nacobre®

Seawater Applications
Copper - Nickel Tubes

Standard Denomination:
706, C70600, 90 / 10, CN102, Cu Ni 10 Fe, Cu Ni 10 Fe1Mn

Cu-Ni alloys are widely used for marine applications due to their excellent resistance to seawater corrosion, high inherent resistance to biofouling and good fabricability.

They have provided reliable service for several decades while offering effective solutions to today's technological challenges.

This alloy has a very good abrasion resistance and a very good flow velocity.

Seawater Applications Cu - Ni Tubes

Advantages of Copper-Nickel

• Easy installation • Corrosion resistance • No galvanic corrosion with other copper based materials • Biofouling resistance • Strength, ductility and damage resistance • High scrap value • Maintenance time is much better for copper-nickel vs. other materials • Flow velocity (11.4 ft/sec.)

CHEMICAL COMPOSITION

Alloy	Cu (%)	Ni (%)	Pb (%)	Fe (%)	Zn (%)	Mn (%)	P (%)	C (%)	S (%)
C 71640	Remainder	9.0 to 11.0	0.02 Max.	1.0 to 1.8	0.50 Max.	1.0 Max.	0.02 Max.	0.05 Max.	0.02 Max.

MECHANICAL PROPERTIES

Alloy	Temper	Tensile Strength	Yield Strength	Expansion %	Grain size (mm)	Flattening
C 70600	O61	38 Min.	15 Min.	30 Min.	0.010 - 0.045	Req.
C70600	H55	45 Min.	35 Min.	20 Min.		Req.

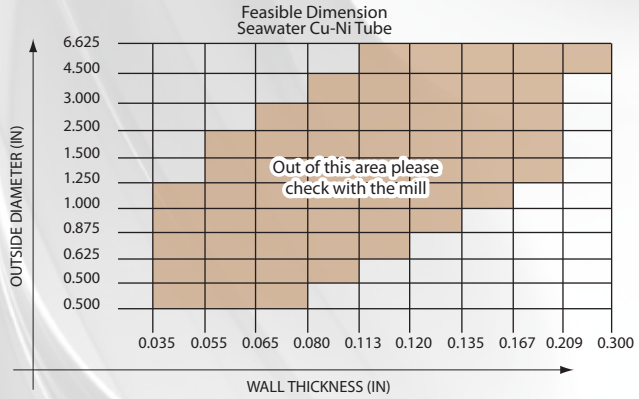
PHYSICAL PROPERTIES

PROPERTIES	UNITS	C70600
MELTING POINT (LIQUIDUS)	°F (°C)	2100 (1150)
MELTING POINT (SOLIDUS)	°F (°C)	2010 (1100)
DENSITY (TO 20°C)	LB./CU, IN	0.323
COEFFICIENT OF THERMAL EXPANSION	PER °F FROM 68 TO 572	9.5×10^{-6}
THERMAL CONDUCTIVITY	BTU./SQ. FT/FT/HR/°F TO 68°F	26
ELECTRICAL RESISTIVITY (ANNEALED)	OHMS (CIRC.MIL/FT) TO 68°F	115
ELECTRICAL CONDUCTIVITY (ANNEALED)	% IACS TO 68°F	9.0
THERMAL CAPACITY (SPECIFIC HEAT)	BTU/LB/°F TO 68°F	0.09
MODULUS OF ELASTICITY (TENSION)	KSI	18000
MODULUS OF RIGIDITY	KSI	6800
ANNEALED TEMPERATURE	°F (°C)	1100-1500 (600-825)

DECIMAL EQUIVALENTS IN INCHES FOR VARIOUS GAUGES

Gage No.	1	2	3	4	5	6	7	8	9	10	11	12	13
BWG	0.300	0.284	0.259	0.238	0.220	0.203	0.180	0.165	0.148	0.134	0.120	0.109	0.095
AWG	0.2893	0.2576	0.2294	0.2043	0.1819	0.162	0.1443	0.1285	0.1144	0.1019	0.0907	0.0808	0.0720

Gage No.	14	15	16	17	18	19	20	21	22	23	24
BWG	0.083	0.072	0.065	0.058	0.049	0.042	0.035	0.032	0.028	0.025	0.022
AWG	0.0641	0.0571	0.0508	0.0453	0.0403	0.0359	0.0320	0.0285	0.0253	0.0226	0.0201



NON DESTRUCTIVE TESTS AVAILABLE
Eddy Current Test
Hydrostatic Test
Pneumatic Test

APPLICABLE STANDARDS
ASTM B- 111
ASME SB– 111
ASTM B-466
ASTM SB-466
BRITISH STANDARD 2871 P-3
DIN 1785
JIS 12451
MIL-T-16420K (1)
JIS H 33000

MAXIMUM WORK PRESSURE
p = Maximum work pressure (psi)
S = Minimum tensile strength of material for an specific temper (It is the value of the tensile strength in PSI in mechanical properties table)
D = Exterior diameter of tube
T = Wall thickness of tube
P = (2t x S) / 5D

Note: The rupture pressure is 5 times the value of work pressure.

WEIGHT PER FEET
W = Weight per Feet (lb./ft)
D = Outside Diameter (In)
P = Wall Thickness (In)
W = (D-P)*P*12.18

SALES BRANCHES AND OFFICES: We export to North, Central and South America, the Caribbean, Europe and Asia.

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