



8ASHT

H a s h t H o l d i n g



[www . HashtHolding . com](http://www.HashtHolding.com)

Hasht trading company was founded in 2020 in the middle of pandemic to change the face of mineral trading and ensure that companies and producers will be provided with the best raw materials as soon as possible with variety of offers to help them keep up the good work during this pandemic and after it. We cut the dealers and provide your demand straight from mineral processing plants to ensure you get the best price and quality

FOUNDRY SHOP

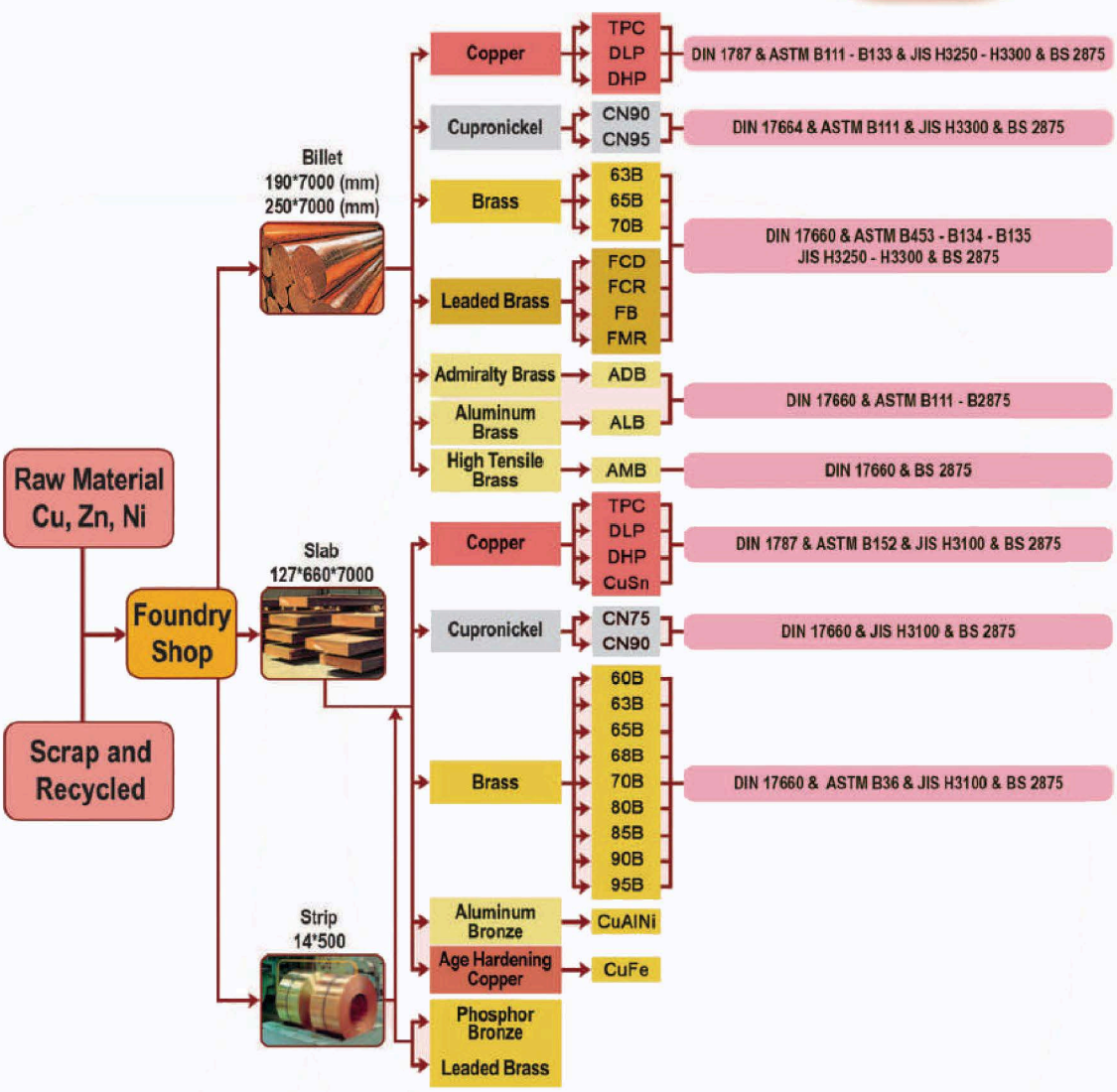
The foundry shop is built upon an area of 13,500 sq. meters and its machinery is from Germany consisting of four melting and casting lines.



Copper, brass, bronze and cupronickel billet and slabs are the products of this factory which in fact supply the raw material of Rolling and Extrusion Shops.

