

PRODUCT
CATALOG
Strips & Sheets

24

Uba
lebronze alloys



About Lebronze alloys

Lebronze alloys is a world leader in the **development** and **fully integrated production** of **high-performance copper and nickel alloys**.

Thanks to a multidisciplinary know-how, the Group provides **innovative solutions to all major industries** such as Aeronautics, Electronics, Space, Automotive, Energy, among others.

Our 6 production facilities and 750 employees manage a **unique range of metal processing technologies**: continuous and semi-continuous casting, extrusion, hot and cold rolling, drawing, open-die forging, hot stamping, closed-die forging, cold forming, machining, non-destructive testing, etc.

The Group's commitment is to find appropriate and **optimized solutions for every sector's requirements while optimizing the environmental impact of our products**.

High
performance
copper and nickel
alloys

Fully
integrated
production
process

Optimized
environmental
impact of our
products

KEY FIGURES

- 6 production sites
- 3 service centers
- 750 employees
- 200 + alloys produced
- 288 M€ turnover

History of the Group

2006

The DUMONT family, some private investors as well as some key managers, take over "Le Bronze Industriel", a company founded in France in 1934 specializing in copper alloys production. This change of ownerships, with Michel DUMONT as active Chairman, marked a new period of strategic growth for the company.

2012-2016

Period of massive external growth for the company. Several major acquisitions are made such as Inoforges, Swissmetal Lüdenscheid and CLAL. These acquisitions consolidated our metallurgical expertise through a sharing of experience.

2016

Le Bronze Industriel officially becomes Lebronze alloys. It has been 10 years since the buyout and the Group has now tripled its sales.

2020

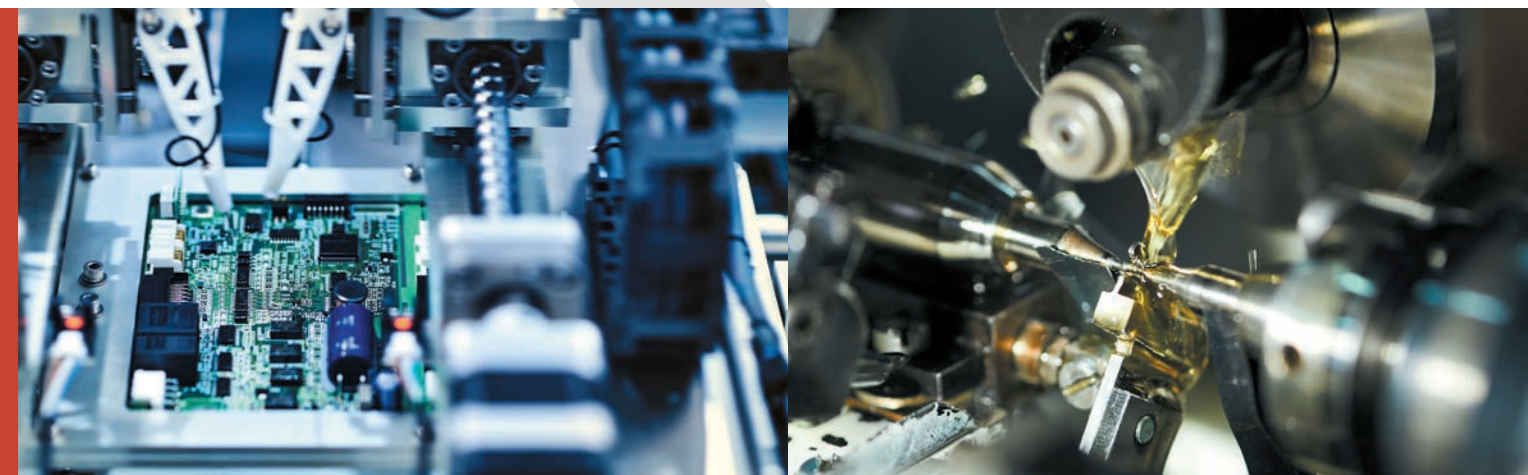
Opening of our first service center in Europe at Aldridge (UK). This service center joins an already well-established network of distributor partners around the globe and enables us to provide a greater responsiveness to our customers' needs.

