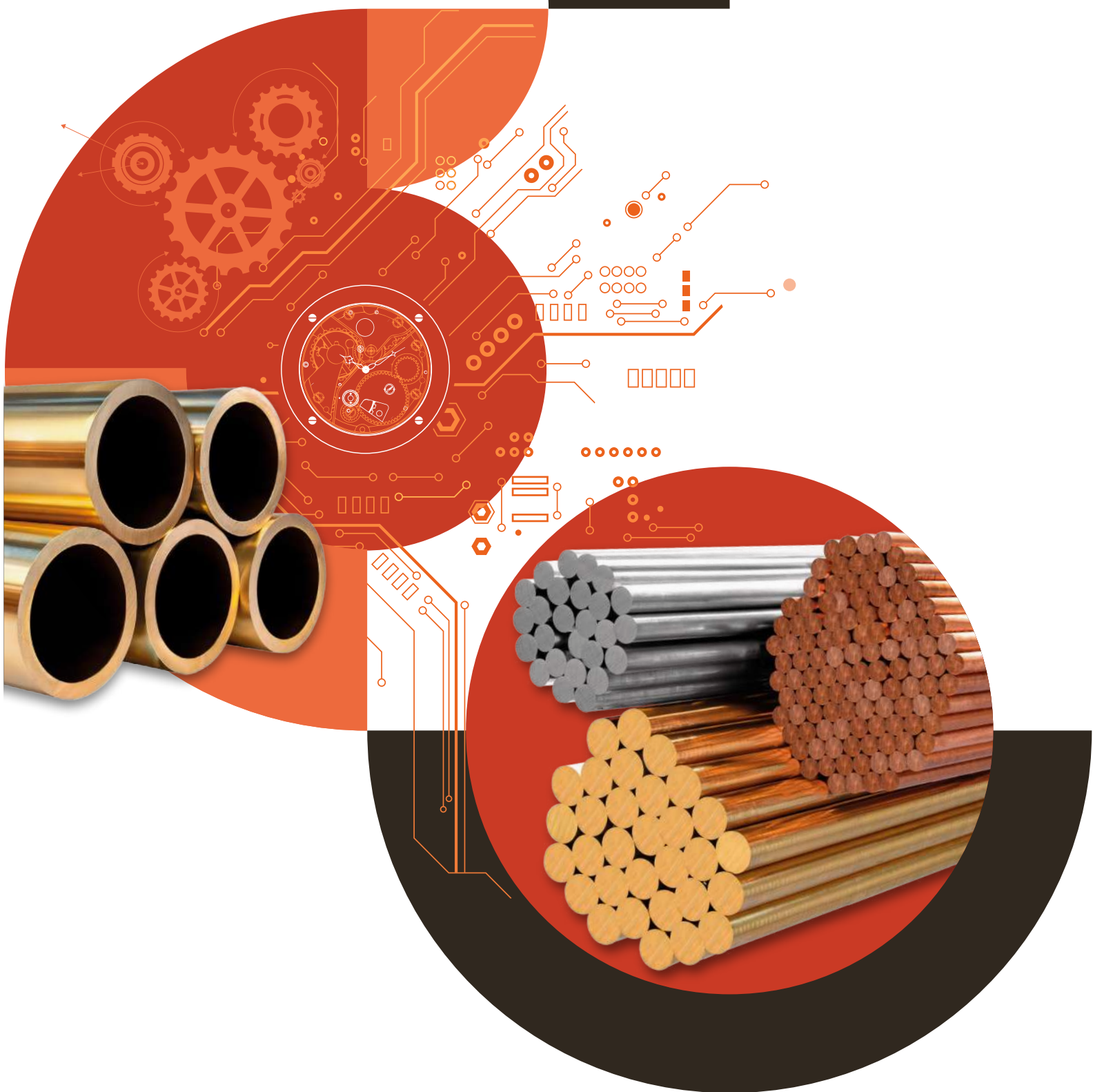


PRODUCT  
**CATALOG**  
Bars &  
Hollows Bars

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 730 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
- 4 service centers
- 730 employees
- 200 + alloys produced
- 239 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.

