Metal Alloys Corporation
Quality, Technology & Vision at its Best
World Class Sourcing Solution for Copper & Copper Alloys Products

www.metalalloyscorp.com
An ISO 9001 Certified Company
We are...
Metal Alloys Corporation - One of the leading manufacturer of Copper and Copper Alloys Cast, Extruded and Drawn products, viz. Billets/Ingots, Mother Shells, Tubes/Pipes, Hollow/Solid Rods, Sections, Profiles etc.

QUALITY:
METALCO is an ISO 9001 Certified unit having sophisticated quality control & quality assurance systems along with an ultra modern chemical & physical testing laboratory having Computerized Spectroscopic Analyzer for precise alloying, Multi - Range Microscope for micro structure examination, Eddy Current Testing, Hydraulic Pressure Testing etc.

TECHNOLOGY:
METALCO - with a production capacity of 6000 MT per annum sprawls across an area of 150,000 sq. ft. with a unique design of the constructed area of 60,000 sq. ft. which maximizes productivity & enables us to transfer benefits of the large scale operations to the customers. In order to consistently manufacture international quality products, the company has employed a dedicated team of highly qualified and experienced Engineers and Management Professionals.

VISION:
The vision of the management & the technical expertise of entrepreneurs led to the design, construction and installation of state of art manufacturing facility for casting, extrusion, pilgering, cold drawing, finishing, inspection and testing, under one roof.
**Admiralty Brass**

Admiralty Brass is generally used with fresh, clean waters free from suspended abrasive solids and originating from rivers, lakes, and canals. It may also be used with brackish or even saline water. The inhibitive action of arsenic protects Admiralty Brass from dezincification and the fully annealed alloy can also withstand stress-corrosion cracking. In waters containing less than 2000 ppm dissolved solids, its use is allowed at flow rates of up to 3 m/s (10 ft/s); in sea waters, a maximum speed of 1 m/s (3.0 ft/s) is recommended. The presence of tin improves resistance to general corrosion in slightly polluted (sulfurized) water.

**Aluminum Brass**

Aluminum Brass is generally used with brackish or sea water. Through its arsenic inhibition, it is virtually immune from dezincification and when fully annealed, also practically free from stress-corrosion cracking. Aluminum Brass is resistant to pitting and even more so to impingement attack: in fresh water, a velocity of up to 3.5 m/s (11.5 ft/s) is admitted; it should be reduced to about 2.5 m/s (8.5 ft/s) when operating in sea water.

**90/10 Copper Nickel**

90/10 Copper Nickel is widely used in sea water. It has very good corrosion resistance to clean or moderately polluted marine or estuary water, even containing dissolved incondensable gases. This alloy is virtually immune from stress-corrosion cracking. In clean sea water, velocities of up to 2.2-2.5 m/s (7.5-8.5 ft/s) are accepted while 4 m/s (13 ft/s) is the upper limit for clean fresh or slightly saline solutions. To avoid the risk of deposit attack, it is generally recommended to never operate at water velocities below about 0.8-1 m/s (2.5-3.5 ft/s). 90/10 Copper Nickel can also be used, with appropriately reduced flow velocity, in contact with water containing some sulphides or suspended solids. It is also often selected for its good mechanical properties, both at room and relatively elevated temperatures.

**70/30 Copper Nickel**

70/30 Copper Nickel is mainly preferred when the severity of service condition (cooling water, steam, condensate, temperature, etc.) is such as to virtually rule out all other copper metals. Due to its hardness and to the type of oxide whereby its surface is self-protected, 70/30 Copper Nickel has excellent resistance to impingement and erosion-corrosion by suspended solids in sea water flowing at up to 3 - 3.5 m/s (10 - 11.5 ft/s). Like all Copper-nickels, 70/30 Copper Nickel is virtually immune from stress-corrosion cracking. It can be very sensitive to deposit attack and is therefore not recommended for stagnant or slow moving (under 1 - 1.2 m/s or 3.5-4 ft/s) water.
Seamless Tubes & Solids

METALCO specializes in manufacturing following Copper & Copper Alloys tubes for Sugar, Air-Conditioning, Refrigeration, U Tube Bundle, Finned Tubes.

70/30 Sugar Brass Tube
SUGAR BRASS TUBES is the commonly known name of 70/30 Brass Tubes. A Copper Zinc Alloy Containing Small Quantity of Arsenic. This is added as an inhibitor against Dezincification. The alloys exhibit a good combination of strength and ductility and are commonly selected whenever excellent cold working properties and relatively low cost are desirable. Application areas of this product are Sugar Industry, Plumbing, Furniture, Hand Pumps, Ammunition, General Engineering.