2022

Marks the end of a 2-years industrial repositioning allowing the Group to focus on high added value materials.

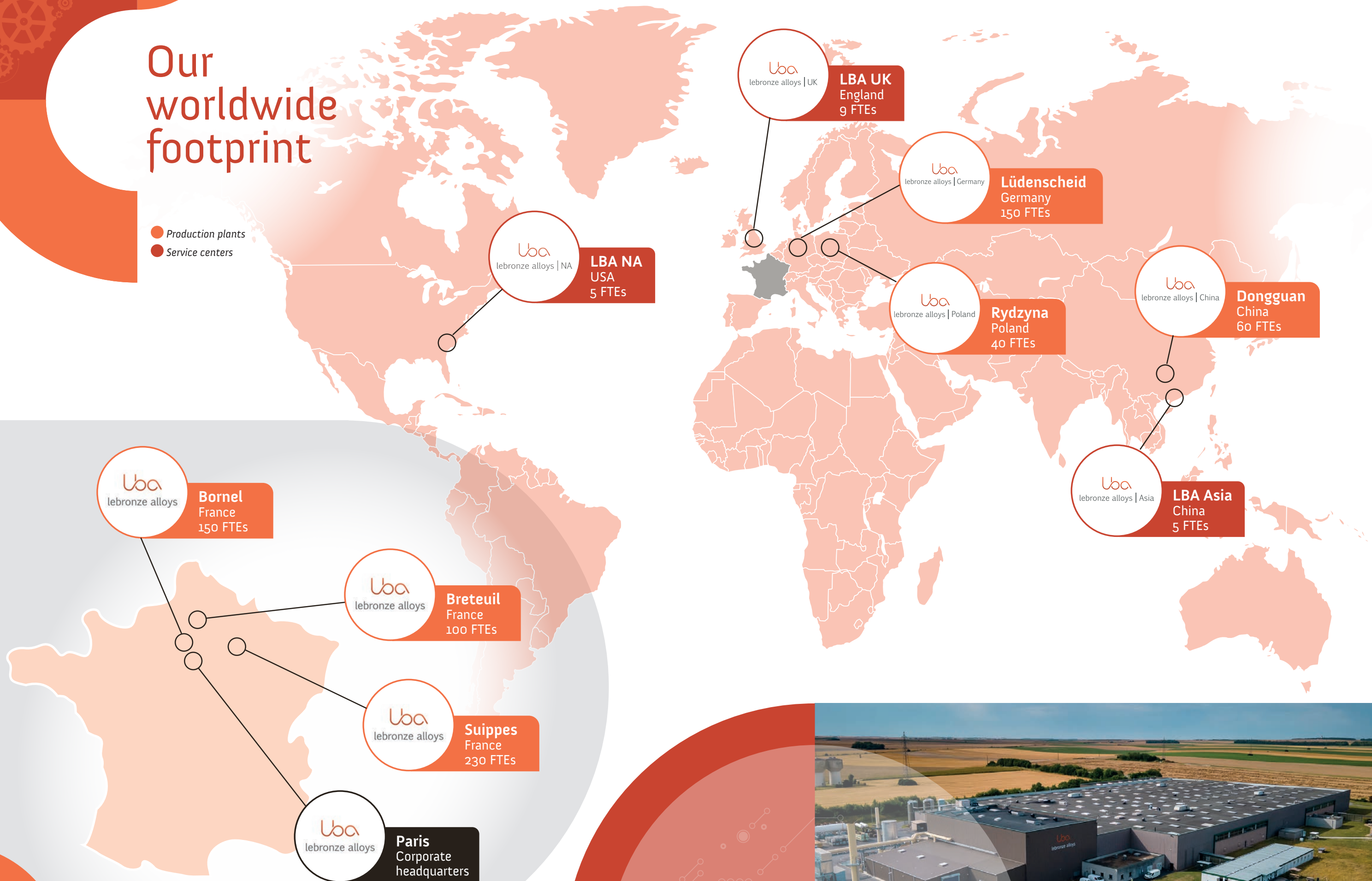
2023

The Group counts over 750 employees, 6 production sites and 3 service centers around the world and generates 288 M€ of sales.