2023-2024

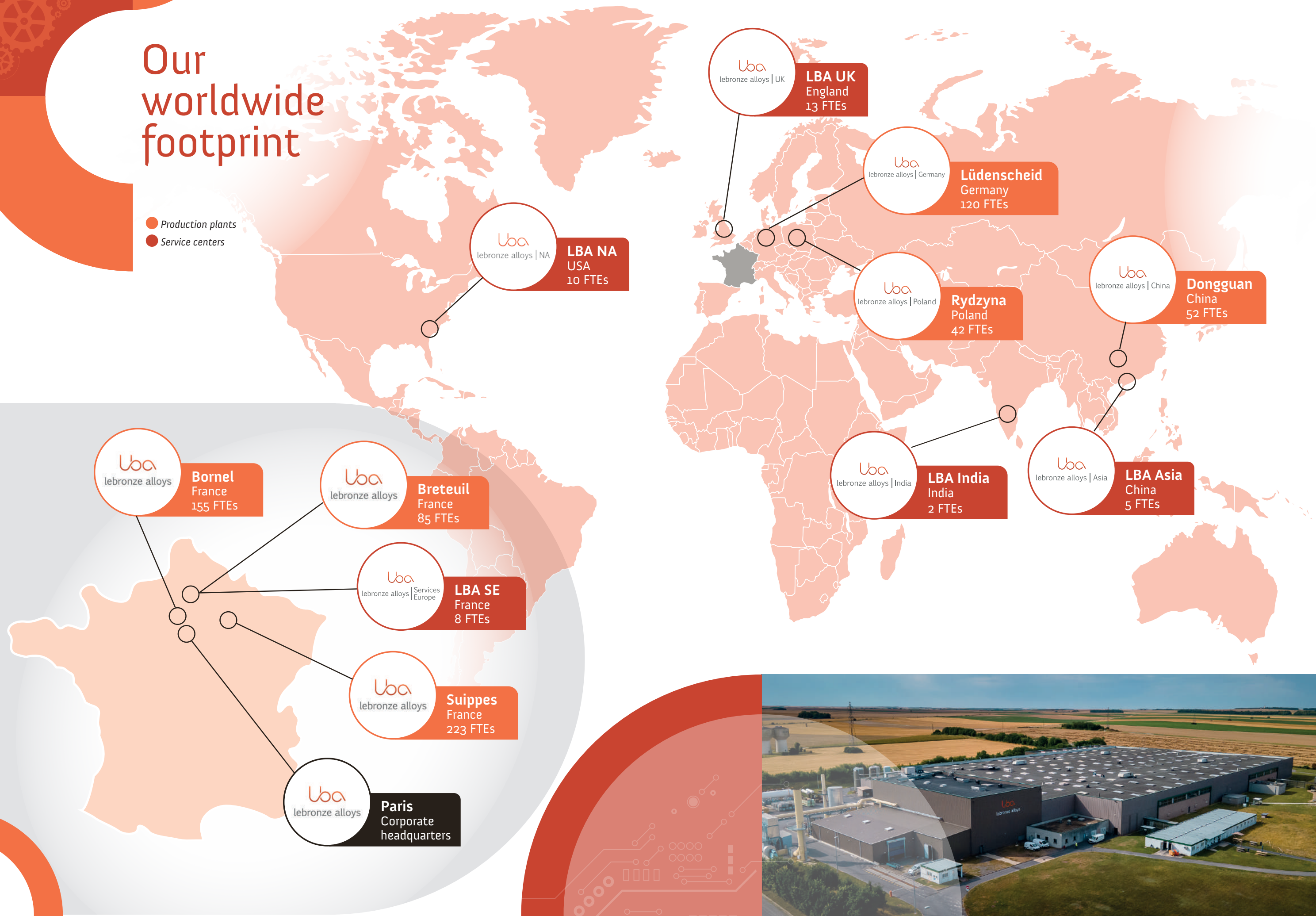
**The Group counts over 730 employees, 6 production sites and 4 service centers around the world and generates 239 M€ of sales.**

Over the last two years, the Group has strengthened its distribution network by opening **two new service centers**: Lebronze alloys SE (Services Europe) in Breteuil, France, and Lebronze alloys NA in Bristol, USA.



