

Elmedur HA

Technical Datasheet

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|-------------------|------------|--|-----|-----|-----|---------|
| Short Name | CW103C | Chemical Composition (Reference values in %) | Co | Ni | Be | Cu |
| Code | CuCo1Ni1Be | | 1.0 | 1.0 | 0.5 | balance |
| Material-No.(old) | ~ 2.1285 | | | | | |

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|----------------|----------------------|-------------|
| Classification | DIN ISO 5182 | Class A 3/4 |
| | R.W.M.A. | Class 3 |
| | DIN EN 12163 / 12167 | CW 103C |

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| Material | Precipitation hardened copper alloy with very high hardness and good electrical and thermal conductivity. |
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| Applications | <ul style="list-style-type: none"> – Electrodes for spot welding, especially for stainless steel – Electrodes for projection welding – Butt welding jaws – Contact tips for submerged-arc-welding – Plunger tips for horizontal die casting machines – Moulds for NF-metal castings |
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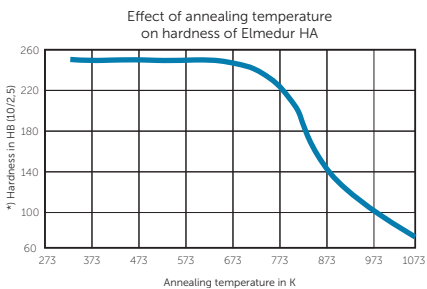
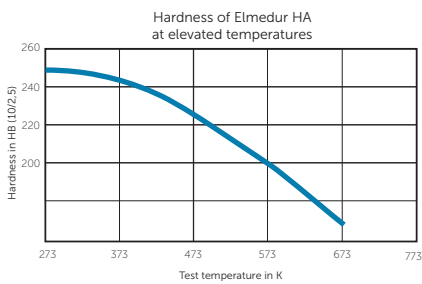
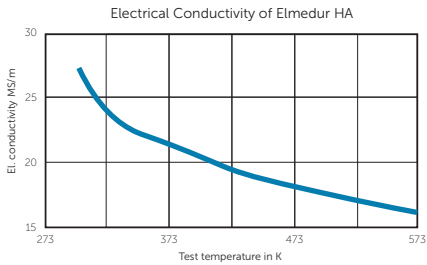
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|---|-----------------------|----------------------------|------------------------------|--------------|---------------|-----------------|
| Mechanical Properties (Reference values) | Conditions | solution annealed and aged | | | | |
| | Cross section | | < Ø 25 mm | > Ø 25–60 mm | > Ø 60–200 mm | > 40 mm fla/sqr |
| | Hardness | HB 187,5/2,5 | > 260 | > 250 | > 240 | > 230 |
| | Tensile strength | N/mm ² | 750–900 | 720–880 | 700–850 | 680–800 |
| | Yield strength | N/mm ² | min. 700 | min. 680 | min. 600 | min. 570 |
| | Elongation L = 5 D | % | min. 5 | min. 5 | min. 6 | min. 10 |
| | Modulus of elasticity | kN/mm ² | 135 | 135 | 135 | 135 |
| | Squeeze strength | % | 95 – 100 % of yield strength | | | |
| Softening temperature | °C (K) | 480 (753) | | | | |

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|---|--|---|-----------------------|
| Physical Properties (Reference values) | Electrical conductivity | MS/m | min. 25 |
| | 20 °C (293 K) | % IACS | min. 40 |
| | Electrical resistance | $\frac{\Omega \cdot \text{mm}^2}{\text{m}}$ | 0.033–0.05 |
| | 20 °C (293 K) | | |
| | Coefficient of electrical resistance | $\frac{1}{\text{K}}$ | 0.0019 |
| | 0-100°C (273-373 K) | | |
| | Coefficient of thermal expansion | $\frac{1}{\text{K}}$ | 17.0•10 ⁻⁶ |
| | 0-320°C (273-593 K) | | |
| Specific heat | $\frac{\text{J}}{\text{g} \cdot \text{K}}$ | 0.42 | |
| Thermal conductivity | $\frac{\text{W}}{\text{m} \cdot \text{K}}$ | | |
| 20 °C (293 K) | | c. 210 | |
| 200 °C (473 K) | | c. 280 | |
| 300 °C (573 K) | | c. 320 | |
| Density | g/cm ³ | 8.8 | |

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| Products | Rods drawn or extruded in round, square and flat; discs and rings, forgings, electrodes for spot-, seam-, projection- and butt welding, castings on request (Available sizes can be found in our current stock list). |
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*) Brinell hardness at R. T after 5-hrs heating, cooling with air

Machining (Reference values) Condition: precipitation hardened

| Turning | Tungsten Carbide K20 | HSS 1.3207 |
|-----------------------|-------------------------------|-------------------------------|
| Cutting speed (m/min) | up to 250 | up to 80 |
| Rake angle | 6–18 | 15–25 |
| Feed and depth of cut | as to required surface finish | as to required surface finish |
| Chip breaker | recommended | recommended |

| Milling | Tungsten Carbide K20 | HSS 1.3207 |
|-----------------------|----------------------|------------|
| Cutting speed (m/min) | bis 250 | 1,3207 |
| Rake angle | positive | positive |
| Feed (mm/min) | 200–300 | 80–150 |

| Drilling | Twist drills in acc. with DIN 338 |
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| Cutting speed (m/min) | max. 20 |
| Chip flow | For a better chip flow, drills with an enlarged twist angle should advantageously be used. We recommend contacting the respective manufacturers. |

| Standards / Tolerances | |
|------------------------|--|
| DIN EN 12 163 | Round bars for general purpose. |
| DIN EN 12 167 | Profiles and rectangular bars for general purpose. |

Health note

The material contains small amounts of beryllium, cobalt and nickel. Inhalation of fine dust and steam is to be avoided. During machining, the H-phrases (H301; H302; H332i; H350i; H334; H372) and the P-phrases (P201; P202; P260; P308; P313) must be observed.

All statements as to the properties or utilization of the materials and products mentioned in this datasheet 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.