Copper Pan Cake Coils
Copper Pan Cake Coils are commonly known as ARC Coils (Air Conditioning and Refrigeration Coils) are highly acknowledged for long lasting excellent performance, High resistance to wear and tear assures low maintenance cost. Rugged construction makes them perfect to be used in various industries. Other applications are Cooling Towers, Gas Lines, Plumbing, Etc.

U-Bend Tubes
METALCO manufactures U-Bend tubes confirming to the international Standards and as per the customer requirements. These tubes have been added to our product range so to offer added value to our esteemed customers. Roundness, Straightness, Uniformity of the wall thickness and inner and outer surface of the tube are the unique features so as to make them suitable for intended Applications. U-bend tubes are mainly used to enhance the design of heat exchangers where is there are space constrains and heat transfer are required to be done on faster basis. Special care is being taken in packing this product to avoid any variation in U-bend radius during transit. The U-bend tube quality is guaranteed by means of hydrostatic and pneumatic tests, eddy current tests and non-destructive tests (hardness, dimensional, dye penetration inspection).

Finned Tubes
METALCO offers different finned tubes: tension wound finned tubes, embedded finned /ubes, extruded finned and low finned tubes. Tension wound finned tubes are formed by winding a strip made of aluminum or copper around the tube under tension. The strip winding technology provides different types of fins: L-fin, LL fin, KL fin. Embedded fins (G fins) are made by winding aluminum or copper strip into a helical groove machined on the outer surface of the tube. Extruded finned tubes are bimetallic tubes whose outer aluminum surface is finned by cold plastic deformation Low finned tube is a finned tube obtained through plastic cold deformation. The method consists in realizing from a smooth tube, dins with a particular geometric form without removing material; this plastic deformation causes an increment of heat exchange efficiency and allows to reduce the heat exchanger size. The finned tubes quality is assured by hydrostatic and pneumatic tests.
### Copper & Copper Alloys

#### Capabilities...

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<th>Production range</th>
<th>Min Thickness and Max Width</th>
<th>Profile</th>
<th>Hollow Rods</th>
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<tr>
<td>Tube</td>
<td>6.35 mm to 110 mm</td>
<td>As per Customer Drawing</td>
<td>Min Bore size 20 MM</td>
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<tr>
<td>Round Rods</td>
<td>6 mm to 250 mm</td>
<td></td>
<td>and Max OD 130 mm</td>
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<tr>
<td>Hex</td>
<td>5 mm to 60 mm</td>
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</tr>
<tr>
<td>Square</td>
<td>4 mm to 60 mm</td>
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<td></td>
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<tr>
<td>Flat</td>
<td>5 mm</td>
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<tr>
<td>Profile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rods</td>
<td></td>
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</tr>
</tbody>
</table>

### Cupro Nickel

- **Ingots / Billets/ Mother tubes/ Pilger Tubes/ Finished Tubes/ Finned Tubes/ U-Bend Tubes/ Rods**
- **70/30 Copper Nickel**
- **90/10 Copper Nickel**
- **95/5 Copper Nickel**

**Cupro Nickel**

- ASTM B 111 C 71500/ ASME SB 111 C 71500/ BS 2871 Part 3 CN 107/ EN 12451 CuNi 30 Fe 1 Mn/ NFA 51 102 CuNi 30 Fe 1 Mn/ JIS H 3300 C 7150/ ASTM B 111 C 70600/ ASME SB 111 C 70600/ BS 2871 Part 3 CN 102/ EN 12451 CuNi10 Fe 1 Mn/ NFA 51 102 CuNi10 Fe 1 Mn/ JIS H 3300 C 7060/ ASTM B 111 C 70400/ ASME SB 111 C 70400/ BS 2870 CN 101/ ISO 1635 CuNi5Fe1Mn/ JIS C 2532 GCN10

### Brass for condensers/ heat exchangers

- **Ingots / Billets/ Mother tubes/ Pilger Tubes/ Finished Tubes/ Finned Tubes/ U-Bend Tubes/ Rods**
- **Admiralty Brass**
- **Aluminum Brass**
- **Aluminum Bronze**

**Brass for condensers/ heat exchangers**

- ASTM B 111 C 44300/ ASME SB 111 C 44300/ BS 2871 Part 3 CZ - 111/ EN 12451 CuZn28 Sn1As/ NFA 51 102 CuZn28Sn1/ JIS H 3300 C 4430
- ASTM B 111 C 68700/ ASME SB 111 C 68700/ BS 2871 Part 3 CZ - 110/ EN 12451 CuZn20 AL2As/ NFA 51 102 CuZn22 Al2/ JIS H - 3300 C 6870/ ASTM B 111 C60800/ ASME SB 111 C 60800/ EN 12451 CuAl5As/ CW200G

### Lead Free Brasses

- **Ingots / Billets/ Mother tubes/ Pilger Tubes/ Finished Tubes/ Rods (Solid and Hollows) - Hex / Rectangles/ Square/ Profile**
- **70/30 Brass**
- **63/37 Brass**
- **Red Brass**
- **Naval Brass**

