

90/10 cupronickel



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CN102 / C70600 / CW352H

90/10 is an alloy of 90% copper and 10% nickel that contains small but important additions of iron and manganese that enhance its overall strength and corrosion resistance.

Traditionally, 90/10 is used in marine environments as it offers inherent resistance to biofouling, low rates of corrosion in seawater and brackish water, high resistance to ammonia stress corrosion cracking, good pitting resistance and excellent resistance to crevice corrosion and stress corrosion. In addition, 90/10 has high resistance to hydrogen embrittlement and retains its mechanical properties from elevated temperatures down to cryogenic temperatures as low as -300°F .

The corrosion resistance of 90/10 is due to a protective surface film formed when the alloy is in contact with water. Even in fast flowing seawater, the corrosion rate has been shown to be minimal. The formation of this oxide layer also makes 90/10 inhospitable to most marine organisms in slow-moving water.

90/10 has gained prominence in architectural and industrial applications as designers have capitalised on its high ductility, good toughness and attractive pink/silver/white colouration. Its excellent fabrication and forming properties, which allow machining, bending, blanking, drawing, forming, punching, stamping and shearing, enhance its suitability for a wide range of applications.

- **OUTSTANDING CORROSION RESISTANCE**
- **HIGH DUCTILITY**
- **ATTRACTIVE PINK/SILVER COLOURATION**
- **EASILY FORMED / FABRICATED**
- **EASILY JOINED**
- **EXCELLENT DURABILITY**
- **OXIDATION AND TARNISH RESISTANCE**
- **OUTSTANDING RESISTANCE TO CREEP**
- **PROVEN ANTIMICROBIAL PROPERTIES**

The machining properties of 90/10 are similar to many other high strength copper-based alloys such as aluminium bronze, phosphor bronze and nickel silver. It has adequate strength to withstand the pressures in most marine hydraulic and instrumentation systems.

The alloy has undergone tests that indicate it has excellent antimicrobial properties. It is capable of killing 99.9% of a wide range of organisms within two hours, including MRSA, E.coli, influenza A (H1N1) and clostridium difficile. This has created demand for 90/10 in hygienic or sanitary environments in hospitals, kitchens and nursing homes.

90/10's pleasant pink/silver colouration and formability make it aesthetically pleasing and an ideal replacement for many stainless steels in the form of push plates, kick plates, door and cabinet handles, work surfaces, balustrades, counter tops, handrails, sculptures, plaques and decorative metalwork. Its corrosion resistance also makes it suitable for marine hardware, salt water pipes and fittings, heat exchangers, cooling plant, hot water tanks, salt water baffles, valve and pump components and flanges, as well as for propeller sleeves, crankshafts and hulls of working boats.

Columbia Metals stocks 90/10 cupronickel in round bar, hexagon and sheet. The most common standards for the alloy in the US and Europe are CN102 / C70600 and CW352H.



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Technical Data

Nominal Composition (%)

Cu	Ni	Fe	Mn
Rem	10.5	1.5	0.75

Mechanical Properties (specification minima)

	Round bar	Sheet
Ultimate Tensile Strength (N/mm ²)	300	310
0.2% Proof Strength (N/mm ²)	105	-
Elongation (%)	30	30

Weight and Stock Sizes

Diameter		Weight		Diameter		Weight		Diameter		Weight	
ins	kg/ft	kg/m	ins	kg/ft	kg/m	ins	kg/ft	kg/m	ins	kg/ft	kg/m
0.375	0.19	0.62	1.375	2.54	8.34	2.750	10.16	33.34			
10mm	0.21	0.68	35mm	2.55	8.37	3.000	12.10	39.68			
0.625	0.53	1.75	1.500	3.02	9.92	3.500	16.46	54.01			
20mm	0.83	2.73	40mm	3.33	10.93	4.000	21.50	70.54			
25mm	1.30	4.27	1.750	4.12	13.50	5.000	33.60	110.22			
1.000	1.34	4.41	2.000	5.38	17.64	6.000	48.38	158.72			
30mm	1.88	6.15	2.250	6.07	19.91	7.000	65.85	216.04			
1.250	2.10	6.89	2.500	8.40	27.56	8.000	86.01	282.17			

Hexagon	Sheet
13mm - 70mm A/F in a comprehensive range	4' x 2' sheets in thickness from 16g upwards

NB Weight data for guidance only