

PRODUCT
CATALOG
Strips & Sheets

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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

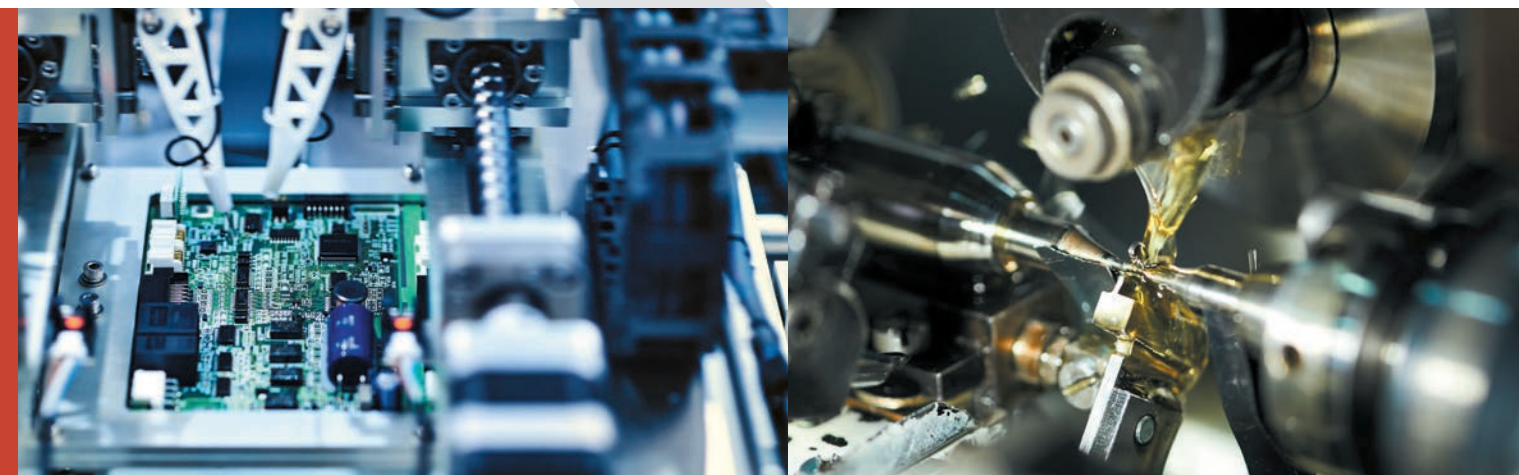
Opening of our first service center in Europe at Aldridge (UK). This service center joins an already well-established network of distributor partners around the globe and enables us to provide a greater responsiveness to our customers' needs.

