

DuroPlast® HA

Technical Datasheet

Short Name	CW103C	Chemical	Co	Ni	Be	Cu
Code	CuCo1Ni1Be	Composition	1.0	1.0	0.5	balance
Material-No.(old)	~ 2.1285	(Reference values in %)				
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.					
Applications	– Plastic injection molds: Solid molds or inserts (core and cavity side) – Tips for hot runner systems – Plunger tips for horizontal die casting machines – Molds for gravity casting					
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/mm²	750 – 900	720 – 880	700 – 850	680 – 800
	Yield strength	N/mm²	min. 700	min. 680	min. 600	min. 570
	Elongation L = 5 D	%	min. 5	min. 5	min. 6	min. 10
	Modulus of elasticity	kN/mm²	135	135	135	135
	Squeeze strength	%	95 – 100 % of yield strength			
	Softening temperature	°C (K)	480 (753)			
Physical Properties (Reference values)	Electrical conductivity 20 °C (293 K)	MS/m % IACS	min. 25 min. 40			
	Electrical resistance 20 °C (293 K)	$\frac{\Omega \cdot \text{mm}^2}{\text{m}}$	0.033 – 0.05			
	Coefficient of electrical resistance 0 – 100°C (273-373 K)	$\frac{1}{\text{K}}$	0.0019			
	Coefficient of thermal expansion 0 – 320°C (273-593 K)	$\frac{1}{\text{K}}$	17.0•10 ⁻⁶			
	Specific heat	$\frac{\text{J}}{\text{g} \cdot \text{K}}$	0.42			
	Thermal conductivity 20 °C (293 K) 200 °C (473 K) 300 °C (573 K)	$\frac{\text{W}}{\text{m} \cdot \text{K}}$	c. 210 c. 280 c. 320			
	Density	g/cm³	8.8			
	Products	Depending on Rods and Plates size: cold drawn, extruded or forged executions				

Wieland Copper Alloys for Plastic Tooling				
Product Name	Hardness	Thermal Conductivity (W/mK)	Tensile Strength (N/mm ²)	Elongation L=5D
DuroPlast® HH CuBe2	36 - 42 HRC	110 (20°C)	1150 - 1350	min. 5
DuroPlast® HA CuCo1Ni1Be	240 - 260 HB	210 (20°C)	700 - 900 (*)	min 5 - min 10 (*)
DuroPlast® SC CuNi7Si2Cr	240 - 260 HB	160 (20°C)	700 - 900	min.5
DuroPlast® NCS CuNi2Si (+Cr)	190 - 240 HB	160 (20°C)	min. 650	min.5
DuroPlast® AB CuAl10Ni5Fe4	180 - 210 HB	50 (20°)	680 - 740	min.8

* depending on the thickness

Wieland No-Copper Based Alloys for Plastic Tooling				
Product Name	Hardness	Thermal Conductivity (W/mK °)	Tensile strength (N/mm ²)	Elongation L=5D
DuroPlast® TZM	200 - 250 HV	130 (20°C)	750 - 900	min. 6
		Chemical Composition		
Ti	Zr	C	Mo	
0,50%	0,08%	0,03%	Rest	

Applications: Gate Inserts, Spure Bushings, Core Pins (Thin-Wall Sections), Parts Exposed to High Temperature

DuroPlast® 7075	150 HB	130-160 (20°C)	440-560 (*)	min. 6	
Chemical Composition					
Si	Fe	Mg	Cr	Zn	Al
0,40%	0,50%	2,90%	0,28%	6,10%	Rest
Applications:	Blow Molding Molds, Prototypes Plastic Injection Molds, Thermoforming Tools				

* depending on the thickness

Product Name	Hardness	Thermal Conductivity	Heat Resistance	Corrosion Resistance	Machinability
DuroPlast® HH					
DuroPlast® HA					
DuroPlast® SC					
DuroPlast® NCS					
DuroPlast® AB					
DuroPlast® TZM					
DuroPlast® 7075					