Our worldwide footprint

- Production plants
- Service centers



Product range at a glance

Lebronze alloys offers **more than 200 copper-based and nickel-based alloys** with unique properties which meet the most complex requirements. We supply these alloys in different forms :



Billets



Bars



Hollow bars



Strips



Sheets



Rods



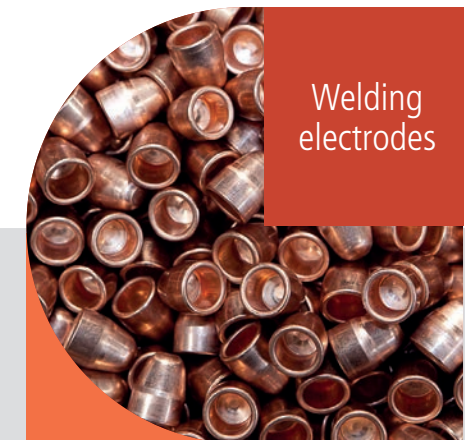
Wires



Standard & complex profiles



Plates



Welding electrodes



Marine tubes & fitting



Machined blanks and parts

A fully integrated production process

One of the Group's major strengths relies in its **fully integrated production process**, from smelting to machining and recycling.

This particularity guarantees a traceability, optimization and strict control of the final properties of our materials so they can suit to the most stringent requirements.

Melting & Casting

- Continuous wire casting
- Continuous bar casting
- Semi-continuous casting

Hot forming

- Extrusion
- Hot rolling
- Free forging
- Hot stamping

Cold forming

- Cold rolling
- Drawing straightening
- Cold stamping
- Heat treatments

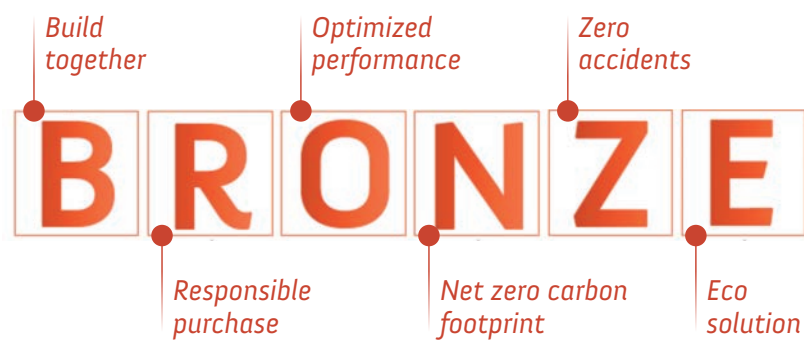
Finishing

- Machining
- Servicing
- Scrap recovery

Our sustainable development policy

To ensure the sustainability of our business, it is essential to strike the **right balance between economic performance, social impact and environmental impact.**

This balance within the Group is structured around our **6 "Bronze" pillars.** Each pillar is broken down into actions and indicators that enable us to be part of a dynamic of continuous progress and sustainability.



Build together: this pillar covers social initiatives that have a positive impact on gender, sex and age equality, as well as projects that improve the well-being of our teams at work.

Responsible purchase: purchases represent more than 50% of Group sales. It is therefore essential that we implement a responsible purchasing policy and tighten up our requirements of our suppliers.

Optimised performance: the Company's economic, industrial and environmental performance is a key factor in meeting the expectations of our relevant stakeholders.

