

# Copper Nickel Pipe Fittings & Flanges for Shipbuilding & offshore Industry



**SUNFLEX**  
METAL INDUSTRIES  
AN ISO 9001 : 2008 CERTIFIED COMPANY



## About us

**SUNFLEX METAL INDUSTRIES** IS ONE OF THE LEADING MANUFACTURER OF COPPER NICKEL MATERIALS USED IN ONSHORE & OFFSHORE OIL INDUSTRIES, SHIPBUILDING, SHIP REPAIR AND ALLIED INDUSTRIES.

**SUNFLEX METAL INDUSTRIES IS PROUD OF ITS QUALIFIED TECHNICAL TEAM TO ASSIST IT'S VALUED CUSTOMERS AND PROJECT PARTNERS IN SELECTION AND PROVIDING TECHNICAL ASSISTANCE, WHENEVER REQUIRED.**

Through our brand new facilities and fully integrated production process, from raw material through smelting, casting extrusion, drawing, forging, forming, stamping and machining, we manufacture and stock the complete range of pipes, fittings, flanges covering all various international standards or dedicated specifications applicable to copper nickel products.

We provide seamless and or welded pipes and BW fittings, hot stamped, forged and machined fittings and flanges from 1/4" till 48" in order to cover the complete package required for whatever naval project.

Nowadays SUNFLEX METAL INDUSTRIES is a referenced and preferred supplier with worldwide major navy or commercial shipyards, ship-owners, naval architects and engineering companies.



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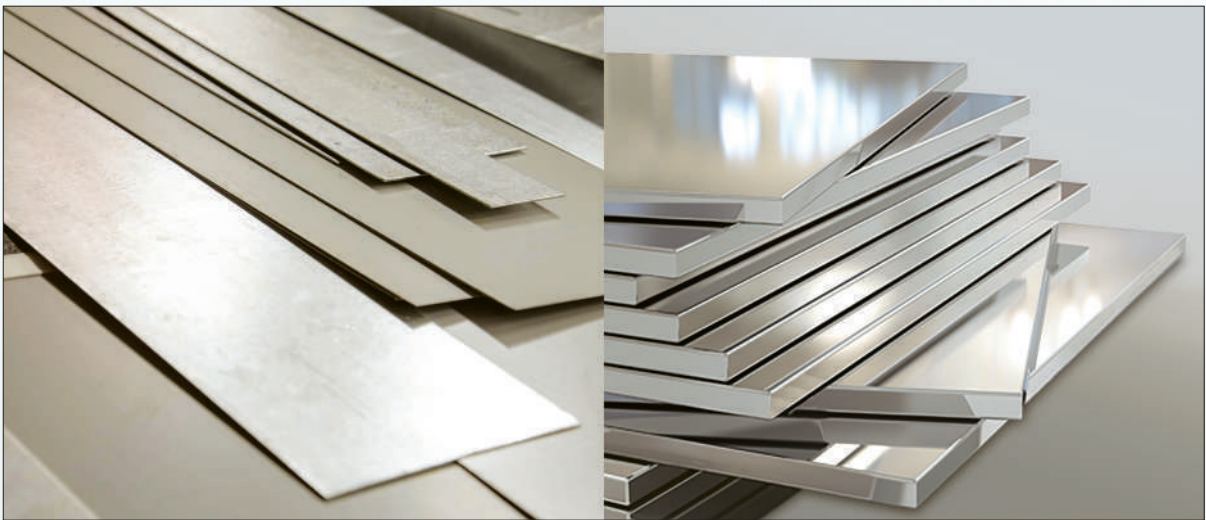
# Copper Nickel 90/10, 70/30

## COPPER-NICKEL PIPE FITTINGS AND FLANGES FOR SHIPBUILDING AND OFFSHORE INDUSTRY

### Pipes



### Sheets / Plates



### "Hie Introduction of Cuni 90/10 and Cuni 70/30 Alloy :

The Attractive corrosion and biofouling - Resistance of copper-nickel alloys in seawater and related environments have Led to their substantial use in marine service for many years. The two main, wrought copper-nickel Alloys chosen for seawater service contain 10% or 30% Nickel, respectively. Development work began in the 1930s in response to A requirement by the british navy for in improved condenser material. Since the 1950s, the 90-10 Alloy has become accepted for condenser service as well as for seawater pipe work in merchant and naval service. In naval vessels, the 90-10 copper-nickel is preferred for surface ships; Whereas, the 70-30 alloy is used for sub- marines because its greater strength makes it more acceptable for the higher pressures encountered. These alloys are also used for power station condensers and offshore seawater pipe work on oil/gas platforms:

Large quantities are selected for the desalination industry and they are additionally used for cladding and sheath-ing of marine structures and hulls.