2022

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

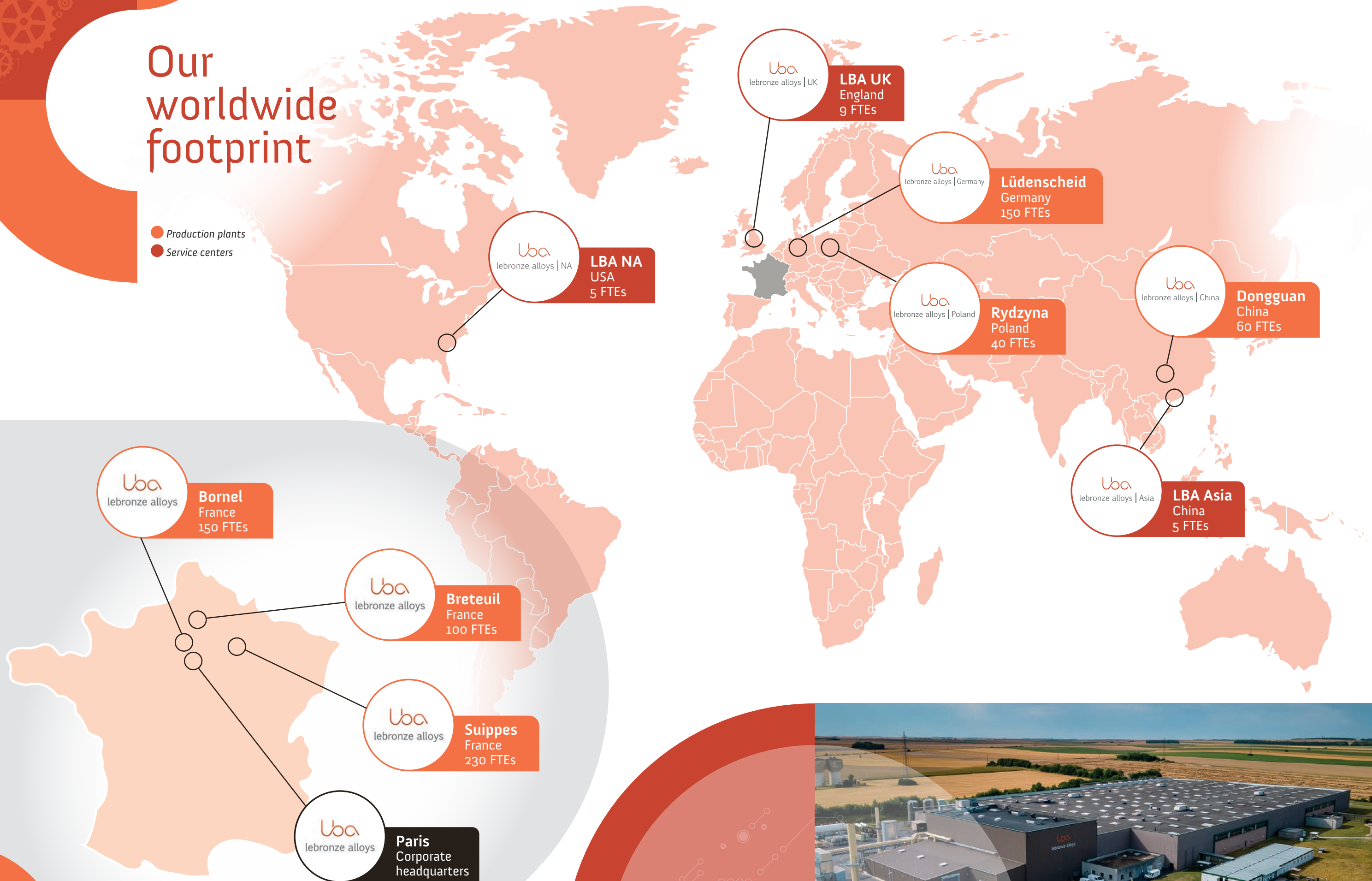
2023

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



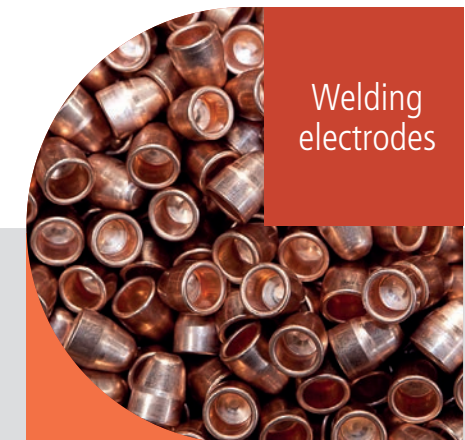
Wires



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

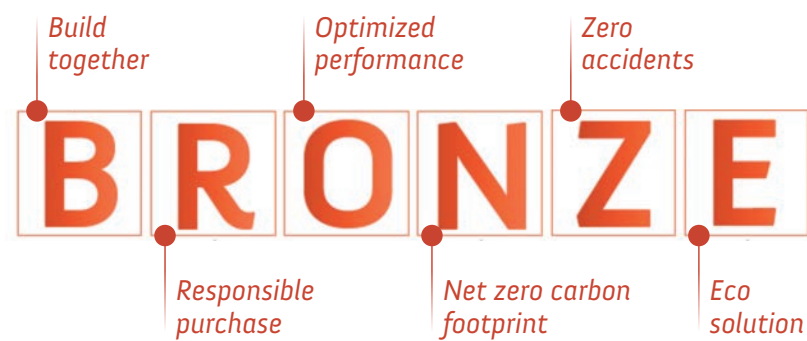
Finishing

- 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.