The line 4 of this factory has the ability to continually cast strips with 14 by 500 mm. In this way it can afford for all the alloys which are problematic when produced by hot rolling or their cooling range is extended, such as leaded sheets and strips, phosphorus bronze and navy brasses.

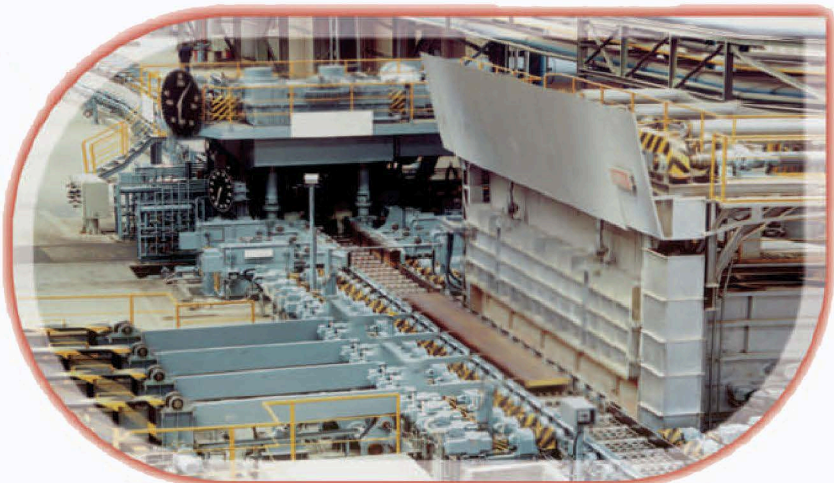
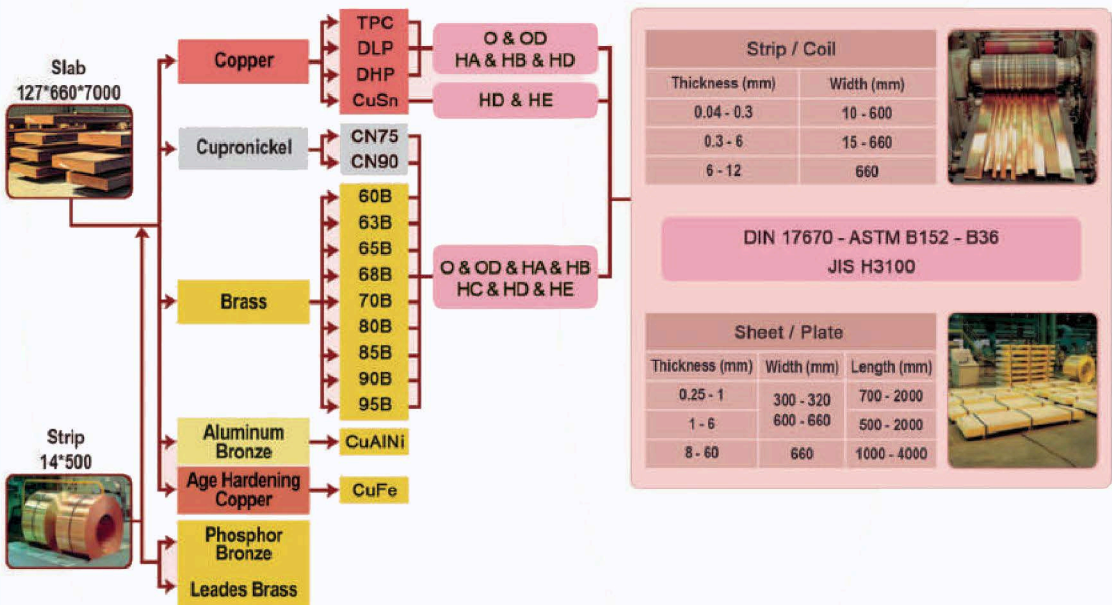




ROLLING SHOP

With an area of 32,000 sq. meters of building and machinery, the rolling shop benefits the various rolling machines, annealing furnaces, pickling lines and slitting and cut to length machines. Kobe Steel, Japan, has supplied the machinery and technology. The annual production of this factory is about 35,050 tons. Different sizes of strips and sheets are used in:

- Cooling industries
- Deep drawing industries
- Electrical industries
- Automobile industries
- Handicrafts and decorative industries





Copper Strip & Sheet

• TPC

- Excellent electrical and thermal conductivity
- Good workability, drawability and corrosion and weathering resistancy
- Applicable to electrical usages, distillers, buildings, chemical industries, gasket, appliances, etc

• DLP-DHP

- Good workability, drawability, weldability, corrosion and weathering resistancy
- Good thermal conductivity
- Applicable to bath, boilers, kettle, gasket, building, chemical industries, etc

