PRODUCT
CATALOG 26
Rods & Wires

lebronze alloys

VOLUME 2

High-performance
copper alloys

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About Lebronze alloys

Lebronze alloys is a world leader in the development and **fully integrated production of performance materials for critical applications.**
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 8 production plants combine a unique range of metal processing technologies, while our 6 service centers ensure global product availability with outstanding customer support.

The Group's commitment is to find appropriate and optimized solutions for every sector's requirements while optimizing the environmental impact of our products.
Lebronze alloys distinguishes itself through a constant focus on quality to serve the most demanding critical applications (e.g. landing gear bushings, high-performance connectors, etc.).

Performance materials for critical applications

Fully integrated production process

Optimized environmental impact of our products

KEY FIGURES

- **8 production plants**
- **6 service centers**
- **1000 employees**
- **+250 alloys produced**
- **300 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.

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 performance materials for critical applications.

2023-2024

Lebronze alloys has strengthened its distribution network by opening three new service centers: **Lebronze alloys Services Europe** in Breteuil (France), **Lebronze alloys North America** in Warwick, RI (USA), and **Lebronze alloys** India in Bangalore (India).

2025

Majority stake acquired by Astorg. Launch of a new external growth phase with the acquisition of four key international companies: **Allied Copper Alloys Ltd** (UK), **AW Fraser Ltd** (New Zealand), **mLego** (France), and **MEA** (France).

Our worldwide footprint

- *Production plants*
- *Service centers*

Bornel
France

Breteuil
France

LBA Services Europe
France

Suippes
France

mLego
France

MEA
France

Paris
Corporate headquarters

LBA NA
USA

LBA UK
England

Lüdenscheid
Germany

Rydzyna
Poland

LBA India
India

LBA Asia
China

AW Fraser
New-Zealand

LBA Oceania
New-Zealand

Back

Product range at a glance

Lebronze alloys offers **more than 250 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 value chain delivering excellence

One of the Group's major strengths lies in its **fully integrated production process**, from upcycling and melting to servicing.

This particularity guarantees traceability optimization and strict control of the final properties of our materials so they can comply with the most stringent requirements.

Upcycling and casting

- Internal & external recycling
- Semi-continuous casting
- Continuous wire casting
- Continuous bar casting
- Centrifugal casting
- Continuous strip casting