ARCAP® alloys

Corrosion resistance and anti-magnetism

ARCAP® is a **proprietary range of alloys** characterized by **excellent corrosion resistance, absolute non-magnetism and optimized transformation properties** (machining, drilling, forming, deep-drawing...)

In rolled format, our portfolio is composed of three alloys :

- ARCAP® AP1 and AP1C characterized by **high and formability properties**
- ARCAP® AP4 characterized by **high corrosion resistance even at high temperature**

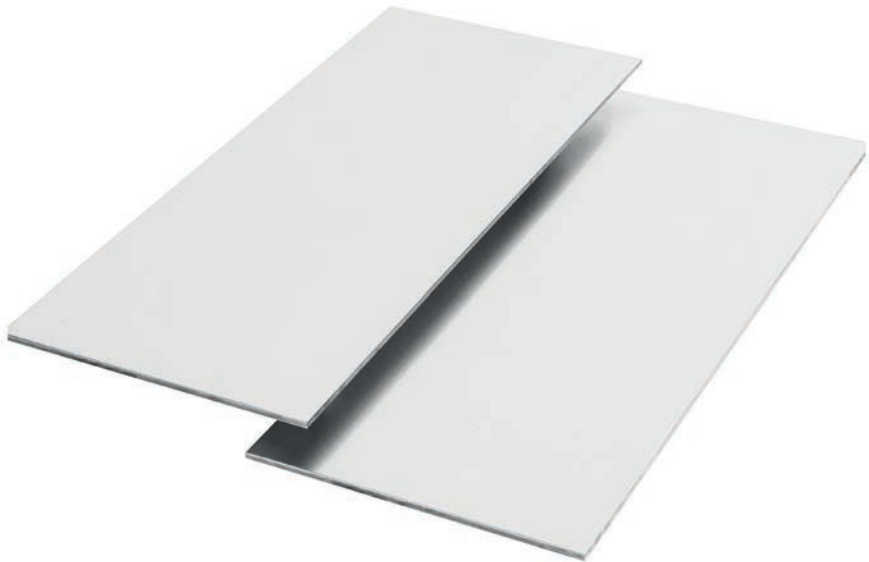
ARCAP® alloys do not need any coatings allowing downstream production steps minimization and better corrosion and friction properties especially compared to stainless steels.

These properties make of ARCAP® an ideal alloy for **complex components in harsh environment**.

PRODUCT PORTFOLIO		
Alloy	ISO	UNS
ARCAP® AP1C	Cu ₅₆ Ni ₂₅ Zn ₁₉	C79360
ARCAP® AP1	Cu ₆₄ Ni ₂₅ Zn ₁₁	NA
ARCAP® AP4	Cu ₅₅ Ni ₄₄ Mn ₁	NA

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*



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 ARCAP alloys are :
- RoHS and REACH compliant
 - Mainly produced from recycled raw materials