**Lead Free Brasses**

- ASTM B 135 C 26000/ BS 2871 Part 3 CZ - 126/ EN 12451 CuZn30As/ NFA 51 102 CuZn30/ JIS H 3300 C 2600/ AS 1572 26130
- ASTM B135 C 27000/ JIS H3000 C 2700/ ISO 1637 CuZn37
- ASTM B135 C 23000/ BS 2870 CZ 102/ JIS H3000 C 2300
- IS 291 Grade I or II / BS 2874 CZ 112/ JIS 3250 C4622/ ASTM C48200

### Copper

- **Ingots / Billets/ Mother tubes/ Pilger Tubes/ Finished Tubes/ Rods (Solid and Hollows) - Hex / Rectangles/ Square/ Profile**
- **DHP Copper**
- **DLP Copper**
- **EC / ETP Copper**

**Copper**

- ASTM B 140 C 31400
- ASTM B103 C 51000 / SAE J 463 C 5100 / BS 2874 PB 102

### Lead Laos

- **Wire Rods (Solid and Hollows) - Hex / Rectangles/ Square/ Profile**
- **Free Cutting Brass**
- **Forging Brass**
- **High Tensile Brass**
- **Rivetting Brass**
- **Nickel Silver**

**Lead Laos**

- ASTM B 455 / B 16 C 38500 / C 36000/ BS 2874 CZ - 121Pb3 or CZ124/ IS319 Grade I / I I / JIS3250 H C3604 or C3602
- ASTM B 124 C37700/ BS 2874 CZ 122/ IS 3488 Forging Brass
- IS 320 HT1 or HT2 / BS 2874 C2114 or C2115/ JIS 3250H C6782 or C6783
- IS 4170 CuZn40/ BS 2874 C2109/ JIS 3250 H C2800/ ASTM B171 C 36500/ IS 4413 CuZnC7/ BS 2872 Ctz108
- IS 10757 Nickel Silver/ BS 2874 NS101/ ASTM C79830

### Bronze

- **Rods (Solid and Hollows) - Hex/ Rectangles/ Square/ Profile**
- **Tin Bronze**
- **Aluminum Bronze**
- **Alu. Silicon Bronze**
- **Lead Comm.Bronze**
- **Phosphos Bronze**

**Bronze**

- ASTM B30 C92600
- ASTM B 111 C60800/ ASME SB 111 C 60800/ EN 12451 CuAl5As/ CW200G
- ASTM B 150 C 64200 / SAE J 463 C 64200
- ASTM B 140 C 31400
- ASTM B103 C 51000 / SAE J 463 C 5100 / BS 2874 PB 102

### U Bend Tubes

- **Brass, Copper-Nickel & Copper**

**U Bend Tubes**

- Tension wound finned tubes, embedded finned tubes, extruded fin and low finned tubes.

### Finned Tubes

- **Brass, Copper-Nickel & Copper**

**Finned Tubes**

- Tension wound finned tubes are formed by winding a strip made of aluminum or copper around the tube under tension. The strip winding technology provides different types of fins: L-fin, LL fin, KL fin.
## Quality Assurance Plan...

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<thead>
<tr>
<th>Sr. No.</th>
<th>Process</th>
<th>Characteristics to be checked</th>
<th>Measuring Instruments</th>
<th>Quantum to be checked</th>
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<td>Spectro Analyzer</td>
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<td>Melting &amp; Casting</td>
<td>Charge Quantity</td>
<td>Weighing Scale</td>
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<tr>
<td></td>
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<td>Temperature</td>
<td>Thermo Couple</td>
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<td>Chemical Composition</td>
<td>Spectro Analyzer</td>
<td>100%</td>
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<tr>
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<td>Billet Cutting</td>
<td>Appearance</td>
<td>Visual</td>
<td>100%</td>
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<td>Extrusion</td>
<td>Temperature</td>
<td>Pyrometer</td>
<td>Random Sampling</td>
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<td>Dimensions</td>
<td>Micro Meter</td>
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<td>Shell Inspection</td>
<td>Dimensions</td>
<td>Micro Meter</td>
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<td>Appearance</td>
<td>Visual</td>
<td>100%</td>
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<td>Pilgering</td>
<td>Dimensions</td>
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<td>Appearance</td>
<td>Visual</td>
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<td>Drawing</td>
<td>Dimensions</td>
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<td></td>
<td>Surface</td>
<td>Visual</td>
<td>100%</td>
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<td>Straightening</td>
<td>Dimensions</td>
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<td>Straightness</td>
<td>Visual &amp; Measurement</td>
<td>Random Sampling</td>
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<td>9</td>
<td>Eddy Current Test (E-243)</td>
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<td>Eddy Current Testing Machine</td>
<td>100%</td>
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<td>Leakage Defect</td>
<td>Pressure Gauge</td>
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<td>Pre - Inspection</td>
<td>Deburring</td>
<td>Deburring Tools</td>
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<td>Dimension &amp; Length</td>
<td>Micrometer</td>
<td>100%</td>
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<td>Temperature</td>
<td>Thermo Couple</td>
<td>Lot Wise</td>
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<td>Speed</td>
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<td>Lot Wise</td>
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<td>Dimensional Check</td>
<td>Outer Diameter, Wall Thickness, Length, Straightness</td>
<td>Micrometer &amp; Measuring Tape</td>
<td>100%</td>
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<td>15</td>
<td>Visual Inspection</td>
<td>Surface</td>
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<td>100%</td>
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<td>Chemical Analysis Of Final Product</td>
<td>Chemical Composition</td>
<td>Spectro Analyzer</td>
<td>Random Sampling</td>
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<td>Microscopic Examination</td>
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<td>Expansion Test</td>
<td>UTM</td>
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<td>Yield Strength Test</td>
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<td>Mercurosis Nitrate Test</td>
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<td>18</td>
<td>Packing</td>
<td>Marking &amp; Packing</td>
<td>As per customer requirement</td>
<td>100%</td>
</tr>
</tbody>
</table>