• CuSn

- With 0.1-0.18 percent of tin has a good consistency up to 300°C
- Applicable to automobile radiators



ROLLING SHOP

Brass Strip & Sheet

• 60B-63B-65B-70B

- Excellent workability and drawability
- Suitable for plating
- Good for being punched and bent
- Glittering surface
- Applicable to automobile radiators and deep drawing works

• 80B-85B-90B-95B

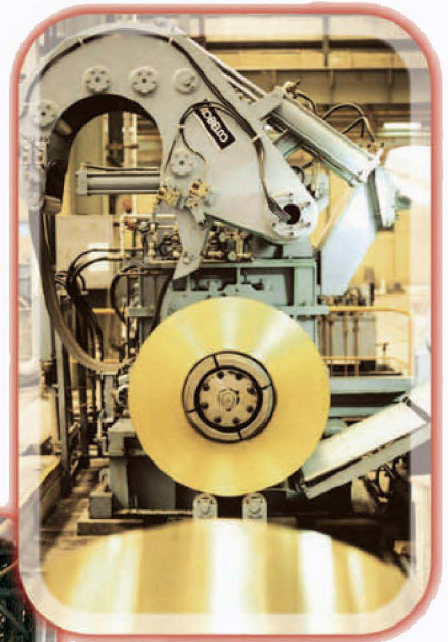
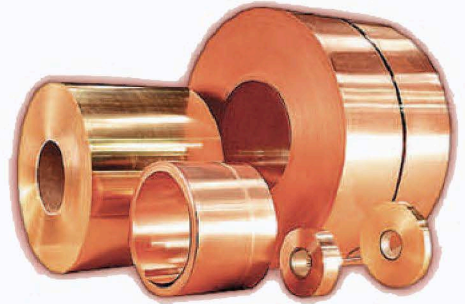
- Excellent workability and drawability
- Good corrosion resistancy
- Applicable to building and military purposes

• CN75-CN90

- Durability in high temperatures
- Good corrosion resistancy (specially in sea water)
- Applicable to communication industry, sea industry and coining

• CuAlNi

- Good corrosion and oxidization resistancy
- Applicable to heat and cold industries and coining





- **CuFe**

- Good corrosion resistancy in different weathers
- Functions better than copper against scratch and cracks due to tension
- Applicable to electrical parts, print and fitting industry

- **Phosphorus Bronze**

- Good corosion and friction resistancy
- High resilience and springiness quality
- Mostly applicable to electrical parts and fitting industry

- **Leaded Brass**

- Good corosion resistancy
- High elongation quality
- Applicable to parts that require drilling and grinding, construction and electrical industries



Chemical Composition

Chemical Composition of Copper Sheet, Strip and Foil, Tube and Sections

Material	Denomination	Standard Conformance					Chemical Composition (%)	
		ISO	USA ASTM	Germany DIN	Japan JIS	UK BS	Copper (min)	Phosphorus
TPC	Tough Pitch Copper	Cu-ETP	C 11000	E Cu 58	C 1100	C 101	99.90	0.004 max
DLP	Phosphorous	Cu-DLP	C 12000	SW-Cu	C 1201	-	99.90	0.004-0.015
DHP	Deoxidized Copper	Cu-DHP	C 12200	SF-Cu	C 1220	C 106	99.90	0.015-0.040

Copper with Sn= 0.1 - 0.18% and P= 0.008 - 0.018 for radiator strips is available.

Chemical Composition of Brass Tube and Sections

Alloy	Trade Name	Standard Conformance					Chemical Composition (%)		
		ISO	USA ASTM	Germany DIN	Japan JIS	UK BS	Copper	Lead	Zinc
70B	Gilding Brass	CuZn30	C 26000	CuZn30	C 2600	CZ 106	68.5 - 71.5	-	Rem
65B	Yellow Brass	CuZn35	C 27000	CuZn36	C 2700	CZ 107	64.0 - 66.0		Rem
63B	Common Brass	CuZn37	C 27400	CuZn37	C 2720	CZ 108	62.0 - 64.0		Rem
FCD	Free Matching Brass	CuZn39Pb3	C 38500	CuZn39Pb3	C 3603	CZ 121	57.5 - 59.0	2.5 - 3.3	Rem
FCR	Free Cutting & Riving	CuZn36Pb3	C 36000	CuZn36Pb3	C 3601	CZ 124	60.0 - 62.5	2.5 - 3.3	Rem
FB	Forging Brass	CuZn39Pb2	C 37700	CuZn39Pb2	C 3771	CZ 128	58.5 - 60.5	1.5 - 2.5	Rem
FB2		CuZn40Pb2	C 38000	CuZn40Pb2	C 3771	CZ 122	57.5 - 59.0	1.5 - 2.5	Rem
ADB (1)	Admiralty Brass	CuZn28Sn1	C 44300	CuZn28Sn1	C 4430	CZ 111	70.0 - 72.0	-	Rem
ALB (2)	Aluminum Brass	CuZn20Al2	C 68700	CuZn20Al2	C 6870	CZ 110	76.0 - 79.0	-	Rem
AMB (3)	High Tensile Brass	CuZn37Mn3Al2	-	CuZn40Al2	-	CZ 114	56.5 - 59.0	-	Rem
FMR (4)	Leaded Brass	CuZn36Pb1.5	C 35340	CuZn36Pb1.5	-	CZ 119	62.0 - 64.0	1 - 2	Rem