Markets and applications

Electronics



- Electronic casings

Luxury



- Watch micro-components

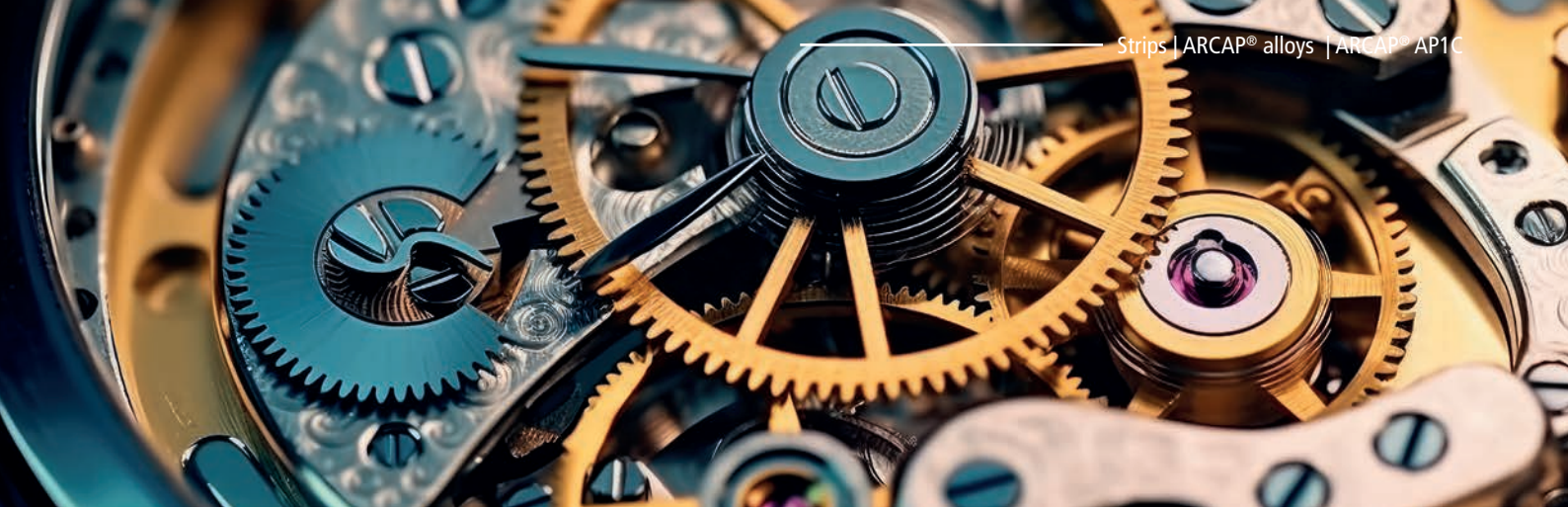


ARCAP® AP1C

Cu₅₆Ni₂₅Zn₁₉



ARCAP® AP1C is a Copper-Nickel-Zinc (Cu₅₆Ni₂₅Zn₁₉) alloy designed and produced by Lebronze alloys. This lead-free alloy exhibits high mechanical properties, excellent corrosion resistance, absolute non-magnetism, a good formability (cold forming, deep drawing, crimping and stamping) and a fair machinability.



MATERIAL DESIGNATION

ISO	UNS	Others
Cu ₅₆ Ni ₂₅ Zn ₁₉	C79360	NA

CHEMICAL COMPOSITION

Cu	Ni	Zn
56%	25%	Balance

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm³
Thermal conductivity at 20°C	22 W/m.°C
Thermal conductivity at 200°C	25 W/m.°C
Coefficient of thermal expansion from 20 to 300 °C	16 x 10 ⁻⁶ /°C
Modulus of elasticity	163 - 170 GPa
Melting range	1150 - 1170 °C
Optical reflection coefficient (Ag=100%)	70%
Magnetism (OERSTED)	10 ⁻⁶
Electrical properties	
Electrical conductivity	4.3 - 4.9 %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

- Watch microcomponents
- Aerospace instruments shielding
- Optic fiber connectors

COMPATIBLE DOWNSTREAM PROCESS

- Cold forming
- Deep drawing
- Brazing
- Soldering
- Electrical seam-resistance welding
- TIG welding

KEY FEATURES

- Bluish white color
- Stringent amagnetism
- Corrosion resistance
- Dimensional stability
- Machinability

