



STRIP & SHEET

Copper and its alloys

The main purpose of NACOBRE is to contribute with unsurpassed technological vanguard and quality to the manufacture of products made from copper and its alloys. We direct our efforts towards the research and development of our own technology in order to satisfy our customer's needs.



Always looking to the future

NACOBRE has been a national leader for more than 65 years in the manufacture of copper products and their alloys, and it entered into the international markets in 1985. The current and increasing demands of both markets in terms of quality and unprecedented worldwide competition have oriented the strategy of our Quality Assurance System towards the certification based on the international ISO model.

The Quality Assurance System established in NACOBRE was scrupulously thought and planned in order to guarantee that our products comply with and exceed the expectations of the national and international markets.

The certification obtained by NACOBRE at the end of 1988 was reached through the joint assessment of QMI and IMNC, leading certifying organizations for Mexico, the United States and Canada. This enabled our registry, recognition and integration in the most important global directories of certified companies.

The commitment of NACOBRE, reflected on our policy and quality purposes, is to consistently satisfy our clients in terms of quality and service.



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Commitment to quality and excellence in service

Since the beginning NACOBRE has acquired the most advanced technology for manufacturing a wide range of products made from copper and its alloys:

- Sheets
- Plates
- Tapes
- Foils
- Strips
- Rolls



We are proud to be leaders recognized worldwide for our quality and service.

The main purpose of NACOBRE is to contribute with unsurpassed technological vanguard and quality to the manufacture of products made from copper and its alloys. We direct our efforts towards the research and development of our own technology in order to satisfy our customers' needs, with the invaluable support of Mexican workers and technicians.



Experience and Development

NACOBRE's experience and its high quality levels are backed by the most advanced knowledge developed in the United States and Europe for the industry of copper and its alloys.

In NACOBRE's Technical Department we improve the manufacturing processes and create our own technology, which we proudly export to international markets.

Experience and Development

NACOBRE maintains the principle that quality results from the most advanced technology and the responsibility of the human team that create it.

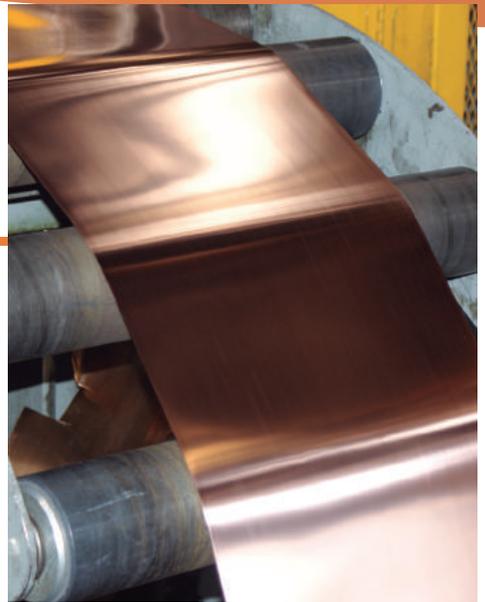
Success is only attained with the participation of a great team and thus, NACOBRE's most valued asset is its people.

We are proud to have the most qualified team of the metalworking and foundry industry, whose experience and high degree of specialization enables the manufacture of the best laminated products in copper and copper alloys.

Technological vanguard for the industry

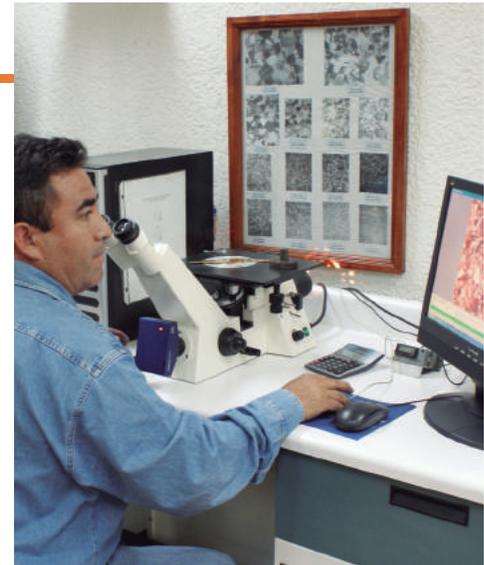
NACOBRE manufactures products made of copper and copper alloys with the most advanced technology for the automotive, metalworking, electric, electronic and ammunitions industries, among others. These products have unsurpassed advantages:

- Thermal and electric conductivity
- Corrosion resistance
- Flexibility
- Ductility
- Resistant to wear and tear
- Machinability
- Weldability



Measurement and testing laboratories and equipments

NACOBRE has laboratory equipments with certified systems for controlling its products and processes, from the start until the end of the manufacture. The chemistry, physics and metrology laboratories have been carefully planned, designed and constructed for offering and assuring the control of the product and process, exceeding the ranges set forth on the highest competition level standards as the ASTM, CDA, JIS and DIN. National certifying institutions constantly audit the laboratories.