# Copper Nickel 90/10, 70/30

## ButtWeld Fitting



### Seamless Butt Welding Fittings

Seamless butt weld fittings are produced from Seamless tube and pipe by either hot or cold extrusion, forming, forging, machining, or by a combination of two or more of these operation.

Seamless butt weld fittings are available in standard size, as published in this catalogue, and in nonstandard sizes. Standard size fittings are generally available ex stock.

### Seam Welded Butt Welding Fittings

Seam-Welded butt weld fittings are produced from hot or cold rolled, annealed and pickled sheet or plate, formed into half shells or segments and longitudinally seam-Welded. Seam-Welded Butt-Welding Fittings are available in standard sizes, as published in this catalogue, and in non-standard sizes.

### Material

#### 90/10 Copper Nickel Alloy

- DIN 86013 2.1972, DIN 17664 / 2.0872
- BS2871, 2872, 2875 CN102
- EEMUA 144
- ASTM B466, B467, C70600, MIL-T-16420K C70600
- JIS H3300 C7060T

#### 70/30 Copper Nickel Alloy

- DIN 17664 2.0882
- BS2871, 2872, 2875 CN107
- ASTM B466, B467, C71500, MIL-T-16420K C71500
- JIS H3300 C7150T

### Dimension

- DIN 86011, 86087, 86088, 86089, 86090
- BS1640
- ANSI B16.9, B16.28
- JMS 7354

## Forge Fitting



### Copper Nickel Forged Fittings

Stockist of Copper Nickel Forged Elbow, ASME 16.11, MSS SP-19, 83, 95, 91 Forged Pipe Fittings, Cupro Nickel Forged Pipe Fittings. Cu-Ni 90-10 Forged Fittings, Global Supplier of Copper Nickel 70-30 Socket weld Fittings, Cu-Ni 90/10 Threaded Fittings Dealer in India.

Manufacturer of ASTM B461 Copper Nickel Bushing, Werkstoff No. 2.0812 Copper Nickel High Pressure Forged Fittings, Copper Nickel T0130 Cross, Copper Nickel Equal Tee, Cu-Ni Full Couplings, BS 3199 Union, Cu-Ni UNS C70600 Forged 90 Deg Screwed Threaded Elbow in Mumbai, India.

### Standard Specification For Copper Nickel ASTM B466 Forged Pipe Fittings

**Specifications :** ASTM B122, B171, B466, B467.

**Standard :** ASME 16.11, MSS SP-79, 83, 95, 97, BS 3799.

**Size :** 1/8" NB to 4" NB (Socketweld & Screwed-Threaded)

**Class :** 2000 LBS, 3000 LBS, 6000 LBS, 9000 LBS.

**Type :** Socketweld Fittings, Screwed-Threaded Fittings.

**Grades :** Copper Nickel 90/10 (C70600) Cupro Nickel - 70130 (C71500), UNS C71640.

# Copper Nickel 90/10, 70/30

## COPPER-NICKEL PIPE FITTINGS AND FLANGES FOR SHIPBUILDING AND OFFSHORE INDUSTRY

### Flange



#### Composite Flange

Composite weld-neck and composite slip-on flanges are made up from components, an inner Flange (Welding collar) in Cu-Ni 90/10 or Cu-Ni 70/30 and an outer flange in Carbon Steel

Composite blind flanges are made up from a carbon steel blind flange with a welded-on and machined disc in Cu-Ni 90/10 or Cu-Ni 70/30.

#### Solid Flanges

Solid flanges in Cu-Ni 90/10 or Cu-Ni 70/30 are produced from bar or plate by hot forging and machining.

#### Product Range

Composite and solid flanges are available in standard sizes machining those of the relevant pipes and butt welding fittings. Non-standard size flanges are produced to certain minimum quantity limitations available on application.