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)
Annealed	≤ 300	≤ 450	≥ 30	≤ 130
¼ hard H11	> 300	450 - 550	≥ 15	130 - 165
½ hard H12	> 400	450 - 550	≥ 5	160 - 190
¾ hard H13	> 500	520 - 600	≈1	180 - 210
¾ hard H14	≥ 550	≥ 580	≈1	200 - 230
Stress relieve H15	≥ 700	≥ 730	NA	≥ 220
Stress relieve H31	≤ 300	480 - 580	≥ 15	145 - 180
Stress relieve H32	≥ 400	520 - 620	≥ 8	170 - 200
Stress relieve H33	≥ 590	630 - 730	≥ 3	210 - 240
Stress relieve H34	≥ 690	705 - 815	≥ 1	235 - 265
Stress relieve H35	≥ 750	≥ 760	NA	245

BENDING PROPERTIES

Temper	90° Bending*		180° Bending*	
	Transverse (Good way)	Longitudinal (Bad way)	Transverse (Good way)	Longitudinal (Bad way)
Annealed	0*t	0*t	0*t	0*t
¼ hard H11	0*t	0*t	0*t	0*t
½ hard H12	1*t	1*t	1*t	1*t
¾ hard H13	1.5*t	2.5*t	1.5*t	2.5*t
¾ hard H14	2*t	3*t	2*t	3*t
H15	2*t	3*t	3*t	4*t
Stress relieve H31	0*t	0*t	0*t	0*t
Stress relieve H32	0.5*t	0.5*t	0.5*t	0.5*t
Stress relieve H33	1.5*t	1.5*t	2*t	2*t
Stress relieve H34	2*t	2.5*t	3*t	3*t
Stress relieve H35	2*t	3*t	4*t	4*t

