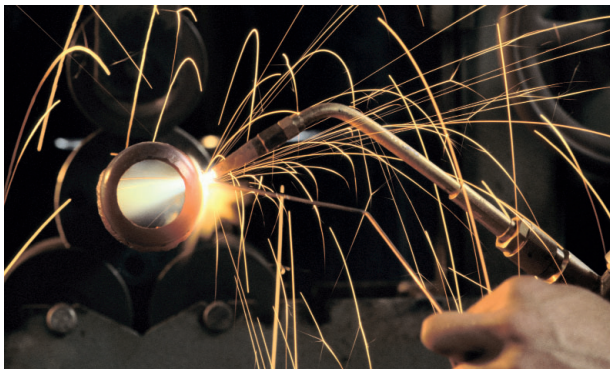
**Application standards: resistance welding electrode materials**

| SVS | Europe | International | USA | UK | France |
|---|---|---|---|---|---|
| Germany: DIN EN ISO 5182 | | ISO 5182 | RWMA - Alloys | BS EN ISO 5182 | NF EN ISO 5182 |

**National and international standard designations of WIRBALIT® - alloys**

| SVS | | Europe | International | USA |
|---|---|---|---|---|
| WIRBALIT® Type | Alloy | EN 12163/Rods<br>EN 12165/Forging Stock<br>EN 12166/Wire<br>EN 12167/Profiles | CEN/TS 13388:2008 | UNS No |
| HF/N/G | CuCr1Zr | CW106C | CuCr1Zr | C 18150*<br>C 18200*<br>C 18400* |
| B | CuCo2Be | CW104C | CuCo2Be | C 17500 |
| D | CuNi2,5SiCr | – | – | C 18000 |
| L | CuAg0,1P | CW016A | | |

** Composition may differ slightly from other standard specifications..*



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