# 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



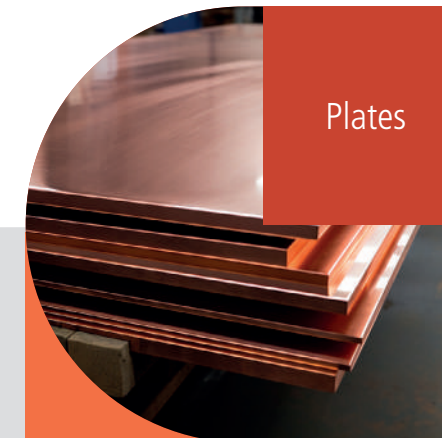
Rods



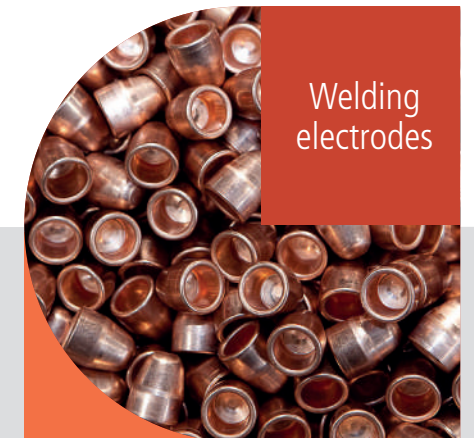
Wires



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

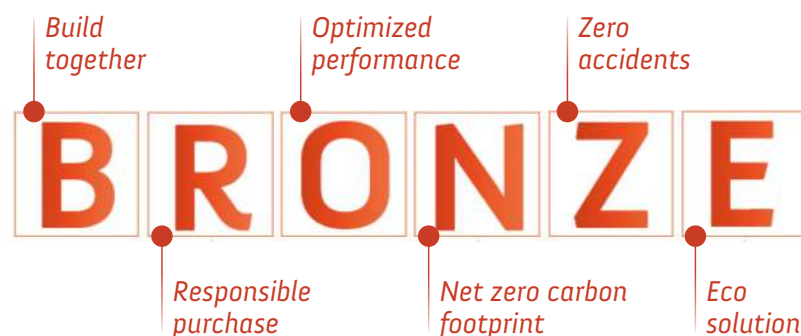
### Finishing

- 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.

**Optimized 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 actions 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 allows 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-check 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, Lüdenscheid, Suippes, Rydzyna.



Certified sites: Breteuil, Suippes, Rydzyna.



Certified sites: Bornel



Certified sites: Lüdenscheid, Breteuil and Suippes.

# Navinic CuNi alloys

## Copper Nickel alloys

### Superior resistance to marine corrosion

Navinic is our range of **copper nickel alloys** designed for **high strength applications in the Marine and Defence industries**. Characterized by an **excellent resistance to marine corrosion** (seawater, brine and sea atmospheric exposure), they also have a **good behaviour in ammoniacal environments**.

We provide Navinic alloys mainly as bars, plates, hollow bars, tubes and fittings, to be processed into relatively complex components.

#### PRODUCT PORTFOLIO

| Alloy      | ISO         | UNS                                 | Other designations                      | Aerospace specifications |
|------------|-------------|-------------------------------------|-----------------------------------------|--------------------------|
| Navinic 10 | CuNi10Fe1Mn | C70600<br>C70610<br>C70620<br>7060X | CN 102<br>WN 2.0872<br>2.1972<br>CW352H | NA                       |
| Navinic 30 | CuNi30Mn1Fe | C71500<br>C71520                    | CN107<br>WN 2.0882<br>CW354H            | NA                       |

#### STANDARD CAPABILITY\*

| Round Bars     | Other Bars**   | Hollow bars    | Plates         |
|----------------|----------------|----------------|----------------|
| ALL DIMENSIONS | ALL DIMENSIONS | ALL DIMENSIONS | ALL DIMENSIONS |

\*Other shapes on request  
\*\*Depending on alloy, square / flat / rectangular / hexagonal bars



### 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 Navinic alloys are:
- REACH and RoHS compliant
  - On average produced with 91 % of recycled materials



### Markets and applications

#### Marine & Defence

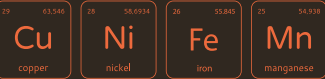


- Seawater pipeline systems



# Navinic 10

CuNi<sub>10</sub>Fe<sub>1</sub>Mn



Navinic 10 is a copper-nickel (CuNi<sub>10</sub>Fe<sub>1</sub>Mn) alloy designed for the Marine and Defence industries. This alloy offers superior resistance to marine corrosion (seawater, brine and sea atmospheric exposures) but also has a good behaviour in ammoniacal environments.



