Cu Ni 12 Zn24

NICKEL SILVER

CHEMICAL COMPOSITION :

Cu	64%
Ni	12%
Zn	24%
Mn max	0.50%

ALLOY DENOMINATIONS :

MATERIAL N° EN :	CW403 J
WN/MATERIAL N° DIN :	2.0730
ROBERT LAMINAGE :	400
EN :	Cu Ni12 Zn24
DIN :	Cu Ni12 Zn24
AFNOR :	Cu Ni12 Zn24
UNS* :	C 75700

**Unified Numbering System (USA)*

PHYSICAL PROPERTIES :

Density 20º C	8.67	Kg/dm^3
Melting point	1000-1060	ºC
Modulus of elasticity, longitudinal	125	GPa
Thermal Conductivity	42	W/M . K
Electrical Conductivity	≥ 3	$M/\Omega\ mm^2$
Electrical resistivity	≤ 0.333	$\Omega\ mm^2/M$
Coefficient of linear expansion from 20 up to 300ºC	18×10^{-6}	K^{-1}
IACS (International Annealed Copper Standard)	≥ 5	%

WORKABILITY :

Coldworking	Very good
Hotworking	Inappropriate
Machining	Medium
Soldering, brazing	Medium
Tin soldering	Very good
Polishing	Very good
Annealing temperature	450-600 ºC
Stress relieving heat treatment temperature	~300 ºC

MAIN APPLICATIONS :

Clock and watchmaking, scientific tool components
Coining, bending, stamping, pressing, cutting
Medical instrument components, electronic, etc.

CONDITIONING :

a) In coils
b) Cut to length, from 0.5 up to 3 m

AVAILABLE SIZES :

Widths	from 2 up to 350mm
Thickness	from 0.01up to 3.40 mm

TOLERANCES :

Depending on product

QUALITY OF EDGES :

Slit edges

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MECHANICAL PROPERTIES : **Cu Ni 12 Zn24**

EN NORM 1652

TEMPER	THICKNESS		Rm (MPa) min	Rm (MPa) max	Rp 0.2 (Mpa)	ELONGATION 0.10 up to 2.5 mm A50 % min	ELONGATION above 2.5 mm A100 % min	Vickers HARDNESS min	Vickers HARDNESS max	GRAIN SIZE min	GRAIN SIZE max
R360	0.1	5	360	430	(max 230)	35	45	-	-	-	-
H080			-	-	-	-	-	80	110	-	-
G020	0.2	2	-	-	-	-	-	-	110	0.015	0.030
G035			-	-	-	-	-	-	100	0.025	0.050
R430	0.1	5	430	510	(min 230)	8	15	-	-	-	-
H110			-	-	-	-	-	110	150	-	-
R490	0.1	5	490	580	(min 400)	-	8	-	-	-	-
H150			-	-	-	-	-	150	180	-	-
R550	0.1	2	550	640	(min 480)	-	-	-	-	-	-
H170			-	-	-	-	-	170	200	-	-
R620	0.1	2	620	-	(min 580)	-	-	-	-	-	-
H190			-	-	-	-	-	190	-	-	-

(For reference only)

DIN NORM 17670

TEMPER	THICKNESS	Rm (MPa) min	Rm (MPa) max	Rp 0.2 (Mpa)	ELONGATION 0.10 up to 2.5 mm A50 % min	ELONGATION above 2.5 mm A100 % min	Vickers HARDNESS min	Vickers HARDNESS max
F36	> 0.1	360	430	max 230	45	40	-	-
H80	< 5	-	-	-	-	-	80	110
F43	≥ 0.1	430	510	min 230	16	13	-	-
H110	≤ 5	-	-	-	-	-	110	150
F51	≥ 0.1	510	590	min 420	8	5	-	-
H150	< 5	-	-	-	-	-	150	180
F56	≥ 0.1	560	650	min 480	-	-	-	-
H170	< 2	-	-	-	-	-	170	200
F65	≥ 0.1	650	-	min 600	-	-	-	-
H200	≤ 2	-	-	-	-	-	200	-

AFNOR NORM NF A 51-101

TEMPER	Vickers HARDNESS min	Vickers HARDNESS max	Rm (MPa) min	Rm (MPa) max	Re (MPa)	ELONGATION 0.10 up to 2.5 mm A50 % min
H11	110	140	410	510	210	27
H12	135	165	470	570	360	8
H13	160	190	560	640	480	4
H14	190	205	640	700	590	~1
H15	> 205		> 700		640	-

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