

Elmedur X (for universal applications)

Technical Datasheet

Short Name	CW106C	Chemical Composition (Reference values in %)	Cr	Zr	Cu
Code	CuCr1Zr		0.8	0.08	balance
Material-Nr.(old)	2.1293				

Classification	DIN ISO 5182	Class A 2/2
	R.W.M.A.	Class 2
	UNS	C18150

Material-Properties Precipitation hardened copper alloy with excellent hardness and high electrical and thermal conductivity.

Applications

- Electrodes and cap tips for spot welding as well as for spark erosion
- Contact tips for MIG/MAG welding
- Parts in electrical equipments under high stress conditions if high electrical conductivity is required
- Application predominantly at low mechanical load if simultaneously very high heat elimination is desired

Mechanical Properties (Reference values)	Conditions	solution annealed and aged			
	Cross section		Ø 21–50 mm	Ø 51–200 mm	other products **)
	Hardness	HB 62,5/2,5	150	120	130
	Tensile strength	N/mm ²	min. 440	min. 360	min. 350
	Yield strength	N/mm ²	min. 350	min. 260	min. 250
	Elongation L = 5 D	%	min. 10	min. 18	min. 18
	Modulus of elasticity	kN/mm ²	108	108	108
	Modulus of torsion	kN/mm ²	45	45	45
Squeeze strength	%	95–100 % of yield strength			

*) resp. coextensive of cross section

***) forged discs and rings up to Ø 400 mm, forged or rolled plates can be found in our current stock list

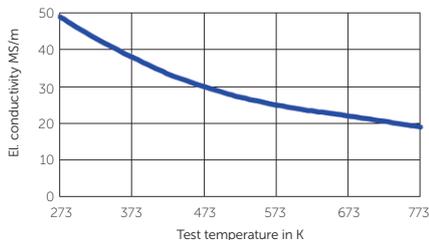
Physical Properties (Reference values)	Electrical conductivity 20 °C (293 K)	MS/m % IACS	43–50 (min. 75 % I.A.C.S.)
	Electrical resistance 20 °C (293 K)	$\frac{\Omega \cdot \text{mm}^2}{\text{m}}$	0.021
	Coefficient of electrical resistance 0–300 °C (273–573 K)	$\frac{1}{\text{K}}$	0.00367
	Coefficient of thermal expansion 0–320 °C (273–593 K)	$\frac{1}{\text{K}}$	17,0•10 ⁻⁶
	Specific heat	$\frac{\text{J}}{\text{g} \cdot \text{K}}$	0.367
	Thermal conductivity 20 °C (293 K)	$\frac{\text{W}}{\text{m} \cdot \text{K}}$	ca. 320
	Density	g/cm ³	8.9

Products Bars in round, square, rectangular 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).

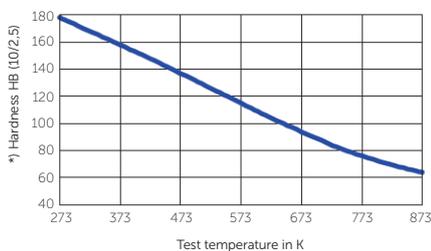
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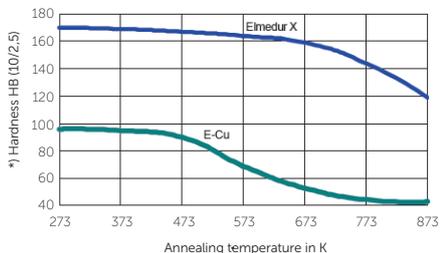
Electrical conductivity of Elmedur X at different temperatures



Hardness of Elmedur X at elevated temperatures



Effect of annealing temperature on hardness of Elmedur X



*) Brinell hardness at r. t. after 5-hrs heating, cooling with air

Machining (Reference values) Condition: precipitation hardened

Turning	Tungsten Carbide K20	HSS THYRAPID 3207
Cutting speed (m/min)	up to 300	up to 120
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 THYRAPID 3207
Cutting speed (m/min)	up to 300	up to 100
Rake angle	positive	positive
Feed (mm/min)	200–300	80–150

Drilling	Twist drills acc. to 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.

Mechanical strength	The mechanical strength are depend from the cross section and the form of cross section.
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Standards / Tolerances

Round bars for generals purpose	DIN EN 12163
Ingots for forgings	DIN EN 12165
Profiles and rectangular bars for general purpose.	DIN EN 12167
Hot rolled sheets and plates	Thickness < 50 mm -0/+2 mm > 50 mm -0/+3 mm Width -0/+8 mm
Forged sheets and flat sizes	Additions and tolerances on request
Tubes	Tolerances for tubes on request

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.