#### Material

- BS 2872 CN102, CN107.
- ASTM B151 C70600, C71500.
- JIS C7060, C7150.
- DIN CuNi10Fe1Mn, CuNi30Mn1Fe.

#### Dimension

- BS4501
- ASTM B16.5
- DIN 86037
- JIS B2240

## Round Bars



#### Cupro Nickel 90 / 10 Round Bar

**Specifications :-** ASTM B151, ASME SB151.

**Dimensions :-** EN, DIN, JIS, ASTM, BS, ASME, AISI.

**Range :-** 5 mm to 500 mm thick in 100 mm to 6000 mm.

**Round Bars :-** 6 mm to 120 mm.

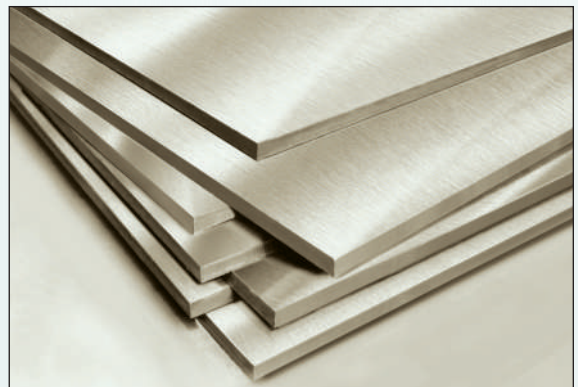
**Square Bars :-** 10 mm to 200 mm.

**Finish :-** Black, Bright Polished, Rough Turned, No. 4 Finish, Matt Finish, BA Finish.

**Length :-** 100 mm to 3660 mm Long.

**Form :-** Round, Square, Hex (A/F), Rectangle, Billet, Ingot, Forging Etc.

## Plates / Sheets



#### Cupro Nickel 90 / 10 Sheets & Plates

**Grades :-** UNS No C 70600 (CU - Ni - 90/10), C 71500 (CU-NI- 70/30)

**Specifications :-** ASTM / ASME SB171, SB157

Width 1000mm / 1219mm / 1250mm / 1500mm

2000mm - Length 2000 mm / 2440 mm

2500 mm / 3000 mm to 6000 mm.

**Thickness :-** 0.1mm to 100 mm Thk.

**Form :-** Coils, Foils, Rolls, Plain Sheet, Strip, Flats, Blank (Circle), Ring (Flange) etc.

## European Standards

### Dimension :-

SEAMLESS and SEAM Pipe according to DIN 1755 T3, DIN 86018, DIN 86019 BS 2871.PT2 & EEMUA 144.

SEAMLESS and SEAM Pipe According to Metric Size, Navy(mm, inch) NDS Size.

Outside Diameter of Pipe ØD			10 bar	14 bar	16 bar	20 bar
			Minimum Wall Thickness	Minimum Wall Thickness	Minimum Wall Thickness	Minimum Wall Thickness
Nominal		Actual mm	Actual mm	Actual mm	Actual mm	Actual mm
inch	ND					
SEAMLESS						
1/8	-	10	1.0	1.0	1.0	1.0
1/4	-	12	1.0	1.0	1.0	1.0
3/8	10	16	1.0	1.0	2.0	2.0
1/2	15	20	1.0	1.0	2.0	2.0
3/4	20	25	1.5	1.5	2.0	2.0
1	25	30	1.5	1.5	2.5	2.5
1 1/4	32	38	1.5	1.5	2.5	2.5
1 1/2	40	44.5	1.5	1.5	2.5	2.5
2	50	57	1.5	1.5	2.5	2.5
2 1/2	65	76.1	2.0	2.0	2.5	2.5
3	80	88.9	2.0	2.5	2.5	2.5
4	100	108	2.5	2.5	3.0	3.0
5	125	133	2.5	3.0	3.0	3.0
6	150	159	2.5	3.0	3.0	3.5
7	175	193.7	2.5	3.5	3.5	3.5
8	200	219.1	3.0	3.5	3.5	4.5
10	250	267	3.0	4.0	4.0	5.5
12	300	323.9	4.0	5.0	5.0	7.0
14	350	368	4.0	5.5	5.5	8.0
16	400	419.1	4.0	6.0	6.0	9.0
SEAMLESS or SEAM WELDED						
18	450	457.2	4.0	6.0	8.0	9.5
20	500	508	4.5	6.5	8.5	11.0
SEAM WELDED						
24	600	610	5.0	8.0	10.5	13.0
28	700	711	6.0	9.0	12.5	15.0
32	800	813	6.0	10.0	13.5	17.0
36	900	914	8.0	11.0	15.5	19.0

