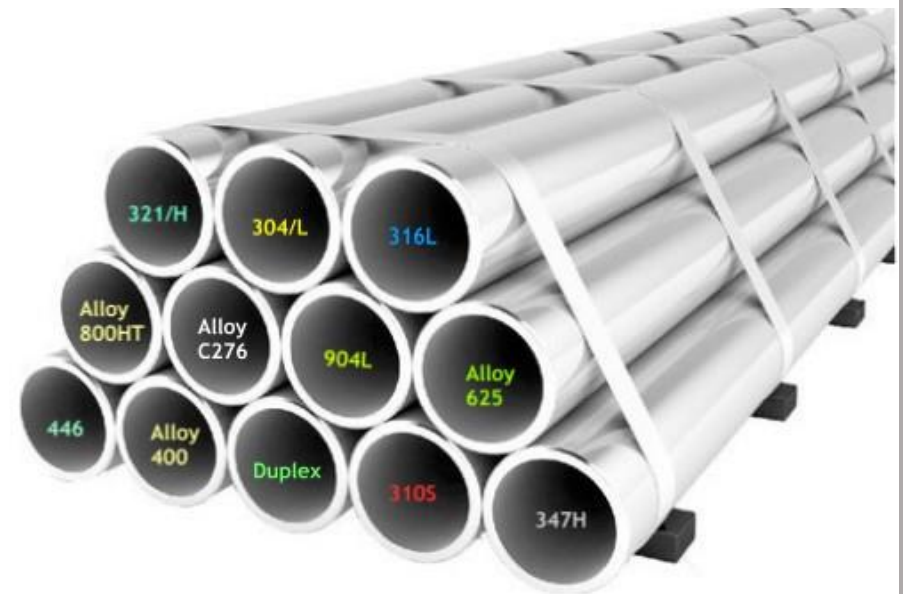


# COPPER NICKEL 90/10, 70/30

## Datasheet for Copper Nickel

- Pipes & Tubes
- Sheets & Plates
- Bars & Rods, Forgings
- Fittings & Flanges
- Nuts & Bolts
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# Datasheet for Copper Nickel 90/10, 70/30

## Cupro Nickel 90/10 (C70600, 2.0872), Cupro Nickel 70/30 (C71500, 2.0882)

### What is Copper Nickel?

Tantalum is a chemical element with symbol Ta and atomic number 73. Previously known as tantalium, its name comes from Tantalus, a hero from Greek mythology. Tantalum (Ta) is a dark blue-gray metal that is very heavy, ductile, and hard and has high corrosion resistance. Tantalum is especially resistant to chemicals at temperatures below 150 °C and can only be dissolved with hydrofluoric acid. It has the fourth-highest melting point of all metals and is able to form extremely thin and protective oxide layers for high-quality capacitors, making it an excellent material for tubes. It is part of the refractory metals group, which are widely used as minor components in alloys. The chemical inertness of tantalum makes it a valuable substance for laboratory equipment and a substitute for platinum. Tantalum is also used for medical implants and bone repair. Its main use today is in tantalum capacitors in electronic equipment such as mobile phones, DVD players, video game systems and computers. Tantalum, always together with the chemically similar niobium, occurs in the minerals tantalite, columbite and coltan (a mix of columbite and tantalite). Tantalum is a rare metal, comprising just 8×10<sup>-9</sup>% of the universe, making it fifteen times less abundant in the universe than gold (which makes up 6×10<sup>-8</sup>%). Tantalum also comprises just 1.5×10<sup>-4</sup>% of the earth's crust, making it more abundant than other metals in the sixth period, such as rhenium (abundance 2.6×10<sup>-7</sup>%), osmium (abundance 1.8×10<sup>-7</sup>%), or iridium (abundance 4×10<sup>-8</sup>%), but not as abundant as barium (abundance 3.4×10<sup>-2</sup>%).

### Product Forms and Standards of Copper Alloy

B469	Seamless Copper Alloy Tubes for Pressure Applications
B466	Seamless Copper Nickel Pipe and Tube
B552	Seamless & Welded Copper Nickel Tubes for Water Desalting
B543	Welded Copper & Copper Alloy Heat Exchanger Tube
B608	Welded Copper Alloy Pipe
B467	Welded Copper Nickel Pipe

B151	Copper Nickel Zinc Alloy (Nickel Silver) & Copper Nickel Rod & Bar
B111	Copper & Copper Alloy Seamless Condenser Tubes & Ferrule Stock
B359	Copper & Copper Alloy Seamless Condenser & Heat Exchanger Tubes with Integral Fins
B171	Copper Alloy Plate & Sheet for Pressure Vessels, Condensers & Heat Exchangers
B122	Copper Nickel Tin Alloy, Copper Nickel Zinc Alloy (Nickel Silver), & Copper Nickel Plate, Sheet, Strip & Rolled Bar