### MATERIAL DESIGNATION

| ISO         | UNS                                 | Other designations                     | Aerospace specifications | Other standards                                                                                                                                                                                                                             |
|-------------|-------------------------------------|----------------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CuNi10Fe1Mn | C70600<br>C70610<br>C70620<br>7060X | CN102<br>WN 2.0872<br>2.1972<br>CW352H | NA                       | ASTM B151-B171-B466-B467<br>MIL T 16420 K, MIL C 15726<br>MIL C 24679, BS 2871,<br>BS 2874, DEF STAN 02-879<br>DIN 17664, DIN 17671<br>DIN 17672, DIN 86019<br>DIN 1755, VG 85 004<br>EEMUA 234, EN 12163<br>EN 12449, EN 12165<br>EN 12420 |

### CHEMICAL COMPOSITION (WEIGHT%)

| Cu      | Ni  | Fe   | Mn   |
|---------|-----|------|------|
| Balance | 10% | 1.6% | 0.7% |

### TYPICAL APPLICATIONS

#### Marine and Defence industries

- Seawater pipeline systems:
- Shipbuilding (cooling, fire-circuit)
  - Offshore platform (fire-circuit)
  - Desalination plant

### PHYSICAL PROPERTIES

| General properties                                                   |                           |                         |
|----------------------------------------------------------------------|---------------------------|-------------------------|
| Density at 20 °C (68 °F)                                             | 8.9 g/cm³                 | 0.32 lb/in³             |
| Thermal conductivity                                                 | 50 W/m.°C                 | 29 BTU/(h.ft.°F)        |
| Coefficient of thermal expansion from 20 to 300 °C (68 °C to 572 °F) | 17 x 10 <sup>-6</sup> /°C | 9.44 µin/in °F          |
| Young’s modulus                                                      | 130 GPa                   | 18 855 ksi              |
| Magnetic permeability                                                | 1.01 to 1.7               |                         |
| Electrical properties                                                |                           |                         |
| Resistivity at 20 °C (68 °F)                                         | 19 µΩ.cm                  | 114.3 Ω.<br>circ mil/ft |
| Electrical conductivity                                              | 9 %IACS                   |                         |

### COMPATIBLE DOWNSTREAM PROCESS

- Extrusion, forging or die stamping  
Cold drawing  
Heat treatment  
Hot working  
Cold working (bending, expending, drawing) for manufacturing of thin pipes and fittings.  
Arc, MIG, TIG welding  
Hard and soft brazing  
Machinability: 20% of free-cutting brass

### KEY FEATURES

- Excellent resistance to seawater corrosion
- By pitting corrosion in stagnant water
  - By erosion-corrosion and cavitation in circulation (3.5 m/s max)
  - By stress corrosion
  - By fouling corrosion

### MECHANICAL PROPERTIES

| Size                                                             | Temper      | Yield Strength 0.2% MPa (ksi) | Tensile Strength MPa (ksi) | Elongation (%) | Hardness (HB) |
|------------------------------------------------------------------|-------------|-------------------------------|----------------------------|----------------|---------------|
| For other dimensions and shapes, mechanical properties on demand |             |                               |                            |                |               |
| Bars                                                             |             |                               |                            |                |               |
| 15.875 ≤ Ø ≤ 315 mm<br>(0.59 ≤ Ø ≤ 12.4 in.)                     | Annealed    | ≥ 110<br>(≥ 16)               | ≥ 310<br>(≥ 44)            | ≥ 35           | ≥ 70          |
| 19.05 ≤ Ø ≤ 25.4 mm<br>(0.75 ≤ Ø ≤ 1 in.)                        | Cold worked | ≥ 250<br>(≥ 36)               | ≥ 350<br>(≥ 51)            | ≥ 15           | ≥ 100         |
| Hollow bars and Tubes                                            |             |                               |                            |                |               |
| 16 ≤ OD ≤ 368.1 mm<br>(0.63 ≤ OD ≤ 14.5 in.)                     | Annealed    | ≥ 110<br>(≥ 16)               | ≥ 310<br>(≥ 44)            | ≥ 35           | ≥ 70          |

### OTHER AVAILABLE FORMS

Plates, billets, strips, sheets, rods, wires, standard & complex profiles, marine tubes & fitting, machined blanks and parts



# Navinic 30

CuNi<sub>30</sub>Mn<sub>1</sub>Fe



Navinic 30 is a copper-nickel (CuNi<sub>30</sub>Mn<sub>1</sub>Fe) alloy used for high strength applications in the Marine and Defence industries. This alloy offers outstanding resistance to marine corrosion (seawater, brine and sea atmospheric exposures) but also has a good behaviour in ammoniacal environments.