(1) Sn = 0.9 - 1.2

(2) Al = 1.8 - 2.3, As = 0.02 - 0.035

(3) Al = 1.3 - 2.3, Fe = 1, Mn = 1.4 - 2.6, Ni = 2, Si = 0.3 - 1

(4) Fe = 0.2

Chemical Composition of Brass Sheet, Strip and Coil

Alloy	Trade Name	Standard Conformance					Chemical Composition (%)	
		ISO	USA ASTM	Germany DIN	Japan JIS	UK BS	Copper	Zinc
95B	Gilding Brass	CuZn5	C 21000	CuZn5	C 2100	-	94.0 - 96.0	Rem
90B	Commercial Bronze	CuZn10	C 22000	CuZn10	C 2200	CZ 101	89.0 - 91.0	Rem
85B	Red Brass	CuZn15	C 23000	CuZn15	C 2300	CZ 102	84.0 - 86.0	Rem
80B	Low Brass	CuZn20	C 24000	CuZn20	C 2400	CZ 103	79.0 - 81.5	Rem
72B	Cartridge Brass	CuZn28	-	CuZn28	-	-	71.0 - 73.0	Rem
70B		CuZn30	C 26000	CuZn30	C 2600	CZ 106	69.0 - 71.0	Rem
68B		CuZn33	C 26800	CuZn33	C 2680	-	67.0 - 68.5	Rem
65B	Yellow Brass	CuZn35	C 26800	CuZn35	C 2680	CZ 107	64.0 - 65.5	Rem
63B		CuZn37	C 27200	CuZn37	C 2720	CZ 108	62.0 - 64.0	Rem
60B	Muntz Metal	CuZn40	C 28000	CuZn40	C 2801	CZ 109	59.0 - 62.0	Rem

Chemical Composition of Cupronickel and Other Copper-base Alloys

Alloy	Standard Conformance				Chemical Composition (%)				
	ISO	USA ASTM	Germany DIN	Japan JIS	Nickel	Iron	Aluminium	Phosphorous	Copper
CN95	CuNi5	C 70400	-	-	4 - 6	1.3 - 1.7	-	-	Rem
CN90	CuNi10Fe1Mn	C 70600	CuNi10Fe1Mn	C 7060	9 - 11	1 - 1.8	-	-	Rem
CN80	-	C 71000	-	-	19 - 21	Max 1	-	-	Rem
CN75	CuNi25	-	CuNi25	-	24 - 26	Max 0.3	-	-	Rem
CN70	CuNi30Mn1Fe	C 71500	CuNi30Mn1Fe	C 7150	29 - 31	0.4 - 0.7	-	-	Rem
CuAl10Ni5	CuAl10Ni5	-	CuAl10Ni5	C6300	4 - 5.5	2 - 4	8.5 - 11	-	Rem
CuAl7	CuAl7	-	CuAl8	C6161	1 - 2.5	-	6 - 7.5	-	Rem
CuFe0.1P	CuFe0.1P	C 19210	CuFe0.1P	C1921	-	0.05 - 0.15	-	0.025 - 0.04	Rem
CuFe2P	CuFe2P	C 19400	CuFe2P	C1940	-	2 - 2.6	-	0.03 - 0.04	Rem

Note: Other grades of copper and copper alloys may be produced on request.

Mechanical & Electrival Properties

Mechanical Properties for Copper Sheet/Strip

Material	Temper	Tensile Strength (N / mm ²)	Elongation (min) (%)	Hardness (HV)	
TPC, DLP, DHP (1)	Annealed	O	220 - 250	35	65 (Max)
	Quarter Hard	HA	220 - 260	25	65 - 90
	Half Hard	HB	250 - 320	15	70 - 100
	Hard	HD	300 (Min)	-	90 - 120

(1) The minimum HV hardness of extra hard tempered (HE) DLP and DHP materials andradiator strips will be 115 (HV).

• All values in above table are valid for sheet, strip and coils from 0.1 to 2.5 mm in thickness.