### Chemical Properties of Copper Nickel 90/10

Element	(in %)
Cu	88.7
Fe	1.3
Ni	1.0

### Mechanical Properties of Copper Nickel 90/10

Properties	Metric	Imperial
Tensile strength, ultimate	303-414 MPa	43900-60000 psi
Tensile strength, yield (depending on temper)	110-393 MPa	16000-57000 psi
Elongation at break (in 254 mm)	42.00%	42.00%
Machinability (UNS C36000 (free-cutting brass) = 100%)	20%	20%
Shear modulus	52.0 GPa	7540 ksi

Poisson's ratio	0.34	0.34
Elastic modulus	140 GPa	20300 ksi

### Physical Properties of Copper Nickel 90/10

Properties	Metric	Imperial
Density	8.94 g/cm <sup>3</sup>	0.323 lb/in <sup>3</sup>

### Chemical Properties of Copper Nickel 70/30

Element	(in %)
Cu	65 min
Mn	1.0 max
Pb	0.05 max
Ni	29 – 33 max
Fe	0.4 – 1.0 max
Zn	1 max

### Mechanical Properties of Copper Nickel 70/30

Properties	Metric	Imperial
Tensile strength, ultimate	372-517 MPa	54000-75000 psi

Tensile strength, yield (depending on temper)	88.0-483 MPa	12800-70100 psi
Elongation at break (in 381 mm)	45.00%	45.00%
Charpy impact	107 J	78.9 ft-lb
Machinability (UNS C36000 (free-cutting brass) = 100%)	20%	20%
Shear modulus	57.0 GPa	8270 ksi
Poisson's ratio	0.34	0.34
Elastic modulus	150 GPa	21800 ksi

### Physical Properties of Copper Nickel 70/30

Properties	Metric	Imperial
Density	8.94 g/cm <sup>3</sup>	0.323 lb/in <sup>3</sup>
Melting point	2140°F	1171°C

### Copper Nickel 90/10 Product Specification

Grades	CU-NI-90/10 (UNS No C70600)
Standard	ASTM B151, ASME SB151, ASTM B466, ASTM B111
Werkstoff Nr	2.0872
Equivalents	CuNi10Fe1Mn
Thickness	1mm – 100mm

Width	1000mm – 3000mm
Production	Hot-Rolled (HR) / Cold-Rolled (CR)
Application	Chemicals & Fertilizers Industries, Sugar Mills, Cement Industries, Ship Building, Paper Industries, Oil & Gas, Petrochemicals, etc.

### Copper Nickel 70/30 Product Specification

Standard	ASTM B171, ASME SB171, ASTM B466, ASTM B111
Grades	CU-NI-70/30 (UNS No C71500)
Werkstoff Nr	2.0882
Equivalents	CuNi30Cr2, CuNi30Mn
Production	Hot-Rolled (HR) / Cold-Rolled (CR)
Thickness	1mm – 100mm
Width	1000mm – 3000mm
Application	Chemicals & Fertilizers Industries, Sugar Mills, Cement Industries, Ship Building, Paper Industries, Oil & Gas, Petrochemicals, etc.

- **Trademark Notice:** Some names are trade names and/or trademarks of specific manufacturers. We are not affiliated with any manufacturer(s). Orders will be filled to meet specifications from any available source(s). Names are listed solely for reference to help identify products consistent with listed specifications.

### Properties of Copper Nickel 90/10 and 70/30

- The addition of nickel to copper improves strength and corrosion resistance without reducing the good ductility.
- Copper-nickel alloys have excellent resistance to marine corrosion, strength and durability.
- Aside from being very corrosion resistant to sea water, copper nickel alloys are very thermally stable.
- Ductile
- Can be hardened only by cold working

- Low temperature co-efficient of electrical resistance.
- The nickel content in these copper nickel alloys also enables them to retain their strength at elevated temperatures compared to copper alloys without nickel.

### Types of Copper Nickel 90/10 and Carbon Nickel 70/30

Cupro Nickel 70/30 Bright Bar	Cupro Nickel 90/10 Bright Bar
70/30 Cu-Ni Plates	90/10 Cu-Ni Plate
Copper Nickel 70/30 Tubes	Copper Nickel 90/10 Tubes
UNS C71500 Cu-Ni Fittings	UNS C70600 Cu-Ni Fittings
WERKSTOFF NR. 2.0882 Flanges	WERKSTOFF NR. 2.0872 Flanges
70/30 Round Bar	90/10 Round Bar
Cupro Nickel 70/30 Forgings	Cupro Nickel 90/10 Forgings
Cu-Ni 70/30 Pipes	Cu-Ni 90/10 Pipes
70/30 Copper Nickel Blocks	90/10 Copper Nickel Blocks
70/30 Cupro Nickel Plate Cuttings	90/10 Cupro Nickel Plate Cuttings
UNS C71500 Cu-Ni Forged Fittings	UNS C70600 Cu-Ni Forged Fittings
70/30 Cupro Nickel Threaded Fittings	90/10 Cupro Nickel Threaded Fittings