CONTROL OF PRODUCTS AND PROCESSES

The continuous quality control is carried out with high-efficiency instruments, which include X-ray spectrometers, optical emission instruments and atomic absorption instruments for chemical analyses. With these technical resources we guarantee the quality of every product.

One of the fundamental purposes of NACOBRE is to optimally satisfy every need our customers may have; therefore we offer a wide range of services that scrupulously comply with the quality standards. The success of these services is the best proof of the results obtained by using NACOBRE products.

CHART OF TYPICAL PRODUCTS

Product	Alloys	Applicable ASTM Standard	Thickness (3)		Width (3)		Length (2)		Diameter		Wide in LSB per inch (PIW)	Temper ASTM (8)
			min	max	min	max	min	max	inside	outside		
Copper radiator tapes	C-14300 C-14420	B-152	0.0018"	0.005"	0.700"	12"	-	-	3",4" 4 1/2" 6" y 7"	-	160 220	H03 H04 H06 H08 H10
Copper tapes	C-11000	B-152	0.003"	0.008"	0.750"	12"	-	-	3",4", 6"	18" max	32" max	O60 H00
			0.0081"	0.012"	0.750"	12"	-	-	4" y 6"	18" max 12", 16"		
Copper tapes	C-11000 C-12200 C-14300	B-152	0.0121"	0.125"	1"	12"	-	-	16", 20"	-	180, 240	O60 OS025 H00 Up to H10 (9)
Copper rolls	C-11000 C-12200 C-14300	B-152	0.016"	0.125"	12" or 24"		-	-	16", 20"	-	180, 240	O60 OS025 H00 Up to H10 (9)
Copper sheets	C-11000 C-12200	B-152	0.016"	0.125"	12" or 24"		48"	120"	-	-	-	O60 H00 Up to H10
Brass radiator tapes	C-26000	B-36	0.014"	0.009"	1"	12"	-	-	3"4,4,1/2"	22" max	-	O60 O81 O82 O83(1) H02
Brass tapes	C-21000 C-22000 C-23000 C-24000 C-26000 C-27200	B-36	0.010"	0.125"	1"	12"	-	-	16", 20"	-	180, 240	OS015 OS025 OS035 OS050 OS070 O81 O82 H01 up to H10
Brass rolls	C-21000 C-22000 C-23000 C-24000 C-26000 C-27200	B-36	0.016"	0.125"	12" or 24"		-	-	16", 20"	-	180, 240	OS015 OS025 OS035 OS050 OS070 O81 O82 H01 up to H10
Brass sheets	C-21000 C-22000 C-23000 C-24000 C-26000 C-27200	B-36	0.016"	0.125"	12" or 24"		48"	120"	-	-	-	OS015 OS025 OS035 OS050 OS070 O81 O82 H01 up to H10

CHART OF TYPICAL PRODUCTS

Product	Alloys	Applicable ASTM Standard	Thickness (3)		Width (3)		Length (2)		Diameter		With in LSB per inch (PIW)	Temper ASTM (8)
			min	max	min	max	min	max	inside	outside		
Brass with lead tapes	C-35300	B-121	0.035"	0.125"	1"	12"	-	-	16",20"	-	240	OS025 H01 H02 H04 H06
Brass with lead rolls	C-35300	B-121	0.035"	0.125"	12" or 24"		-	-	16", 20"	-	240	OS025 H01 H02 H04 H06
Brass with lead sheets	C-35300	B-121	0.035"	0.125"	12" or 24"		48"	120"	-	-	-	OS025 H01 H02 H04 H06
Bronze tapes	C-51000 C-51100	B-103	0.010"	0.125"	1"	12"	-	-	16", 20"	-	180, 240	H02 H04 H06 H08 H10
Bronze rolls	C-51000 C-51100	B-103	0.016"	0.125"	12" or 24"		-	-	16", 20"	-	180, 240	H02 H04 H06 H08 H10
Bronze alum. tapes	6131 (1)(5)	N/A	0.050"	0.105"	11.700"	12.027"	-	-	16", 20"	-	230 (10)	(7)
Cupronickel tapes	7131 (1)(6)	N/A	0.050"	0.105"	11.700"	12.027"	-	-	16", 20"	-	125	(7)
Nickel silver tapes	C-75200 C-75700 C-7700	B-122	0.010" (4)	0.080"	1"	12"	-	-	16", 20"	-	180, 240	OS015 OS035 H02
Nickel silver rolls	C-75200 C-75700 C-7700	B-122	0.016" (4)	0.080"	12" or 24"		-	-	16", 20"	-	180, 240	OS015 OS035 H02

Notes:

- (1) Internal designation
- (2) Length tolerance.
- (3) Dimensional tolerances pursuant to the standard ASTM B-248
- (4) For thicknesses up to 0.020" we also offer annealed temper 1/2 hard
- (5) Impurities of 0.5% maximum, or 0.7% maximum
- (6) Impurities of 0.7% maximum, or 0.9% maximum
- (7) Temper: drawn laminated (AS-ROLLED)
- (8) Meaning of the ASTM temper nomenclature**
- (9) The OS025 temper is only offered in thicknesses up to 0.050" maximum
- (10) The 230 PIW is only offered in soldered rolls. For unsoldered rolls, the PIW is 115.