Net zero carbon footprint: taking into account the major challenge of decarbonation, we have decided to make this a specific pillar and to build a path that meets the transformation of the Climate Act and the Paris Agreement.

Zero accidents: our processes require constant vigilance. We are taking action to anticipate and reduce the risk of accidents as far as possible.

Eco solution: by working in collaboration with our customers and bringing innovations to the market, we are contributing to a more sustainable approach by improving the life cycle of products.

Quality

Lebronze alloys develops for all its activities a formally recognized quality management system which allow to:

- guarantee the traceability of our products, from raw material to the product delivered
- certify our products properties
- control our delivery times

Our state-of-the-art quality checks equipment include:

- **Metallurgical tests** such as traction, resilience, hardness, bending and others
- **Non destructive tests** such as Magnetic Particle Inspection (MPI), ultrasonic contact testing, liquid penetrant Inspection and others
- **Metrology, geometry and surface tests** such as surface metrology, global DEA, profile projectors and others



Our certifications

All our certificates can be consulted on our website

Aerospace certifications



Certified site: Suippes



Heat treating



Certified service center:
Lebronze alloys UK

General certifications



Certified sites: Bornel, Breteuil, Lüdenscheld, Suippes, Rydzyna.



Certified sites: Breteuil, Suippes, Rydzyna.



Certified sites: Lüdenscheld and Suippes.

CuNiSn alloys

Spinodal alloys

High strength and hardness

Our Group offers a wide range of **spinodal alloys** composed of copper, nickel and tin. These alloys are widely used for their **high yield strength and their hardness**. These alloys have various applications such as **spectacle components, automotive bushings, electronic EMI shielding and miniature connectors**.

Our wide range of spinodal alloys makes us one of the **major actors on this market** and allows us to meet the **challenging requirements of a large portfolio of customers**.

We provide these products mainly as strips, rods and wires to be processed into relatively complex components.

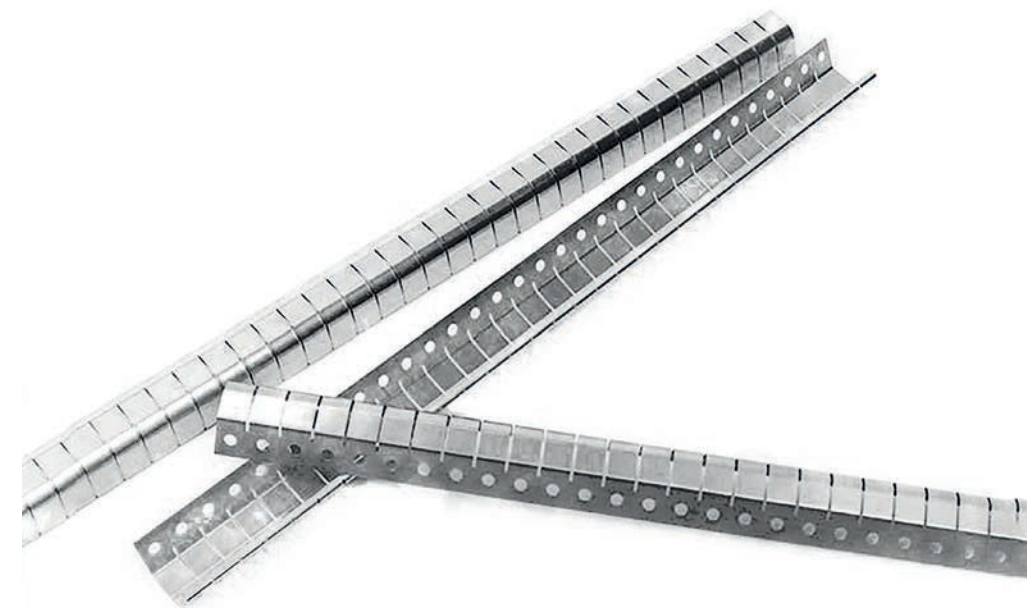
PRODUCT PORTFOLIO

Alloy	ISO	UNS
Hardiall®	CuNi ₁₅ Sn ₈	C72900
Niclafor® 1000	CuNi ₉ Sn ₆	C72700
Declafor 1015	CuNi _{7.5} Sn ₅ Te	C72670
Nical® 725	CuNi ₉ Sn ₂	NA