• For products with over 3 min in thickness, only O and HA tempers are available.

Mechanical Properties for Brass Sheet/Strip

Material	Temper	Tensile Strength (N / mm ²)	Elongation (min) (%)	Hardness (HV)	
90B, 95B	Annealed	O	230 - 290	35	70 (Max)
	Quarter Hard	HA	260 - 350	25	65 - 110
	Half Hard	HB	290 - 370	20	80 - 120
	Three Quarter Hard	HC	350 - 410	-	110 - 140
63B	Hard	HD	390 (Min)	-	125 (Min)
	Annealed	O	280 - 400	40	85 (Max)
	Quarter Hard	HA	330 - 420	35	80 - 125
	Half Hard	HB	360 - 450	28	90 - 145
70B	Three Quarter Hard	HC	380 - 480	-	110 - 160
72B	Hard	HD	420 - 560	-	125 - 175
63B	Extra Hard	HE	550 (Min)	-	160 (Min)

• All values in above table are valid for sheet, strip and coils from 0.1 to 2.5 mm in thickness.

• For products with over 3 min in thickness, only O and HA tempers are available.

Mechanical Properties for Tube

Material	Temper	Tensile Strength (MPa)	Grain Size (mm)	Hardness (HV)	
Copper: TPC & DHP	Soft Annealed	OS	200 - 260	0.025 - 0.060	60 (Max)
	Light Annealed	OL	220 - 270	0.04 (Max)	70 (Max)
	Hard	HD	350 (Min)	-	90 (Min)
Brass: 65B 63B	Soft Annealed	OS	320 - 400	0.025 - 0.060	90 (Max)
	Light Annealed	OL	340 - 440	-	70 - 110
	Hard	HD	450 (Min)	-	150 (Min)

Standards for Copper & Brass Tubes

Condenser Tubes: ASTM B 111

Copper Water Tubes: ASTM B 88

Copper Capillary Tubes: ASTM B 360

Copper Air Conditioning and Refrigeration (ACR) Tubes: ASTM B 280

General Purpose Copper Tubes: ASTM B 75, BS 2871, DIN 17671, JIS 3300

General Purpose Brass Tubes: ASTM B 135, BS 2871, DIN 17671, JIS 3300

Mechanical Properties for Rod, Wire and Bus Bar

Shape	Material	Temper	Tensile Strength (MPa)	Hardness (HV)
Rod	FB, FB2	E	275 (Min)	80 -120
		HD	430 (Min)	120 (Min)
	FMR	HD	440 - 540	135 (Min)
Wire & Bus Bar	TPC	E	220 (Min)	40 - 70
		HB	250 - 320	70 - 105
	63B, 65B	O	300 (Min)	90 (Max)
		HD	450 (Min)	150 - 200

Electrical Conductivity of Tough Pitch Copper (IACS %)

Temper	Thickness (mm)	Conductivity (IACS %)	
Annealed	Over 0.5	100	
	0.3 - 0.5	99	
	Up to 0.3	98	
Quarter Hard	HA	Over 2	97
Half Hard	HB	Up to 2	97
Hard	HD	Over 2	96
		Up to 2	96

Dimensions

Coil / Sheet

Thickness (mm)	Strip / Coil		Sheet / Plate	
	Width (mm)		Length (mm)	
0.04 to and includ 0.3	10 - 600 (Copper)	10 - 620 (Brass)		
0.3 to and include 0.6	10 - 660		300 - 320 600 - 660	700 - 2000
0.6 to and include 1	15 - 660			
1.0 to and include 6.0	20 - 660			500 - 2000
6.0 and 7.0 (1)	660			
8.0 to and include 12.0 (2)			660	1000 - 4000
8.0 to and include 60.0 (2)				

(1) Only cold rolled without degreasing.

(2) Hotrolled with oxide scales.

Notes:

• Internal diameter of coils, depending on thickness, will be 300, 400 and 500 mm.

• Small edge-cracks may occur when the width of strip is 660 mm .

• The width tolerance will be ±5 mm if the width is 660 mm.

• For special products the inside diameter of 100, 150, 200, 250 are also available.