Hot forming

- Extrusion
- Hot rolling
- Free forging

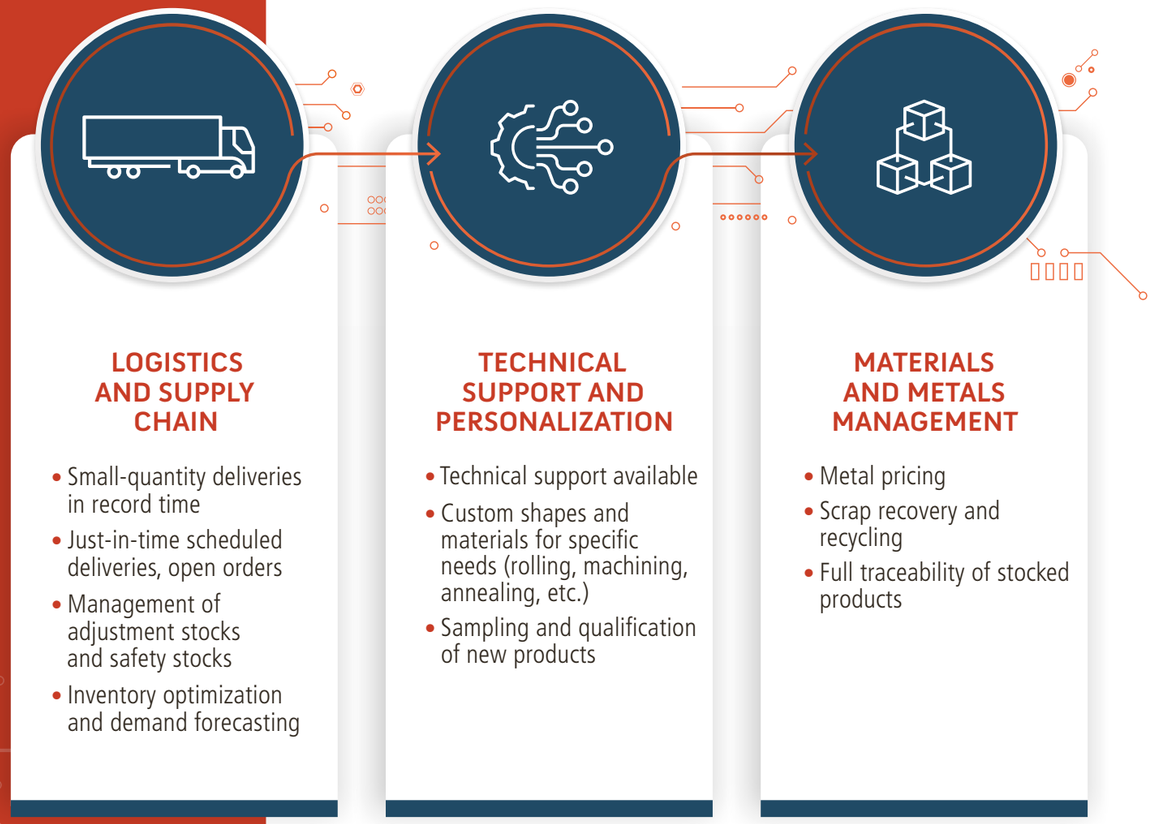
Cold forming

- Drawing
- Straightening
- Cold rolling
- Heat treatments

Blanks and components

- Hot stamping
- Cold stamping
- Cold heading
- Machining

Services offered by our service centers worldwide



LOGISTICS AND SUPPLY CHAIN

- Small-quantity deliveries in record time
- Just-in-time scheduled deliveries, open orders
- Management of adjustment stocks and safety stocks
- Inventory optimization and demand forecasting

TECHNICAL SUPPORT AND PERSONALIZATION

- Technical support available
- Custom shapes and materials for specific needs (rolling, machining, annealing, etc.)
- Sampling and qualification of new products

MATERIALS AND METALS MANAGEMENT

- Metal pricing
- Scrap recovery and recycling
- Full traceability of stocked products

Our culture of quality

Lebronze alloys develops for all its activities a formally recognized quality management system that alows us 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 control equipment includes:

- **Metallurgical tests** such as tensile, impact, 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 CMM (DEA), profile projectors, and others

Our certifications

All our certificates can be consulted on our website

Aerospace certifications

Nadcap Administered by PRI ACCREDITED HEAT TREATING

Certified site: Suippes, FR

afaq EN/AS/JISQ 9100 Aéronautique AFNOR CERTIFICATION

Certified sites : Boëssé-le-Sec, FR; Suippes, FR

AEROSPACE STANDARD AS9120:B

Certified service centers : Lebronze alloys UK, Lebronze alloys North America, Lebronze alloys Asia, Lebronze alloys Services Europe

General certifications

afaq ISO 9001 Qualité AFNOR CERTIFICATION

Certified sites: Lüdenscheid, DE*; Boëssé-le-Sec, FR; Bornel, FR; Breteuil, FR; Doulaincourt-Saucourt, FR; Suippes, FR; Christchurch, NZ*, Rydzyna, PL*

afaq ISO 14001 Environnement AFNOR CERTIFICATION

Certified sites: Lüdenscheid, DE*; Breteuil, FR; Suippes, FR; Rydzyna, PL*; Christchurch, NZ*;

afaq ISO 45001 Santé Sécurité au Travail AFNOR CERTIFICATION

Certified sites: Bornel, FR; Suippes, FR

afaq ISO 50001 Énergie AFNOR CERTIFICATION

Certified sites: Lüdenscheid, DE*; Bornel, FR; Breteuil, FR; Suippes, FR

Our environmental commitment

At Lebronze alloys, our commitment to environmental responsibility is at the heart of how we operate and innovate. We are actively transforming our processes to reduce our impact on the planet while supporting a more sustainable industrial future.