STANDARD CAPABILITY

Format	Thickness	Width	Length
Strips	0.08 to 3.5 mm	3 to 380 mm	NA
Sheets	0.25 - 3.5 mm	20 - 380 mm*	500 - 3000 mm*

**Dimensions outside this range on request*



ESG Performance

We aim to offer our Customers products with the leading grade of environmental footprint. To achieve this, we make major investments in innovative processes aiming to optimize energy and water consumption and increasing the use of recycled raw materials. More specifically, we have developed state-of-the-art recycling know-how based on specialized purchasers for sourcing end of life materials to be processed in our Group Upcycling Workshop. Another key aspect of our ESG strategy is to offer substitutes for alloys that are not REACH and RoHS compliant.

Our Spinodal alloys are :

- Ideal substitutes to copper-beryllium and leaded copper-beryllium alloys
- RoHS and REACH compliant
- Mainly produced from recycled raw materials



Markets and applications

Electronics



- Connectors
- Relays
- Fingerstock
- EMI shielding

Automotive



- Bushings

Luxury



- Eyewear components
- Watch industries micro-components



Hardiall®
CuNi₁₅Sn₈ | C72900

<div>Cu</div> <div>copper</div>	<div>Ni</div> <div>nickel</div>	<div>Sn</div> <div>tin</div>
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Hardiall® is a wrought spinodally hardened copper alloy designed for high strength applications where toughness is required. It is non-magnetic and resists mechanical wear, galling, stress relaxation, corrosion and erosion. Hardiall® is a direct replacement to beryllium copper and leaded beryllium copper.

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi ₁₅ Sn ₈	C72900	NA

CHEMICAL COMPOSITION

Cu	Ni	Sn
Balance	15%	8%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm³
Coefficient of thermal expansion from 20 to 200 °C	16.4 x 10 ⁻⁶ /°C
Modulus of elasticity	140 GPa
Melting point	1300 °C
Electrical properties	
Thermal conductivity at 20°C	38 W/m.°C
Electrical conductivity at 20°C	7.5 % IACS

TYPICAL APPLICATIONS

Connectors
Springs
Electrical Contacts
Power Sockets
VCM springs
Belleville Washers
Snap Springs

COMPATIBLE DOWNSTREAM PROCESS

Cold forming
Surface coating
Soldering
Brazing
Machining
Stamping

KEY FEATURES

Non-magnetic
Mechanical wear resistance
Galling resistance
Stress relaxation resistance
Corrosion and erosion resistance
High hardness

STANDARD CAPABILITY

Format	Thickness	Width	Length
Strips	0.08 - 3.5 mm	3 - 380 mm	NA
Sheets	0.25 - 3.5 mm	20 - 380 mm*	500 - 3000 mm*

*Dimensions outside this range on request

OTHER AVAILABLE FORMS

Wire
Rods
Bars
Machined parts

Our copper and nickel alloys strips can be slitted on demand.

To know more, visit:
www.lebronze-alloys.com



Niclafor® 1000

CuNi₉Sn₆ | C72700



Niclafor® 1000 is a range of Copper-Nickel-Tin (CuNi₉Sn₆) alloys designed and produced by Lebronze alloys. It exhibits very high mechanical properties, excellent fatigue resistance and low friction.

Niclafor® can substitute to Beryllium copper for various applications.