*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

Disclaimer : Data for information only, non-contractual

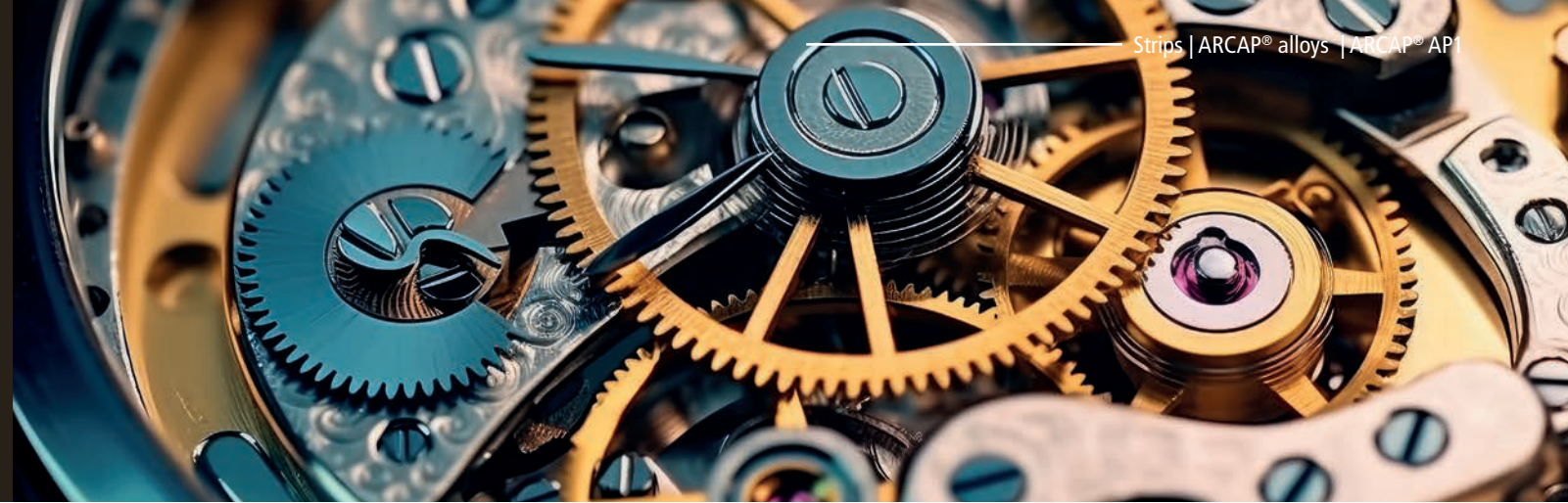


ARCAP® AP1

Cu₆₄Ni₂₅Zn₁₁

65 63.546 Cu copper	28 58.6934 Ni nickel	30 65.38 Zn zinc
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ARCAP® AP1 is a Copper-Nickel-Zinc (Cu₆₄Ni₂₅Zn₁₁) alloy designed and produced by Lebronze alloys. This lead-free alloy exhibits high mechanical properties, excellent corrosion resistance, absolute non-magnetism, a good formability (cold forming, deep drawing, crimping and stamping) and a fair machinability.



MATERIAL DESIGNATION

ISO	UNS	Others
Cu ₆₄ Ni ₂₅ Zn ₁₁	NA	NA

CHEMICAL COMPOSITION

Cu	Ni	Zn
64%	25%	Balance

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm³
Thermal conductivity at 20°C	22 W/m.°C
Thermal conductivity at 200°C	25 W/m.°C
Coefficient of thermal expansion from 20 to 300 °C	16 x 10 ⁻⁶ /°C
Modulus of elasticity	163 - 170 GPa
Melting range	1150 - 1170 °C
Optical reflection coefficient (Ag=100%)	70%
Magnetism (OERSTED)	10 ⁻⁶
Electrical properties	
Electrical conductivity	4.3-4.9 %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

Watch microcomponents
Aerospace instruments shielding
Optic fiber connectors

COMPATIBLE DOWNSTREAM PROCESS

Cold forming
Deep drawing
Brazing
Soldering
Electrical seam-resistance welding
TIG welding

KEY FEATURES

Bluish white color
Stringent amagnetism
Corrosion resistance
Dimensional stability
Machinability

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)
Annealed	≤ 300	≤ 420	≥ 30	≤ 120
¼ hard H11	> 300	370 - 470	≥ 20	120 - 150
½ hard H12	> 370	450 - 550	≥ 10	150 - 170
¾ hard H13	> 470	520 - 600	≈3	165 - 185
4/4 hard H14	≥ 530	≥ 580	≈1	180 - 210

BENDING PROPERTIES

Temper	90° Bending*		180° Bending*	
	Transverse (Good way)	Longitudinal (Bad way)	Transverse (Good way)	Longitudinal (Bad way)
Annealed	0*t	0*t	0*t	0*t
¼ hard H11	0*t	0*t	0*t	0*t
½ hard H12	1*t	1*t	1*t	1*t
¾ hard H13	1*t	2*t	2*t	2*t
4/4 hard H14	2*t	3*t	3*t	4*t