Guided by internationally recognized frameworks and certifications, we have set ambitious, science-based targets to lower our emissions, preserve natural resources, and increase our use of recycled materials.

These commitments reflect both our long-term vision and our determination to contribute meaningfully to the global transition toward a low-carbon, circular economy.

-50%

Scope 1 & 2 emissions reduction between 2018 and 2030 (target 1,5°)

-25%

Reduction of scope 3 emission between 2021and 2030 (target 1,5°)

>80%

Over 80% of our raw metal comes from recycled sources

-50%

Reduction of water consumption of 50% between 2018 and 2025

GOLD | Top 5% ecovadis Sustainability Rating JAN 2026

Member of "Coq vert"

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

WE SUPPORT UN GLOBAL COMPACT

Performance materials for critical applications

lba lebronze alloys

CuMn alloys
Current sensing alloys
Precision and stability

Our Group offers a wide range of **current sensing alloys** composed of copper, manganese and nickel. These alloys are widely used for their **precision and the stability** of their electrical resistivity in various environments. Main applications are in electronics as **precision resistors** and **electrical shunts** amongst others.

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

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

PRODUCT PORTFOLIO

Alloy	ISO
Niclal® 28*	CuMn6Sn2
Niclal® 29*	CuMn7Sn2
Niclal® 37	CuMn10Ni4
Niclal® 38	CuMn10Ni4
Niclal® 42	CuMn11Ni4
Niclal® 43	CuMn12Ni4
Niclal® 43A	CuMn12Ni2
Niclal® 47	CuMn14Ni2
Niclal® 48	CuMn13Ni4
Constantan 45 TCR	CuNi44Mn1Fe
Niclal® 50*	Proprietary
Niclal® 80*	Proprietary
Niclal® 100*	Proprietary

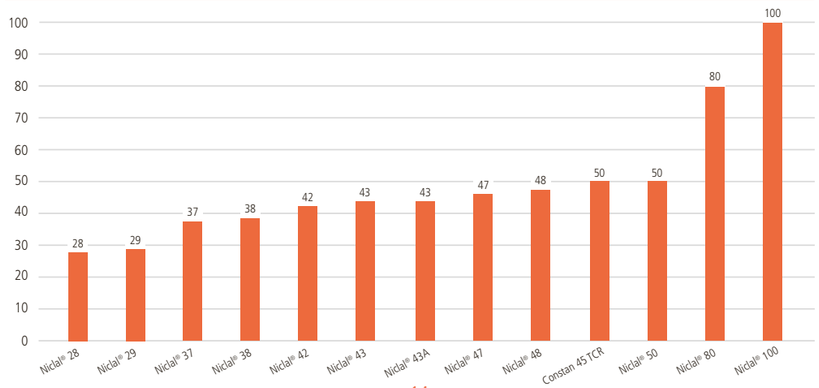
** For those alloys, technical data in on demand*

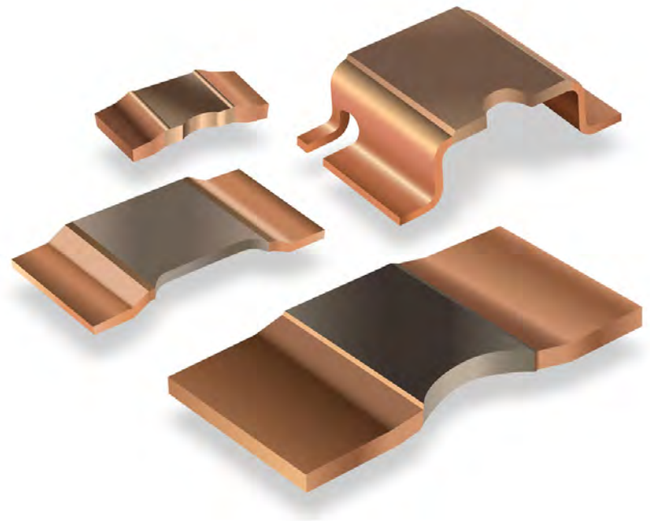
STANDARD CAPABILITY

	Rods	Wires
Diameter	1.0 – 16.0 mm*	1.0 – 16.0 mm*

**Depending on alloy. Dimensions outside this range on request*

ELECTRICAL RESISTIVITY AT 20°C (µΩ.cm)





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 designed 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 who source 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.