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi ₉ Sn ₆	C72700	ASTM B740

CHEMICAL COMPOSITION

Cu	Ni	Sn
Balance	9%	6%

PHYSICAL PROPERTIES

General properties		
Density at 20 °C	8.9 g/cm³	
Thermal conductivity at 20°C	53.6 W/m.°C	
Coefficient of thermal expansion from 20 to 200 °C	17.25 x 10 ⁻⁶ /°C	
Modulus of elasticity	120 GPa	
Modulus of torsion	50 GPa	
Melting point	970 °C	
Electrical properties		
Electrical conductivity	Solution annealed	≈ 9 %IACS
	Heat treated	≥ 12 %IACS

TYPICAL APPLICATIONS

Connectors, Relays, fingerstock gaskets for EMI shielding

Test probes

Automotive bushings

Telecom and mobile phones components

Spectacles components

Domestic appliance components

Micro-components for watch industry

COMPATIBLE DOWNSTREAM PROCESS

Cold forming

Surface coating

Soldering

Brazing

Machining

Stamping

KEY FEATURES

Dimensional stability to heat treatment

Strictly non-magnetic

Non-sparking

Corrosion resistance

Good stress relaxation resistance

Good friction properties

High formability

STANDARD CAPABILITY

Format	Thickness	Width	Length
Strips	0.08 - 3.5 mm	3 - 380 mm	NA
Sheets	0.25 - 3.5 mm	20 - 380 mm*	500 - 3000 mm*

*Dimensions outside this range on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)	90° Bending*	
					Longitudinal (Bad way)	Transverse (Good way)
Solution annealed						
TB	≤ 300	≤ 460	≥ 30	≤ 140	0.2 x t	0.2 x t
Solution annealed and cold rolled						
TD1	≥ 300	460 - 560	≥ 15	140 - 180	0.2 x t	0.2 x t
TD2	≥ 400	540 - 640	≥ 10	160 - 200	0.2 x t	0.2 x t
TD3	≥ 550	620 - 720	≥ 3	200 - 240	0.5 x t	0.5 x t
TD4	≥ 600	700 - 820	≈ 1	220 - 260	2 x t	1 x t
TDX	≥ 650	≥ 780	≈ 1	≤ 320	10 x t	2 x t
Solution annealed and precipitation heat treated						
TF	≥ 510	740 - 860	≥ 10	230 - 270	0.5 x t	0.5 x t
Solution annealed, cold rolled and precipitation heat treated						
TH1	≥ 650	850 - 950	≥ 8	270 - 310	0.5 x t	0.5 x t
TH2	≥ 720	880 - 980	≥ 8	290 - 320	1 x t	1 x t
TH3	≥ 800	950 - 1050	≥ 4	310 - 340	1 x t	1 x t
TH4	≥ 900	1000 - 1100	≈ 3	320 - 360	2 x t	2 x t
THX	≥ 950	≥ 1050	≈ 1	≤ 390	NA	NA

*90° bending across and in the rolling direction. According to DIN 5011 dated 25/10/85 Figures represent min bending radius

OTHER AVAILABLE FORMS

Wire

Rods

Bars



Declafor 1015
CuNi_{7.5}Sn₅Te | C72670

<div>Cu</div> <div>copper</div>	<div>Ni</div> <div>nickel</div>	<div>Sn</div> <div>tin</div>	<div>Te</div> <div>tellurium</div>
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Declafor1015 is a Copper-Nickel-Tin (CuNi_{7.5}Sn₅Te) alloy designed and produced by Lebronze alloys. It exhibits very high mechanical properties, excellent fatigue resistance and low friction.

Declafor1015 can substitute to Titanium-copper and Beryllium-copper for various applications.