Perfection is impossible, but continual pursuit of perfection is dedication that few will pursue. Our future depends on the dedication of individuals to lead the way for the quality we wish to achieve.
Copper & Copper Alloys

Process flow chart...

Raw Material → Melting → Casting → Spectro Analysis

Pickling → Extrusion → Billet Heating → Billet Cutting

Straightening → Pilgering

Hydro Testing → Cut to Length → Eddy Current Testing → Straightening

Pre Inspection → Annealing

Annealing → Final Inspection, Testing & Marking

Dispatch → Packaging
Seamless Tubes & Solids

Our Plant

Coreless Type Induction Melting Furnace

Horizontal Oil Hydraulic Extrusion Press

PLC Controlled Draw Benches

Cold Pilger Mill

Eddy Current Testing Machine

Hydraulic Pressure Testing Machine

Superior Quality Packing

Roller Hearth Bright Annealing Furnace
Copper & Copper Alloys

Our Quality Control...

PROCESS EQUIPMENTS
- Coreless Type Induction Melting Furnace
- Channel Type Induction Melting Furnace
- Gas Fired Billet Heater
- 1250/160 M.T. Horizontal Oil Hydraulic Extrusion Press
- Mannesmann Make Cold Pilger Mill
- Roller Hearth Bright Annealing Furnaces
- PLC Controlled Draw Benches
- Straightening Machine

QUALITY CONTROL EQUIPMENTS
- Optical Emission Spectrometer
- Universal Testing Machine
- Rockwell Cum Brinell Hardness Tester
- Brinell Cum Vickers Hardness Tester Machine
- Conductivity Meter
- Metallurgical Microscope
- Eddy Current Testing Machine
- Hydraulic Pressure Testing Machine
- Chemical Laboratory

UTILITY
- Diesel Generating Sets
- High Pressure Air Compressors
- Stretch Wrapping Machine
- PLC based RO plant for industrial water supply
- Cooling Towers
- EOT Cranes

Optical Emission Spectrometer
Chemical Laboratory
Universal Testing Machine
Hardness Testing Machine
Seamless Tubes & Solids

Product Application...

MAIN PRODUCT APPLICATION AREA

- Ship Building
- Automobiles
- Electronics
- Defence
- L.P.G. Valves & Compts
- Machinery Parts & Compts
- Thermal Power Plants
- Watch Industry
- Sugar Plant Tubes
- Tele Communications
- Surgical Equipments
- Ball Pens
- Electricals
- Railways
- Wood Screws
- Refrigeration Plant
- Heat Exchangers
- Building Hardware
Metal Alloys Corporation
Manufacturer & Exporter of Copper and Copper Alloys Products

Regd. Office & Plant
6 & 7, Lakhabaval, R O. Khodiyar Colony, Jamnagar-361 006. Gujarat (INDIA)
Tel.: +91-288-2889251 /52, Fax: +91-288-2889223, Cell: +91-9924443396

Email: info@metalalloycorp.com • web: www.metalalloycorp.com

Corporate Office
A/2, North View Apartment, Sub Plot-IV, St. Xavier's College Road, Navrangpura, AHMEDABAD - 380 009. Gujarat (INDIA)
Tel. +91-79-26300054/0197 • Fax : +91-79-26302231 • M.: 98250 95960

Nearest Domestic Air Port : Jamnagar - 3 kms.
Nearest International Air Port : Ahmedabad 325 kms.
Nearest Port : Kandla - 222 kms., Mundra - 300 kms.