

Elmedur X

Technical Datasheet

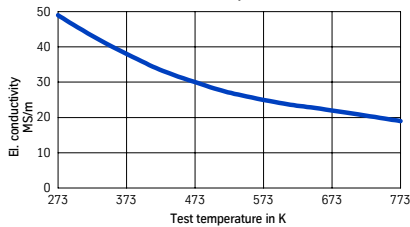
Short Name	CW106C	Chemical	Cr	Zr	Cu	
Code	CuCr1Zr	Composition	0.8	0.08	balance	
Material-Nr.(old)	2.1293	(Reference values in %)				
Classification	ISO 5182 R.W.M.A.	Class A 2/2 Class 2				
Material-Properties	Precipitation hardened copper alloy with excellent hardness and high electrical and thermal conductivity.					
Applications	<ul style="list-style-type: none"> • 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 					
Mechanical Properties (Reference values)	Conditions		solution annealed, cold drawn and aged		Extruded, sol. annealed and aged	Castings prec. hardened
	Cross section		<25 mm Ø	25-50 mmØ	50-120 mm Ø	-
	Hardness	HB	160	150	130	100-115
	Tensile strength	N/mm ²	min. 470	min. 440	min. 370	min. 320
	Yield strength	N/mm ²	min. 440	min. 350	min. 270	min. 195
	Elongation L = 5 D	%	min. 8	min. 10	min. 18	min. 18
	Modulus of elasticity	kN/mm ²	108	108	108	103
	Modulus of torsion	kN/mm ²	45	45	45	-
	Squeeze strength	%	95 – 100 % of yield strength			
Physical Properties (Reference values)	Electrical conductivity 293 K (20 °C)	MS/m			43 - 50 Castings 45 - 53 (min. 75 % I.A.C.S.)	
	Electrical resistance 293 K (20 °C)	$\frac{\Omega \cdot \text{mm}^2}{\text{m}}$			0.021	
	Coefficient of electrical resistance 273-373 K (0-100°C)	$\frac{1}{\text{K}}$			0.00367	
	Coefficient of thermal expansion 273-593 K (0-320°C)	$\frac{1}{\text{K}}$			17,0 · 10 ⁻⁶	
	Specific heat	$\frac{\text{J}}{\text{g} \cdot \text{K}}$			0.376	
	Thermal conductivity 293 K (20 °C)	$\frac{\text{W}}{\text{m} \cdot \text{K}}$			c. 320	
	Density	$\frac{\text{g}}{\text{cm}^3}$			8.9	
Available sizes	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).					

THYSSEN DURO METALL

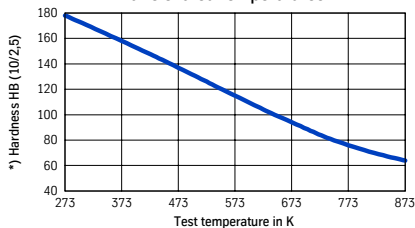
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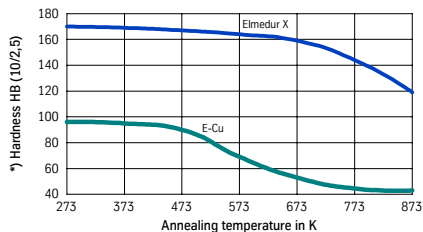
Electrical conductivity of Elmedur X at different temperatures



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 K 20	HSS THYRAPID 3207
Cutting speed m/min.	up to 300	up to 100
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.

Standards / Tolerances

DIN EN 12 163	Round bars for general purpose
DIN EN 12 165	Ingots for forgings
DIN EN 12 167	Profiles and rectangular bars for general purpose.

Hot rolled sheets and plates

Thickness	<50 mm -0/+2 mm
	>50 mm -0/+3 mm
Width	+8/-0 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.