Copper Bus Bar

Width (mm)	Thickness (mm)														
	3	4	5	6	6.35	7	8	9.52	10	12	12.7	14	15	20	
20	■	■	■	■					■						
25	■	■	■	■				■							
25.4					■				■						
30	■	■	■	■				■			■	■			
31.75					■										
32			■												
35														■	
38.1					■										
40	■	■	■	■				■		■					■
42											■				
44.4												■			
45												■			■
50		■	■	■						■	■				■
50.8					■					■		■			
60			■					■		■					■
63	■		■								■				
70						■						■			
75				■				■							
80			■	■				■		■	■				■
80.9								■							
100			■						■	■				■	■
101.6					■				■						
120			■						■						■
125			■	■											

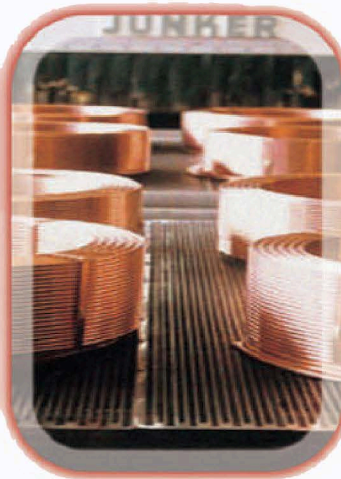
Copper Tubes in Level Wound and Pancake Coil

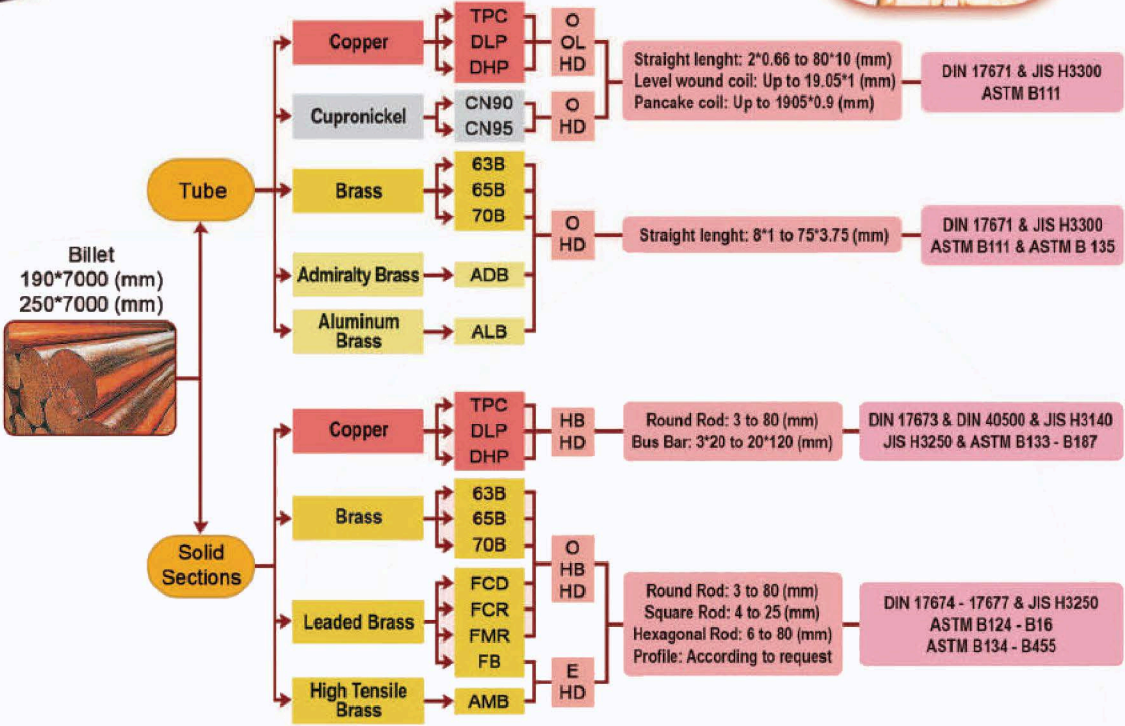
Outer Diameter (mm)	(in)	Wall Thickness (mm)													
		0.4	0.43	0.46	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.9	1		
2															
3		■								■			■		
4.8										■					
6.35	1/4			■	■	■			■	■	■	■	■		
7.93	5/16			■	■	■			■	■	■	■	■		
8				■				■		■	■	■	■	■	
9.52	3/8			■		■			■	■	■	■	■	■	
10				■						■		■	■	■	
10.2												■	■	■	
12										■		■	■	■	■
12.7</															

EXTRUSION SHOP

The machinery of extrusion shop is bought from Germany and uses the technology of Outokumpu Finland. Different sizes of tubes and sections with different alloys of copper and copper alloys are the products of this factory. It consists of two 2,500 ton extrusion presses machines, pickling and annealing lines, spinners and drawers. The products of extrusion shop are used in:

- Oil and gas industries
- Cooling and heating industries
- Electrical industries
- Ship making industries