## Standard

The Applicable Standard Specifications for Cu-Ni 90/10 Pipes & Cu-Ni 70/30 Pipes

Kind	Country	GERMANY	UNITED KINGDOM	U.S.AMERICA	FRANCE	JAPAN
SEAMLESS		DIN 86019 DIN 1755 DIN 85004(Navy)	BS 2871 PT2 EEMUA 144 NES 779 PT3(Navy)	ASTM B466 MIL-T-16420K Type I GRADE 1	GAM MM11(Navy) S.T.F.22.54./C.004(Navy)	H3300
SEAM WELDED		DIN 86018	BS 2875	ASTM B467 ASTM B608 MIL-T-16420K Type II GRADE 1 or GRADE 2	GAM MM11(Navy) S.T.F.22.54./C.005(Navy)	H3320

# Copper Nickel 90/10, 70/30

## Characteristics of Copper Nickel Alloy



- Good Resistance to stress corrosion & cavitation erosion.
- Excellent resistance to sea water
- Good thermal stability (up to approx. 300°C)
- Good cold - workability
- Good Welding and solder properties

### Chemical Composition & Comparison Table for Cu - Ni Alloys

#### Comparison Table of Standard Specifications for Cu-Ni 90 / 10 Pipe

	DIN 17664 2.0872	DIN 86019 2.1972	BS 2871 CN 102	EEMUA 144-1987 UNS C 7060x	MIL-T-16420K ASTM B 466 C 70600	JIS H 3300 C 7060T Cu+Ni+Fe
Cu%	rem.	rem	rem	rem	rem	rem
Ni%	90. - 11.0	9.0 - 11.0	10.0 - 11.0	10.0 - 11.0	9.0 - 11.0	9.0 - 11.0
Fe%	1.0 - 2.0	1.5 - 1.8	1.0 - 2.0	1.5 - 2.0	1.0 - 1.8	1.0 - 1.8
Mn%	0.5 - 1.0	0.5 - 1.0	0.5 - 1.0	0.5 - 1.0	max. 1.00	0.2 - 1.0
C%	max. 0.05	max. 0.05	max. 0.05	max. 0.05	max. 0.05	-
Pb%	max. 0.03	max. 0.01	max. 0.01	max. 0.01	max. 0.02	max. 0.05
S%	max. 0.02	max. 0.05	max. 0.05	max. 0.02	max. 0.02	-
P%	max. 0.02	max. 0.02	-	max. 0.02	max. 0.02	-
Zn%	max 0.50	max. 0.05	-	max. 0.20	max. 0.50	max. 0.50
Other imp	max. 0.30	max. 0.20	max. 0.30	max. 0.30	-	Cu+Ni+Fe+Mn min 99.5%

#### Comparison Table of Standard Specifications for Cu-Ni 70 / 30 Pipe

	DIN 17664 2.0882	BS 2871 CN 107	MIL-T-16420K ASTM B 466 C 71500	JIS H 3300
Cu%	rem.	rem	rem	rem
Ni%	30.0 - 32.0	30.0 - 32.0	29.0 - 33.0	29.0 - 33.0
Fe%	0.4 - 1.0	0.4 - 1.0	0.4 - 1.0	0.4 - 1.0
Mn%	0.5 - 1.5	0.5 - 1.5	max. - 1.00	0.2 - 1.0
C%	max. 0.05	max. 0.06	max. 0.05	-
Pb%	max. 0.03	max. 0.01	max. 0.02	max. 0.05
S%	max. 0.02	max. 0.08	max. 0.02	-
P%	max. 0.02	-	max. 0.02	-
Zn%	max 0.50	-	max. 0.50	max. 0.50
Other imp	max. 0.30	-	-	Cu+Ni+Fe+Mn : 99.5%



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Cupro Nickel Piping Material**

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