### MATERIAL DESIGNATION

| ISO         | UNS              | Other designations           | Aerospace specifications | Other standards                                                                                                                                                                              |
|-------------|------------------|------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CuNi30Mn1Fe | C71500<br>C71520 | CN107<br>WN 2.0882<br>CW354H | NA                       | ASTM B151-B171-B466-B467<br>MIL T 16420 K, MIL C 15726<br>MIL C 24679, BS 2871,<br>BS 2874, DEF STAN 02-879<br>DIN 17664, DIN 17671<br>DIN 17672, EN 12163<br>EN 12420, EN 12165<br>EN 12449 |

### CHEMICAL COMPOSITION (WEIGHT%)

| Cu      | Ni  | Mn   | Fe |
|---------|-----|------|----|
| Balance | 30% | 0.5% | 1% |

### TYPICAL APPLICATIONS

#### Marine and Defence industries

- Seawater pipeline systems:
- Shipbuilding (submarine pressurized circuit)
  - Exchanger pipes

### PHYSICAL PROPERTIES

| General properties                                                   |                           |                         |
|----------------------------------------------------------------------|---------------------------|-------------------------|
| Density at 20 °C (68 °F)                                             | 8.9 g/cm <sup>3</sup>     | 0.32 lb/in <sup>3</sup> |
| Thermal conductivity                                                 | 30 W/m.°C                 | 17 BTU/(h.ft.°F)        |
| Coefficient of thermal expansion from 20 to 300 °C (68 °C to 572 °F) | 16 x 10 <sup>-6</sup> /°C | 8.89 μin/in °F          |
| Young’s modulus                                                      | 130 GPa                   | 18 855 ksi              |
| Magnetic permeability                                                | 1.01                      |                         |
| Electrical properties                                                |                           |                         |
| Resistivity at 20 °C (68 °F)                                         | 34 μΩ.cm                  | 204.5 Ω.<br>circ mil/ft |
| Electrical conductivity                                              | 5 %IACS                   |                         |

### COMPATIBLE DOWNSTREAM PROCESS

- Extrusion, forging or die stamping  
Cold drawing  
Heat treatment  
Hot working  
Cold working (bending, expending, drawing) for manufacturing of thin pipes and fittings.  
Arc, MIG, TIG welding  
Hard and soft brazing  
Machinability: 20% of free-cutting brass

### KEY FEATURES

- Non-magnetic  
Excellent resistance to seawater corrosion
- By pitting corrosion in stagnant water
  - By erosion-corrosion and cavitation in circulation (3.5 m/s max)
  - By stress corrosion
  - By fouling corrosion

### MECHANICAL PROPERTIES

| Size                                                             | Temper      | Yield Strength 0.2% MPa (ksi) | Tensile Strength MPa (ksi) | Elongation (%) | Hardness (HB) |
|------------------------------------------------------------------|-------------|-------------------------------|----------------------------|----------------|---------------|
| For other dimensions and shapes, mechanical properties on demand |             |                               |                            |                |               |
| Bars                                                             |             |                               |                            |                |               |
| 15.875 ≤ Ø ≤ 254 mm<br>(0.59 ≤ Ø ≤ 10 in.)                       | Annealed    | ≥ 130<br>(≥ 19)               | ≥ 350<br>(≥ 51)            | ≥ 30           | ≥ 80          |
| 19.05 ≤ Ø ≤ 25.4 mm<br>(0.75 ≤ Ø ≤ 1 in.)                        | Cold worked | ≥ 300<br>(≥ 43)               | ≥ 460<br>(≥ 65)            | ≥ 15           | ≥ 120         |
| Hollow bars and Tubes                                            |             |                               |                            |                |               |
| 10 ≤ OD ≤ 273.05 mm<br>(0.4 ≤ OD ≤ 10.75 in.)                    | Annealed    | ≥ 130<br>(≥ 19)               | ≥ 350<br>(≥ 51)            | ≥ 30           | ≥ 80          |

### OTHER AVAILABLE FORMS

Plates, billets, strips, sheets, rods, wires, standard & complex profiles, marine tubes & fitting, machined blanks and parts



lebronze alloys

Métallurgie d'exception

[www.lebronze-alloys.com](http://www.lebronze-alloys.com)