**

- OS015: Soft-temper (Annealed to obtain a nominal grain size 0.015 mm)
 OS025: Soft-temper (Annealed to obtain a nominal grain size 0.025 mm)
 OS035: Soft-temper (Annealed to obtain a nominal grain size 0.035 mm)
 OS050: Soft-temper (Annealed to obtain a nominal grain size 0.050 mm)
 OS070: Soft-temper (Annealed to obtain a nominal grain size 0.070 mm)
 O60: Soft annealed
 O81: 1/4 hard-temper per annealed
 O82: 1/2 hard-temper per annealed
 O83: 3/4 hard-temper per annealed (in-house designation)
 H00: 1/8 hard-temper
 H01: 1/4
 H02: 1/2
 H03: 3/4
 H04: Hard-temper
 H06: Extra-hard temper
 H08: Spring temper
 H10: Extra-spring temper

Any feature that is different or not included shall be consulted with our Technical Department in order to offer you the best alternative, as well as products not mentioned on this chart.

MAIN ALLOYS, NOMINAL CHEMICAL COMPOSITION AND GENERAL APPLICATIONS GUIDE

Trade name	Alloys	Nominal Chemical Composition (%weight)										General Applications
		Cu copper	P phosphorus	Cd cadmium	Zn zinc	Pb lead	Sn tin	Al aluminium	Ni nickell	Te tellurium	O2 oxygen	
Electrolytic copper	C-11000	99.90 min (1)									0.04	Sockets, Switches, outlet connections and cable casing
Copper deoxidized with phosphorus	C-1200	99.90 min (1)	0.02									Process of deep stuffing, rejected, containers for distillation and ornamental items
Copper-cadmium deoxidized	C-14300	99.90 min (2)		0.10								Separators and flat fins for automotive radiators
Copper-tellurium Tin	C-14200	99.90 min (3)					0.035			0.10		Separators and flat fins for automotive radiators
Brass 95/5	C-21000	95			5							Base for electrodepositions, emblems, jewelery and plates
Commercial Bronze 90%	C-22000	90			10							Lining for bullets jewelery, cases for comestics, pen lids and stuffing processes
Red Brass 85%	C-23000	85			15							Decorarive items, emblems, plates, cases for cosmetics, coins, stuffing and stamping processes
Low Brass 80%	C-24000	80			20							Medals, coins, stuffing proceses, battery terminals, molding and folding processes
Cartridge brass	C-26000	70			30							Cartridges, press-studs, outlet connections, radiators, locksmithing, craftwork, stuffing processes, coins, medals and ornametation
Yellow brass	C-27200	63			37							Parts for radiators, stamped pieces decoration items, automotive headstock and seals
Brass high in lead 62%	C-35300	61.5			36.5	2.0						Keys and locksmithing, base for coating and plating
Phosphorated bronze 5%A	C-51000	94.8	0.2				5					Clutch disks, outlet connection, valve diaphragms and parts that require spring-like movement
Phosphorated bronze	C-51100	95.6	0.2				4.2					Telecommunications industry

MAIN ALLOYS, NOMINAL CHEMICAL COMPOSITION AND GENERAL APPLICATIONS GUIDE

Trade name	Alloys	Nominal Chemical Composition (%weight)										General Applications
		Cu copper	P phosphorus	Cd cadmium	Zn zinc	Pb lead	Sn tin	Al aluminium	Ni nickell	Te tellurium	O ₂ oxygen	
Bronze-Aluminium	6131 (4)	92 (5)						6	2			Manufacture of tokens for minting coins, medals and chips
Cupronickel	7131 (4)	75 (6)							25			Manufacture of tokens for minting coins, medals and chips
Nickel Silver 65-18	C-75200	65			17				18			Telecommunications industry, decoration items, emblems, kitchen accesories and craftwork
Nickel Silver 65-12	C-75700	65			23				12			Telecommunications industry, decoration items, emblems, kitchen accesories and craftwork
Nickel Silver 55-18	C-77000	55			27				18			Telecommunications industry, decoration items, emblems, kitchen accesories and craftwork

Notes:

- (1) Includes Ag (silver)
- (2) Includes Cd (cadmium)
- (3) Includes Te (tellurium)
- (4) Internal designation
- (5) Presentation with impurities of 0.5% maximum, or impurities of 0.7% maximum
- (6) Presentation with impurities of 0.7% maximum, or impurities of 0.9% maximum

