

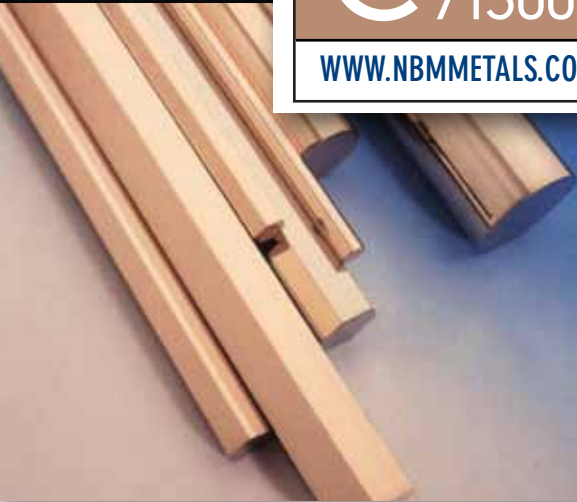


**C** 70600  
71500

## COPPER NICKEL "90/10" & "70/30"

[WWW.NBMMETALS.COM](http://WWW.NBMMETALS.COM)

LEADING MANUFACTURER & MASTER DISTRIBUTOR OF BRASS, BRONZE, & COPPER ALLOYS



### Offered in solid bars, tubes, and plate.

C70600 & C71500, Copper nickel offers excellent corrosion resistance, especially in marine salt water environments. The main, wrought copper-nickel alloys chosen for sea water service contain 10 or 30 percent nickel. They also have important additions of iron and manganese which are necessary to maintain good corrosion resistance. Some common applications for copper nickel include: valves, pump components, fittings, flanges and various other marine hardware components.

### Sizes Available From NBM

SOLID BAR . . . . . 1/4" - 12" diameter  
PLATE . . . . . up to 6" thick  
TUBE . . . . . up to 10" diameter

### Spec Equivalents

ASTM B-111, B-151, B-171, B-466  
MIL C15726F

### Chemical Composition for C70600

|         | Cu <sup>(1)</sup> | Fe      | Pb  | Mn  | Ni <sup>(2)</sup> | Zn  |
|---------|-------------------|---------|-----|-----|-------------------|-----|
| min/max | Rem               | 1.0-1.8 | .05 | 1.0 | 9.0-11.0          | 1.0 |
| nominal | 88.6              | 1.4     | -   | -   | 10.0              | -   |

(1) Cu value includes Ag.  
(2) Ni value includes Co.  
Note: Cu + Sum of Named Elements, 99.5% min.

### Chemical Composition for C71500

|         | Cu <sup>(1)</sup> | Fe      | Pb  | Mn  | Ni <sup>(2)</sup> | Zn  |
|---------|-------------------|---------|-----|-----|-------------------|-----|
| min/max | Rem               | .40-1.0 | .05 | 1.0 | 29.0-33.0         | 1.0 |
| nominal | 69.5              | .50     | -   | -   | 30.0              | -   |

(1) Cu value includes Ag.  
(2) Ni value includes Co.  
Note: Cu + Sum of Named Elements, 99.5% min.

### Typical Uses for C70600

#### Automotive

Power Steering Tube, Brake Lines

#### Consumer

Screw Lamp Bases

#### Industrial

Condenser Plates, Condensers, Weld Torch Tips, Heat Exchanger Tubes, Valve Bodies, Evaporator Tubes, Pressure Vessels, Distiller Tubes, Pump Impellers for Oil Refining, Ferrules, Evaporators

#### Marine

Boat Hulls, Tube Sheet for Salt Water Service, Salt Water Pipe Fittings, Salt Water Piping Systems, Salt Water Piling Wrap, Hot Water Tanks, Salt Water Baffles, Propeller Sleeves, Ship Hulls, Water Hoses

#### Plumbing

Flanges

### Typical Uses for C71500

#### Industrial

Pump Impellers, Heat Exchanger Tubes, Evaporator Tubes, Distiller Tubes, Condenser Plates, Refrigerators, Process Equipment, Condenser Components, Ferrules, Welding Backing Rings, Flexible Metal Hose, Weld Wire, Boiler Parts, Condensers, Propeller Sleeves, Heat Exchanger Components

