PRODUCT
# CATALOG 25

lebronze alloys

High-performance
copper alloys

## FOR AERONAUTICS

# Introduction

**For more than 50 years, Lebronze alloys has been the international reference for specialty copper alloys dedicated to the Aeronautics industry.**

Our Group has become a leading solution developer in 45 countries for key Aeronautics partners, and holds the largest number of approvals for copper alloys.

When it comes to civil or defense applications, to OEM's or MRO's, Lebronze alloys is providing a full range of high-performance materials from semi-finished products to fully finished machined blanks used in equipment on all major platforms compliant with all international and national standards.

Our **fully integrated manufacturing supply chain** for Aeronautics includes the following processes :

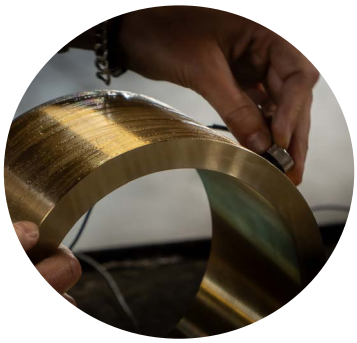
01 Semi-continuous casting

02 Extrusion and free forging

03 Drawing

04 Heat treatment

05 Non-destructive testing



## Our certifications

(Suippes plant)

**Aerospace certifications:**

afaq EN/AS/JISQ 9100 Aéronautique AFNOR CERTIFICATION

Nadcap Administered by PRI ACCREDITED

Heat treating

**General certifications:**

afaq ISO 9001 Qualité AFNOR CERTIFICATION

afaq ISO 50001 Énergie AFNOR CERTIFICATION

afaq ISO 14001 Environnement AFNOR CERTIFICATION

**Our customer specifications:**

Airbus, Airbus Helicopters, Boeing, Safran Avic, Dassault, Mitsubishi, Bell Helicopter, and Bombardier

# High performance materials

**To fulfill the stringent needs of the Aeronautics industry, we have developed over the years a broad portfolio of high-performance copper alloys which are fully optimised for the Aeronautics environment.**

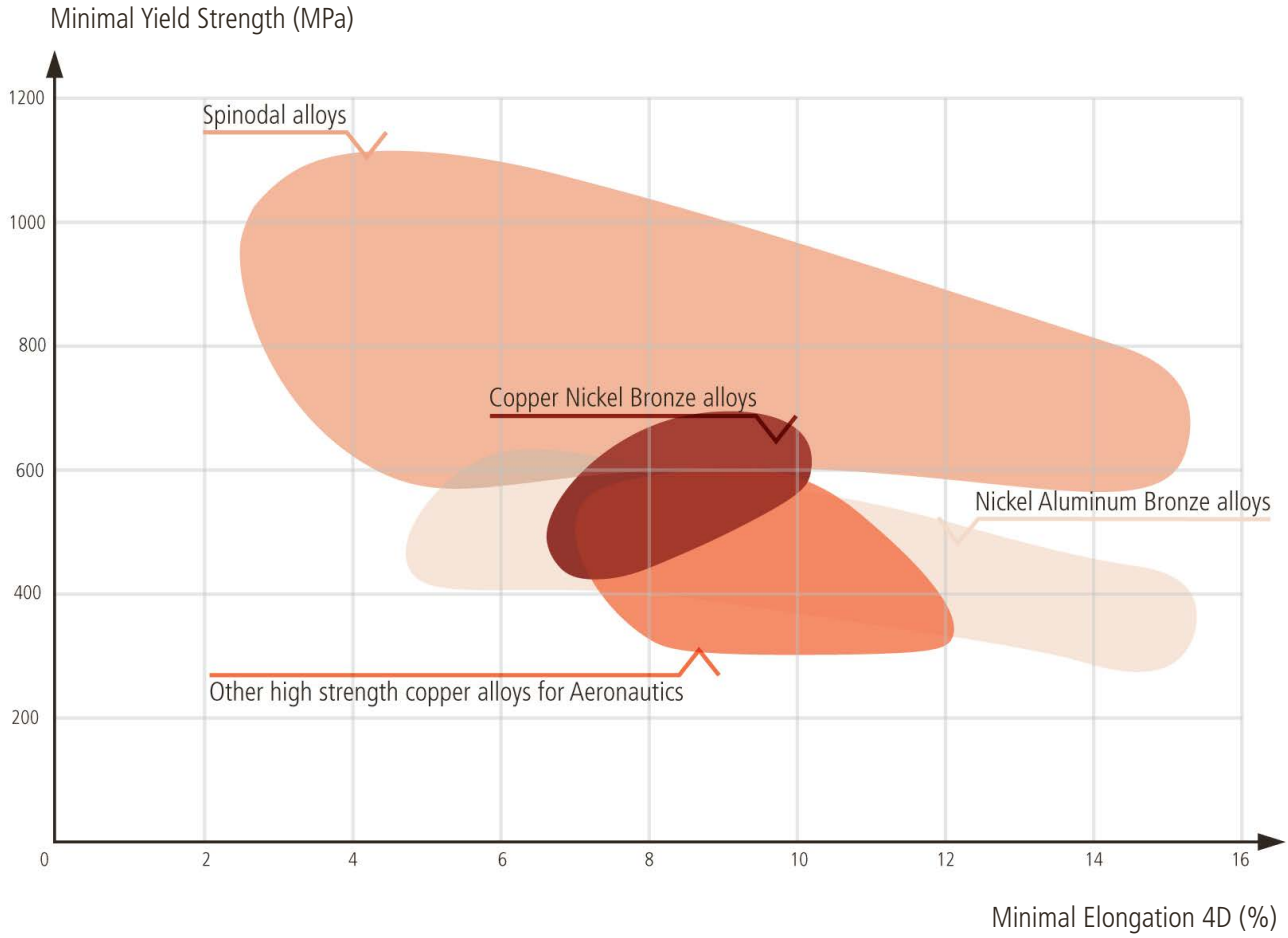
Our alloys are specially designed to **withstand extreme conditions** (high and sub-zero temperatures) and are **exceptionally resistant to mechanical wear and corrosion.**
They perform and maintain traction and shear forces, and friction at high/low speeds and high pressures.