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi _{7.5} Sn ₅ Te	C72670	NA

CHEMICAL COMPOSITION

Cu	Ni	Sn	Other (incl. Te)
Balance	7.5%	5%	0.5%

PHYSICAL PROPERTIES

General properties		
Density at 20 °C	8.9 g/cm³	
Thermal conductivity at 20°C	55 W/m.°C	
Coefficient of thermal expansion from 20 to 200 °C	17.2 x 10 ⁻⁶ /°C	
Modulus of elasticity	115 GPa	
Melting point	960°C	
Electrical properties		
Electrical conductivity at 20°C	Solution annealed	≤ 9 % IACS
	Heat treated	≥ 13 % IACS

TYPICAL APPLICATIONS

Electrical spring contacts and test probes
Micro-components for watch industry
Coaxial connectors

COMPATIBLE DOWNSTREAM PROCESS

Machining
Plating

KEY FEATURES

Dimensional stability to heat treatment
Strictly non-magnetic
Non-sparking
Corrosion resistance
Good stress relaxation resistance
Good friction properties
Good machinability

STANDARD CAPABILITY

Format	Thickness	Width	Length
Strips	0.08 - 3.5 mm	3 - 380 mm	NA
Sheets	0.25 - 3.5 mm	20 - 380 mm*	500 - 3000 mm*

*Dimensions outside this range on request

OTHER AVAILABLE FORMS

Wire
Rods

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)
TB	≤ 370	410 - 460	≥ 30	≤ 140
TH3	≤ 870	900	≥ 7	≥ 280

Disclaimer : Data for information only, non-contractual

We also produce copper and nickel alloys wires and precision rods.

To know more, visit:
www.lebronze-alloys.com



Niclal® 725

CuNi₉Sn₂



Niclal® 725 is a range of Copper-Nickel-Tin (CuNi₉Sn₂) alloys designed and produced by Lebronze alloys. It exhibits high mechanical properties, a good compromise between elasticity and conductivity , excellent fatigue resistance and low friction.



MATERIAL DESIGNATION

ISO	UNS	Others
CuNi ₉ Sn ₂	NA	CW351H

CHEMICAL COMPOSITION

Cu	Ni	Sn
Balance	9%	2%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm³
Thermal conductivity at 20°C	48 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	17.2 x 10 ⁻⁶ /°C
Modulus of elasticity	138 GPa
Melting point	1060 °C
Heat capacity	377 J/(kg.°C)
Electrical properties	
Electrical conductivity at 20°C	11 % IACS

STANDARD CAPABILITY

Format	Thickness	Width	Length
Strips	0.08 - 3.5 mm	3 - 380 mm	NA
Sheets	0.25 - 3.5 mm	20 - 380 mm*	500 - 3000 mm*

*Dimensions outside this range on request

TYPICAL APPLICATIONS

- Connectors
- Sensors
- Household appliances parts
- Mechatronics and automation components

COMPATIBLE DOWNSTREAM PROCESS

- Deep-drawing
- Slitting
- Bending

KEY FEATURES

- Elasticity
- Good compromise between elasticity and conductivity
- Good corrosion resistance
- Good friction properties

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)	90° Bending* Transverse (good way)
Solution annealed					
Annealed	< 250	< 400	> 35	< 100	0 x t
Cold rolled					
¼ hard H11	> 300	380 - 450	> 15	125 - 150	0.3 x t
½ hard H12	> 400	470 - 530	> 4	145 - 165	0.4 x t
¾ hard H13	> 460	500 - 580	> 1	165 - 185	1 x t
¾ hard H14	> 550	580 - 650	0	185 - 215	1 x t
Spring H15	> 600	> 650	0	> 200	2 x t
Cold rolled and stress relieved					
H31	> 230	390 - 450	> 25	110 - 130	NA
H32	> 320	460 - 530	> 15	145 - 170	0.5 x t
H33	> 450	550 - 630	> 10	170 - 190	0.5 x t
H34	> 500	620 - 680	> 8	180 - 210	0.5 x t
H35	> 600	> 650	> 8	> 195	0.5 x t

*90° bending across the rolling direction. According to DIN 5011 dated 25/10/85 Figures represent min bending radius

OTHER AVAILABLE FORMS

- Wire
- Rods

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lebronze alloys

Métallurgie d'exception

www.lebronze-alloys.com