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

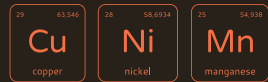
OTHER AVAILABLE FORMS

Wire
Rods



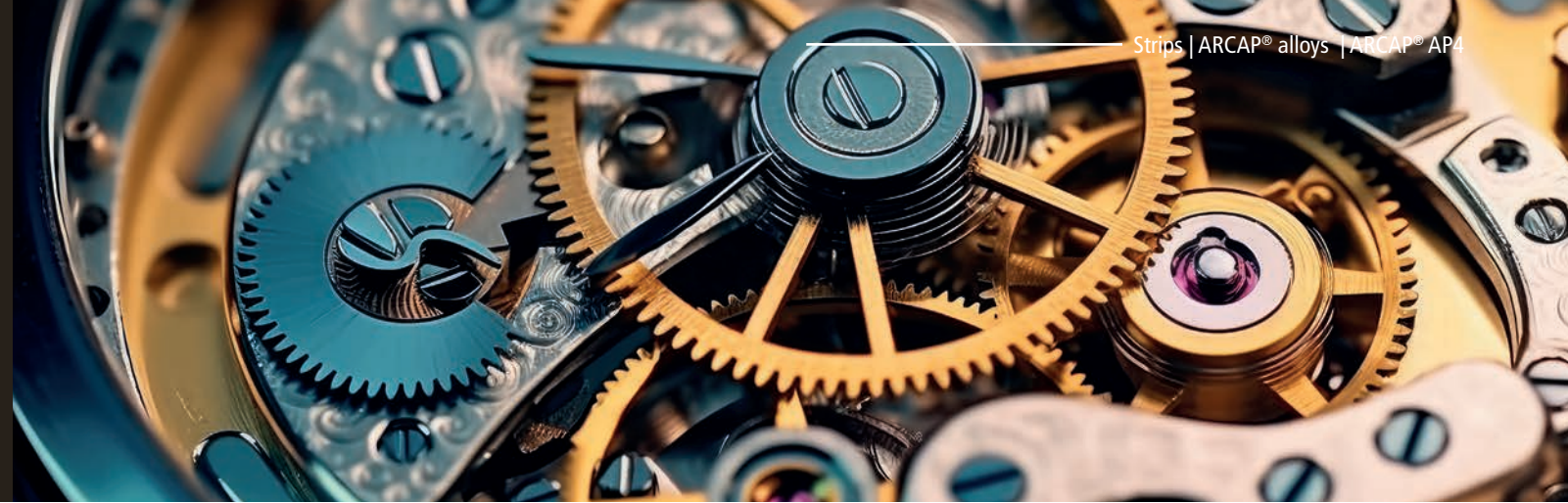
ARCAP® AP4

Cu₅₅Ni₄₄Mn₁



ARCAP® AP4 is a Copper-Nickel (Cu₅₅Ni₄₄Mn₁) alloy designed and produced by Lebronze alloys. It exhibits high mechanical properties, excellent corrosion resistance, high elasticity and fair machinability.

Strips | ARCAP® alloys | ARCAP® AP4



Strips | ARCAP® alloys | ARCAP® AP4

MATERIAL DESIGNATION

ISO	UNS	Others
Cu ₅₅ Ni ₄₄ Mn ₁	NA	DIN 17471 2.0842

CHEMICAL COMPOSITION

Cu	Ni	Mn
Balance	44%	1%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm³
Thermal conductivity at 20°C	22.5 W/m.°C
Thermal conductivity at 200°C	23 W/m.°C
Coefficient of thermal expansion from 20 to 300 °C	16 x 10 ⁻⁶ /°C
Modulus of elasticity	145 GPa
Melting range	1225 - 1285 °C
Optical reflection coefficient (Ag=100%)	70%
Magnetism (OERSTED)	10 ⁻⁶
Electrical properties	
Electrical conductivity	3.5 %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

Watch microcomponents
Aerospace instruments shielding
Optic fiber connectors

COMPATIBLE DOWNSTREAM PROCESS

Hot working
Deep drawing
Brazing
Soldering
Electrical seam-resistance welding
TIG welding

KEY FEATURES

Remarkable corrosion resistance at high temperature
High mechanical properties
Good Marine corrosion resistance

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)
Annealed	≤ 300	≤ 500	≥ 30	≤ 140
¼ hard H11	> 300	470 - 600	≥ 15	140 - 180
½ hard H12	> 450	450 - 550	≥ 1	150 - 170
Spring H15	≤ 670	≥ 580	NA	180 - 210

BENDING PROPERTIES

Temper	90° Bending*		180° Bending*	
	Transverse (Good way)	Longitudinal (Bad way)	Transverse (Good way)	Longitudinal (Bad way)
Annealed	0*t	0*t	0*t	0*t
¼ hard H11	0*t	0*t	0*t	0*t
½ hard H12	1*t	1*t	1*t	1*t
Spring H15	1*t	2*t	1*t	2*t

*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



lebronze alloys

Métallurgie d'exception

www.lebronze-alloys.com