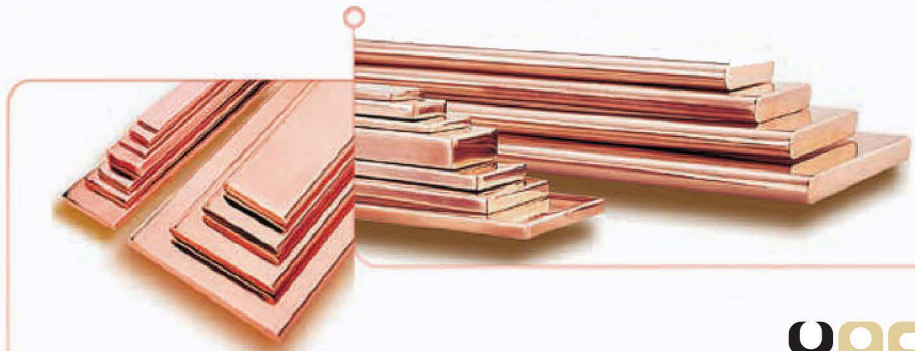




Busbar

• TPC

- Excellent electrical and thermal conductivity
- Good workability, drawability and corrosion and weathering resistancy
- Applicable to distribution panels



EXTRUSION SHOP

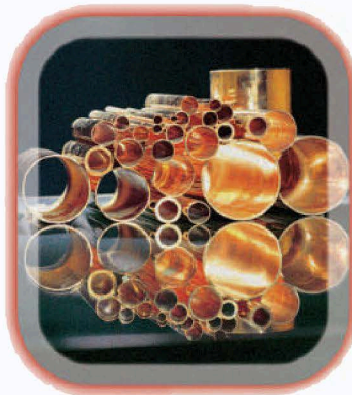
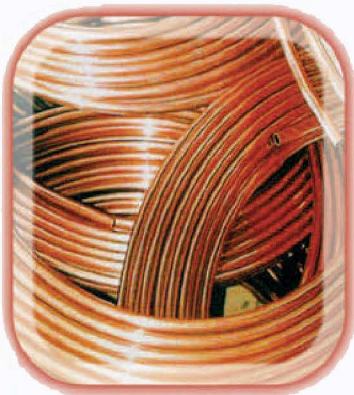
Tubes

• TPC

- Excellent electrical and thermal conductivity
- Good workability, drawability and corrosion resistancy
- Applicable to electrical industries specially cable shoe pipes

• DLP-DHP

- Good workability, drawability, weldability, corrosion and weathering resistancy
- Good thermal conductivity
- Applicable to gas and heat exchanger industries.



• CN90

- Good corrosion and resistancy especially against see water
- Applicable to ship industries (heat exchanger tubes.)

• 63B-65B-70B

- Good drawability bending properties
- Applicable in ship industries, sanitary tubes, automobile parts

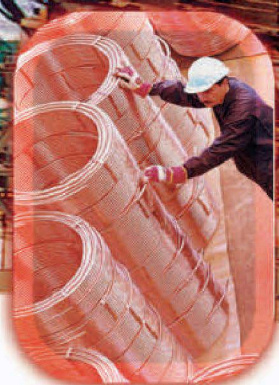
• ADB

- Good resistancy against see water
- Applicable to heat exchangers and gas piping

• ALB

- Good thermal conductivity
- Applicable to distillers and oil cooling systems
- More corrosion resistancy against sea water compared with ADB





Sections

• FCD-FCR

- Excellent machinability and punchability
- Applicable to watch and clock parts, gears, etc.

• AMB

- Good resistancy against pressure and erosion industries (heat exchanger tubes.)

• FB

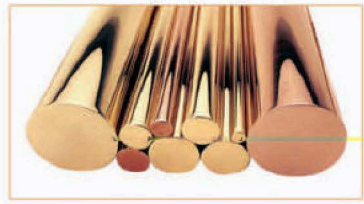
- Good for forging
- Applicable to sanitary utensils, window panes, valves and automobile parts

• FMR

- Good for machining and riveting
- Applicable to valves and bolts

• TPC

- Excellent electrical and thermal conductivity
- Good bendability, drawability and corrosion resistancy
- Applicable to electrical industries



LABORATORIES

Quantometry Labs

In this laboratory the chemical analysis of raw material and finished products are tested by ARL company instruments such as X-Ray (XRF) and diffusion spectrometer (OES). Chemical analysis for most copper based alloys like Brass, Bronze and Cupronickel are also done. The equipments of this lab and their capabilities are:



1.X-Ray spectrometer (XRF-ARL)

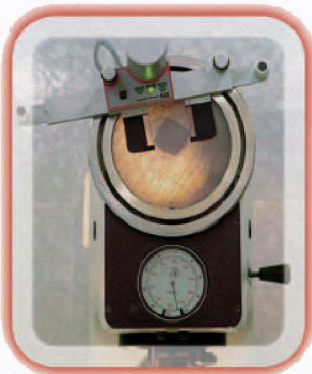
This equipment can analyze elements such as Zinc, Lead, Manganese, Phosphor, Iron, Nickel, Silicon, Aluminum, Tin, Sulfur and Arsenic at the same time by monochromater system in less than 3 minutes and with acceptable precision. If modified, this equipment can measure other elements with atomic number over 11.

