Elmedur X (for universal applications)



Technical Datasheet

Short Name	CW106C	Cher	nical	Cr	7r	Cu
Code	CuCr17r	Com	position	0.8	0.08	balance
Material-Nr.(old)	2.1293	(Refe	rence values in %)			
Classification	DIN ISO 5182	Clas	s A 2/2			
	R.W.M.A.	Clas	s 2			
	UNS	C182	50			
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	Conditions	solution annealed and aged				
Properties (Reference values)	Cross section		Ø 21–50 mm	Ø 51–200 i	mm other	products **)
	Hardness	HB 62,5/2,5	150	120	130	
	Tensile strength	N/mm²	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/mm²	108	108	108	
	Modulus of torsion	kN/mm²	45	45	45	
	Squeeze strength	%	9	5–100 % of yie	eld 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						
DL		1461	17 50			

Physical Properties (Reference values)	Electrical conductivity 20 °C (293 K) Electrical resistance 20 °C (293 K)	$\frac{MS/m}{\% IACS}$ $\frac{\Omega \cdot mm^2}{m}$	43–50 (min. 75 % I.A.C.S.) 0.021
	Coefficient of electrical resistance 0–300 °C (273–573 K)	$\frac{1}{K}$	0.00367
	Coefficient of thermal expansion 0–320 °C (273–593 K)	<u>1</u> K	17,0•10 ⁻⁶
	Specific heat	J g∙K	0.367
	Thermal conductivity 20 °C (293 K)	W m•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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Machining (Reference values) Condition: precipitation hardened HSS Turning Tungsten Carbide К20 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 as to required surface finish surface finish Chip breaker recommended recommended

180 *) Hardness HB (10/2,5) 160 140 120 100 80 60 40 273 373 473 573 673 773 873 Test temperature in K

Effect of annealing temperature on hardness of Elmedur X

E-Cu

573

Annealing temperature in K

673

873

473

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

Elmedur X

180

80

60 40

273

373

*) Hardness HB (10/2,5)

Hardness of Elmedur X at elevated temperatures

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.

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

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

Wieland Duro GmbH | Albert-Einstein-Straße 1 | 70806 Kornwestheim | Deutschland info@wieland-duro.com | wieland-duro.com