#### Marine

Salt Water Flanges, Salt Water Piping, Valve Bodies, Sea Water Service, Fittings, Sea Water Condensers, Salt Water Pipe Fittings, Water Boxes - Salt Water Applications, Pump Bodies and Internal Parts-Sea Water



713-869-9600  
1-800-231-0771 TOLL FREE  
sales@nbmmetals.com  
www.nbmmetals.com

PO BOX 800818  
HOUSTON, TX 77280  
fax: 713-869-9124



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# COPPER NICKEL "90/10" & "70/30"

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## Room Temp Tensile & Hardness Data for C70600 / C71500 Plate

| ALLOY  | TEMPER (PLATE) | SECTION SIZE (INCHES) | TENSILE (KSI) MIN | YIELD (KSI) MIN | ELONGATION IN HD MIN |
|--------|----------------|-----------------------|-------------------|-----------------|----------------------|
| C70600 | M20 and O25    | 2 1/2" and Under      | 40                | 15              | 30%                  |
|        |                | 2 1/2" and Over       | 40                | 15              | 30%                  |
| C71500 | M20 and O25    | 2 1/2" and Under      | 50                | 20              | 30%                  |
|        |                | 2 1/2" and Over       | 45                | 18              | 30%                  |

## Room Temp Tensile & Hardness Data C70600 / C71500 Tube & Pipe

| ALLOY  | TEMPER (Tube & Pipe) | TENSILE (KSI) MIN | YIELD (KSI) MIN | ROCKWELL HARDNESS (B) |
|--------|----------------------|-------------------|-----------------|-----------------------|
| C70600 | O60 ANN.             | 38                | 13              | 45 Max                |
|        | H55 Light Drawn      | 45                | 35              | 45 - 70               |
|        | H80 Hard Drawn       | 50                | 40              | 63 Min.               |
| C71500 | O60 ANN.             | 52                | 18              | 51 Max                |
|        | H80 Hard Drawn       | 70                | 45              | 70 Min.               |

### Physical Properties for C70600

Melting Point - Liquidus . . . . . 2100 F  
 Melting Point - Solidus . . . . . 2010 F  
 Density . . . . . 0.323 lb/in<sup>3</sup> at 68 F  
 Specific Gravity . . . . . 8.94  
 Electrical Resistivity . . . . . 115.0 ohms-cmil/ft @ 68 F  
 Electrical Conductivity . . . . . 9 %IACS @ 68 F  
 Thermal Conductivity . . . . . 26.0 Btu · ft/(hr · ft<sup>2</sup>·°F)at 68F  
 Coefficient of Thermal Expansion . . . . 9.5 ·10<sup>-6</sup> per °F (68-572 F)  
 Specific Heat Capacity . . . . . 0.09 Btu/lb/°F at 68 F  
 Modulus of Elasticity in Tension . . . . . 18000 ksi  
 Modulus of Rigidity . . . . . 6800 ksi  
 Machinability Rating . . . . . 20%

### Physical Properties for C71500

Melting Point - Liquidus . . . . . 2260 F  
 Melting Point - Solidus . . . . . 2140 F  
 Density . . . . . 0.323 lb/in<sup>3</sup> at 68 F  
 Specific Gravity . . . . . 8.94  
 Electrical Resistivity . . . . . 225.0 ohms-cmil/ft @ 68 F  
 Electrical Conductivity . . . . . 4 %IACS @ 68 F  
 Thermal Conductivity . . . . . 17.0 Btu · ft/(hr · ft<sup>2</sup>·°F)at 68F  
 Coefficient of Thermal Expansion . . . . 9.0 ·10<sup>-6</sup> per °F (68-572 F)  
 Specific Heat Capacity . . . . . 0.09 Btu/lb/°F at 68 F  
 Modulus of Elasticity in Tension . . . . . 22000 ksi  
 Modulus of Rigidity . . . . . 8300 ksi  
 Machinability Rating . . . . . 20%



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