

# Elmedur HA

## Technical Datasheet

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					

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

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"> <li>– Electrodes for spot welding, especially for stainless steel</li> <li>– Electrodes for projection welding</li> <li>– Butt welding jaws</li> <li>– Contact tips for submerged-arc-welding</li> <li>– Plunger tips for horizontal die casting machines</li> <li>– Moulds for NF-metal castings</li> </ul>
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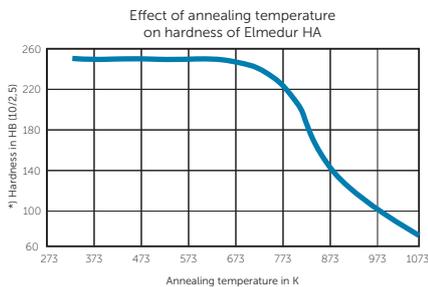
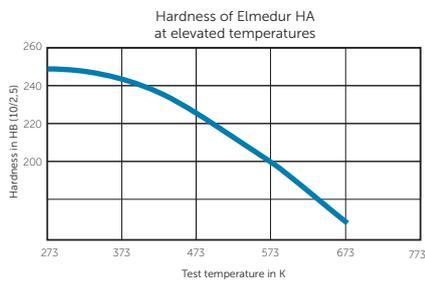
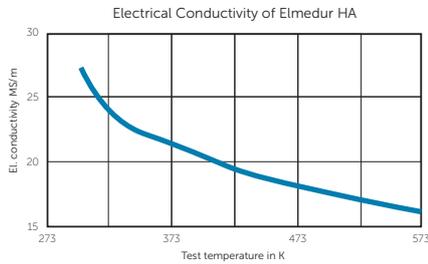
Mechanical Properties (Reference values)	Conditions	solution annealed and aged				
	Cross section		< Ø 25 mm	> Ø 25–60 mm	> Ø 60–200 mm	> 40 mm fla/sqr
	Hardness	HB 187,5/2,5	> 260	> 250	> 240	> 230
	Tensile strength	N/mm <sup>2</sup>	750–900	720–880	700–850	680–800
	Yield strength	N/mm <sup>2</sup>	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 <sup>2</sup>	135	135	135	135
	Squeeze strength	%	95 – 100 % of yield strength			
Softening temperature	°C (K)	480 (753)				

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 <sup>-6</sup>
	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 <sup>3</sup>	8.8	

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
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.