Thanks to our **fully integrated production process**, our alloys are available in many different tempers and dimensions.
Our combination of cold and heat treatments enables us to offer you the highest mechanical properties available.
Our Aeronautics alloys serve many applications for civil aircrafts, military transport aircrafts, business jets, fighters and vertical takeoff and landing (VTOL).

| Alloy | ISO | Designations | Aeronautics specifications | Other standards / specifications |
|---|---|---|---|---|
| Spinodal alloys | | | | |
| Hardiall® | $CuNi_{15}Sn_8$ | C72900<br>CW355H | AMS 4596<br>AMS 4597<br>AMS 4598 | ASTM B929<br>EN 12163 |
| Copper Nickel Bronze alloys | | | | |
| K5 | $CuNi_{14}Al_2$<br>$CuNi_{14}Al_3$ | NA | NFL 14-702 | ASNA 6127* |
| K7 | $CuNi_{14}Al_3Fe_1$ | 2.1504 | WL 2.1504*<br>LN 9468* | NA |
| Nickel Aluminium Bronze alloys | | | | |
| CA104 | $CuAl_{10}Ni_5Fe_4$ | CA104 | BS B23*<br>BS 2B23* | BS 2874* |
| NCS | $CuAl_{11}Ni_5Fe_5$ | C63020<br>CW308G<br>2.0978 | AMS 4590<br>NFL 14-706 | NFA 51 116 \| EN 12167<br>EN 12163 \| EN 12420<br>DIN 1756<br>ABS 5688B*<br>NCT10641-01<br>NCT15641-11<br>NCT15641-12 |
| NC4 | $CuAl_{10}Ni_5Fe_4$ | C63000<br>CW307G<br>2.0966 | AMS 4640<br>NFL 14-705 | ASNA 3406*<br>ASTM B124, ASTM B150, ASTM B171<br>NFA 51 116 \| EN 12420<br>EN 12163 \| EN 12165<br>EN 12167 |
| Other high strength copper alloys for Aeronautics | | | | |
| NS5 | $CuNi_2Si$ | CW111C<br>2.0855 | NFL 14-701<br>DTD 498 | ASNA 3405*<br>NCT 15643-01<br>NCT 15643-02<br>EN 12163 \| EN 12167 \| EN 12420 \| EN 12165 \| RWMA class 3 |
| Si45Z | $CuSi_3Fe_2Zn_3$ | C65620 | AMS 4616 | NA |
| ZA9 | $CuZn_{19}Al_6MnFe$ | NA | NFL 14-707 | ASNA 3402*<br>NCT 10631-11<br>NCT 15631-01<br>NCT 15631-02 |
| NC6 | $CuAl_9Ni_5Fe_4$ | NA | DTD197A* | NA |

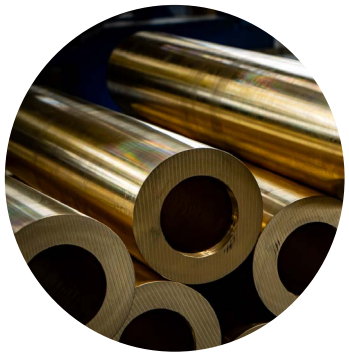
***& ASNA New Airbus QPL release for commercial aircraft**

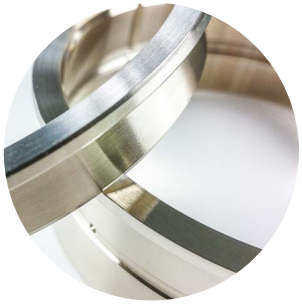
# Key mechanical properties of our Aeronautics alloys




# Available forms

- Round bars
- Flat bars
- Hollow bars/tubes
- Rings
- Forged plates
- Billets





Control systems

Engine

Doors & Hatches

Landing gear

Main Structure

Braking systems

Wing flap system

Main rotor and blades

Tail rotor

Door

Landing gear

Engine

# lebronze alloys

Métallurgie d'exception

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