

Elmedur XS (for high stressed electrodes)

Technical Datasheet

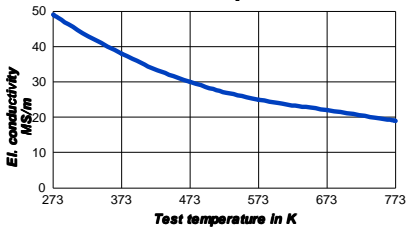
DURO METALL
A company of the Wieland Group

Short Name Code	CW106C CuCr1Zr	Chemical Composition (weight %)	Cr 0,8	Zr 0,08	Cu balance
Classification	ISO 5182 R.W.M.A. UNS	Class A 2/3 Class 2 C 18150			
Material-Properties	Precipitation hardened copper alloy with excellent hardness and high electrical and thermal conductivity, limited bendable, for machining only.				
Applications	<ul style="list-style-type: none"> High performance electrodes for resistance spot welding Electrical and mechanical high stressed power transmitting parts 				
Mechanical Properties (Reference values)	Conditions		a g e d		
	Cross section		$\varnothing 20\text{ mm}$		
	Hardness (typical)	HB 62,5/2,5	160		
	Tensile strength	N/mm ²	540		
	Yield strength	N/mm ²	450		
	Elongation L = 5 D	%	8		
	Modulus of elasticity	kN/mm ²	108		
	Modulus of torsion	kN/mm ²	45		
Squeeze strength	%	95 – 100 % of yield strength			
Physical Properties	Electrical conductivity 293 K (20 °C)	MS/m	min. 43 (min. 74% IACS)		
	Electrical resistance 293 K (20 °C)	$\Omega\cdot\text{mm}^2/\text{m}$	0.023 (Reference values)		
	Coeff. of electr. resist. 273-573 K (0-300°C)	1/K	0.00367		
	Coeff. of therm. exp. 273-593 K (0-320°C)	1/K	$17,0 \cdot 10^{-6}$		
	Specific heat	J/g.K	0,376		
	Thermal conductivity 293 K (20 °C)	W/m.K	ca. 320		
	Density	g/cm ³	8.9		
Available sizes	Round bar				

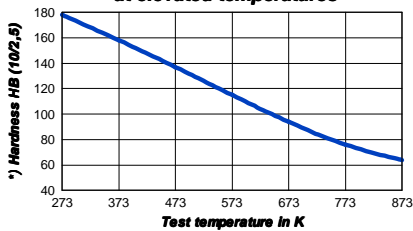
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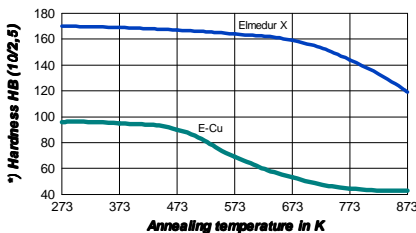
Electrical conductivity of Elmedur X at different temperatures



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 on air

Machining (Reference values) Condition: hardened

Turning

	Tungsten Carbide K 20	HSS 1.3207
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 1.3207
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.

Available Forms

Round and hexagonal bars as well as profiles

Standards/Tolerances

Round bars for general purpose DIN EN 12 163

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.