2.Optical Emission Spark (OES-ARL)

This device has a low detection limit for the elements with copper base and has a very good precision factor for analyzing trace elements. It can measure 17 elements in copper base and is used in different analytical programs. Brass, Bronze, pure Copper, DLP, DHP and Cupronickel alloys are measured by this device.

3.Optical Emission Spark (OES-Quantron)

This device can analyze more elements than previous equipments while covering their advantages. The elements this device can detect are Mercury, Bismuth, Beryllium, Cobalt, Carbon, Chrome, Silicon, Aluminum, Iron, Nickel, Cadmium, Oxygen, Lead, Phosphor, Zinc, Tin, Sulfur, Trillium, Zirconium, magnesium, Antimovan , Selenium and Arsenic. It can also measure special alloys as Copper--Chrome, Copper-Chrome-Zirconium, Gun metal, Copper-Cobalt-beryllium, Cupronickel and Bronzes.





Metallurgical and Mechanical Labs

In these laboratories different tests of mechanical properties such as Drawing, Hardness (Vickers, Berinell and Rockwell) Micro Hardness (Vickers and Nope) and formability index are carried out by Instron, Wilson-Wolpert, Struers, Erichsen and Leitz equipments. Electrical conductivity and IACS percent are measured by nondestructive methods.

The microstructures of the products can be surveyed by samples prepared by mechanical, electro polishing and also hot mounting methods. The metallographical parameters such as Grain Size and Phase Percent are also accessed in metallography lab.

Chemical Labs

Water

In this laboratory water is analyzed according to classic methods with ISO and ASTM standards, Iran national standards, scientific references and civil documentaries. The appliances are mostly German made such as Spectrophotometer (p.p.m precision) set for analyzing 150 elements in water, conductivity meter, ph meter, TDS meter and BOD meter.

Oil

Physical and chemical specifications of oils are measured in this lab with equipments which are generally made of Herzog and Sartorius Germany. These devices are viscometer, Centrifuge, refract meter, PH meter and Pensky Martens. The physical and chemical specifications of oils are:

1. Viscosity in two sets of temperature (40 and 100 centigrade), acidity, sediment, pollution and oil density
2. P11, density and bacteria emulation
3. Penetration of greases

Chemical Analysis

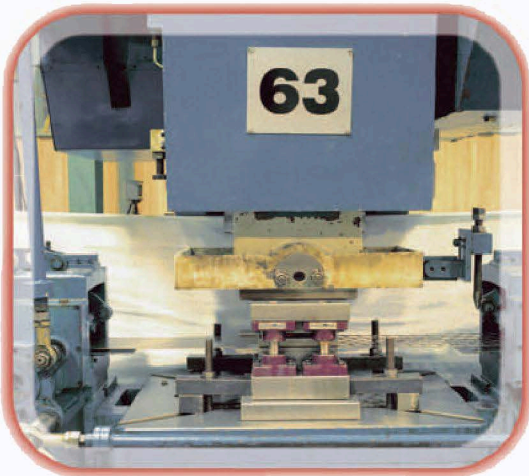
By using On-Mat, gas analyzer and spectrophotometer equipments, this laboratory is capable of measuring level of Oxygen, Nitrogen and Hydrogen in materials and products, complete gas analyzing of the chimney smokes, titration and analyzing different solutions. This lab also has got the competency certificate from Standard institution.



COIN



Copper has been used to make coins for a long time. Copper coins are durable and easy to make. Different compositions in copper alloys make different colors so that coins of different values can be identified. Coins can be circulated longer than paper money. With the development of coin phones, buses without the ticket seller and self-service vendor machines, coins are used more frequently than ever. Thousands tons of copper are used to make coins every year in the world. Taking the London Royal Mint for instance, It makes 0.7 billion copper coins per year, which requires 7,000 tons of copper.



The Coin factory has been established on a 2400 square meters ground with initial production of 1,000 tons a year which in development project this capacity will increase in value up to 12,000 tons. The Coin factory equipment and machinery are advanced and are capable of manufacturing any size and dimensions of blank coin.

This product is outstanding in quality, color, dimensions, surface smoothness, hardness and ... which is examined by quality control unit in all stages of production and various tests are done to achieve the required quality so that the coins be comparable with foreign samples in various aspects of equality and be able to absorb part of the large market area of the region.



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