### Difference Between Copper Nickel 90/10 and Copper Nickel 70/30

Copper-nickel alloy properties vary with composition. The two main copper nickel alloys are 90/10 (90% copper, 10% nickel) and 70/30 (70% copper, 30% nickel). The 70/30 is the stronger and has greater resistance to seawater flow, but the 90/10 will provide good service for most applications and, being less expensive, tends to be more widely used. Both alloys contain small but important additions of iron and manganese

which have been chosen to provide the best combination of resistance to flowing seawater and to overall corrosion. Copper 90/10 and Copper 70/30 both show outstanding resistance to corrosion, particularly sea water; however, Copper 70/30 is stronger and has superior resistance to impingement corrosion. On the other hand, a slightly superior resistance to biofouling is exhibited by the 90/10 alloy.

### Applications

- Seawater pipework
- Offshore fire water systems
- Heat exchangers and condensers
- Sheathing of legs and risers on offshore platforms and boat hulls
- Hydraulic lines
- Fish cages for aquaculture
- Desalination units.

### Our Key Products

<a href="#">Copper Nickel Sheet</a>	<a href="#">Copper Nickel Plate Cuttings/Profiles</a>	<a href="#">Copper Nickel Nuts, Bolts and Fasteners</a>
<a href="#">Copper Nickel Plate</a>	<a href="#">Copper Nickel Foil, Coil</a>	<a href="#">Copper Nickel Wire</a>
<a href="#">Copper Nickel Blocks/Slabs</a>	<a href="#">Copper Nickel Strip</a>	<a href="#">Copper Nickel Ingot</a>
<a href="#">Copper Nickel Rod/Bar</a>	<a href="#">Copper Nickel Pipes and Tubes</a>	<a href="#">Copper Nickel Forgings and Castings</a>
<a href="#">Copper Nickel Flanges</a>	<a href="#">Copper Nickel Forged Fittings</a>	<a href="#">Copper Nickel Buttweld Fittings</a>

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- Established in 1975, the Metallica Metals Group (The Steel Pipes Factory) has its operations spread across major cities in India. We are a pioneer in the stainless steel pipes, nickel alloy products, titanium products, carbon steel pipes and alloy steel pipes manufacturing and processing industry. Our products including pipe fittings, flanges, pipes, sheet plates and valves are exported to over 70 countries across the world, while in India we have supplied to even the remote areas. With over 250 tons of sale in stainless steel and carbon steel pipes every day, Metallica has emerged as a prominent vendor for many buyers in India and Overseas
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## Our Key Products

### **STAINLESS STEEL & NICKEL ALLOYS**

Pure Nickel Alloys

Monel Alloys (Ni-Cu Alloys)

Inconel (Ni-Cr-Mo) Alloys

Incoloy Alloys (Ni-Cr-Fe)

Hastelloy Alloys

Stainless Steel 304/304L

Stainless Steel 309S/309H

Stainless Steel 310/310S

Stainless Steel 316/316L

Stainless Steel 316Ti

Stainless Steel 317/317L

Stainless Steel 321/321H

Stainless Steel 347/347H

Stainless Steel 904L

Duplex Steels (UNS S32205, UNS S31803)

Super Duplex Steels (UNS S32760 / UNS S32750)

Stainless Steel 254 SMO (UNS S31254 / 1.4547)

### **INSTRUMENTATION TUBES & FITTINGS**

Instrumentation Tube

Hydraulic Tubing

Seamless Tubing

Instrumentation Tube Fittings

Double Compression Tube Fittings

Precision Pipe Fittings

Needle & Gauge Valves

Manifold Valves

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Steel Sheet & Plate

Steel Coil & Strip

Steel Pipes

Steel Tubes

Electropolish Tube

Heat Exchanger Tubes

Steel Bars/Rods & Wire

Fasteners (Nut, Bolt, Washer)

Steel Angle Bars

Hex Steel Bars

Round Steel Bars & Rod

Flat Steel Bars

Forgings, Rings & Forged Blocks

Stainless Steel Pipe

Stainless Steel Seamless Pipe

Stainless Steel Welded Pipe

Stainless Steel Tubes

Stainless Steel Furnace Tubes

Stainless Steel Seamless Tubing

Stainless Steel Heat Exchanger Tubes

Large Diameter Pipe

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