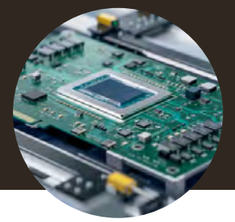
Our CuMn current sensing alloys are :
- RoHS and REACH compliant
- Mainly produced from recycled raw materials

REACH compliant

RoHS compliant

Markets and applications

Electronics



- Precision resistors
- Electrical shunts in electricity meters
- Electrical shunts in DC ammeters

Niclal® 37

CuMn10Ni4

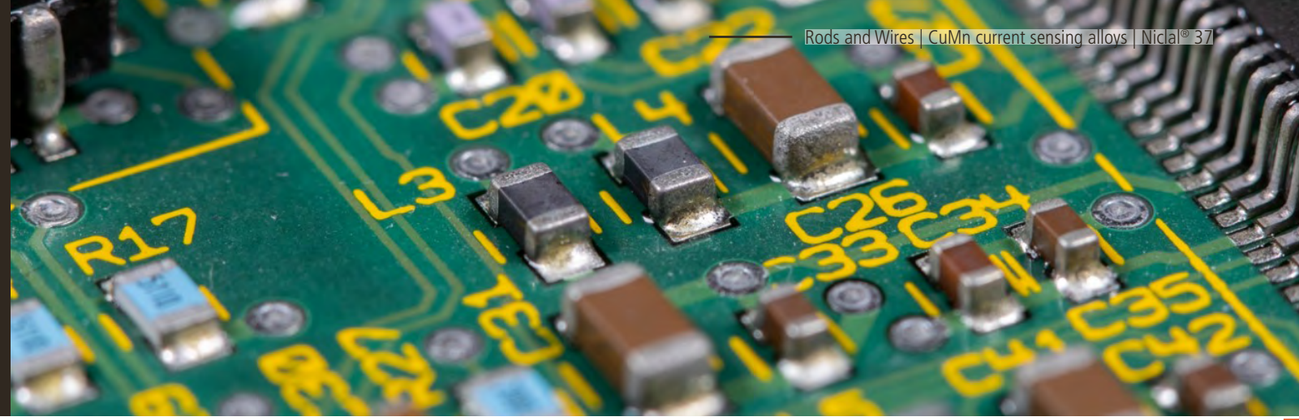
29 63.546 Cu copper

25 54.938 Mn manganese

28 58.6934 Ni nickel

Back

Niclal® 37 is a copper-manganese-nickel alloy designed and produced by Lebronze alloys.
It exhibits high thermal stability of electrical resistance centered around 37 µΩ.cm and good transformation ability (stamping, welding etc...).



Rods and Wires | CuMn current sensing alloys | Niclal® 37

MATERIAL DESIGNATION

ISO	UNS	Others
CuMn10Ni4	NA	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Mn	Ni
Balance	10%	4%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm³
Thermal conductivity at 20 °C	22 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	18 x 10^{-6}/°C
Melting point	950 °C
Electrical properties	
Resistivity at 20 °C	37 µΩ.cm
Temperature coefficient of electrical resistance from - 40 to 160 °C	0 ± 20 ppm/°C
Temperature coefficient of electrical resistance from 20 to 60 °C	0 ± 25 ppm/°C
Thermal EMF against copper between 15 and 25 °C	0 ± 1.7 µV/°C
Long-term stability (after 4000 hours at 100 °C)	0 ± 0.1 %

TYPICAL APPLICATIONS

Precision resistors
Electrical shunts in electricity meters
Electrical shunts in DC ammeters

COMPATIBLE DOWNSTREAM PROCESS

Cold forming
Welding
Soldering
Stamping

KEY FEATURES

High thermal stability of electrical resistance centered around 37 µΩ.cm

STANDARD CAPABILITY

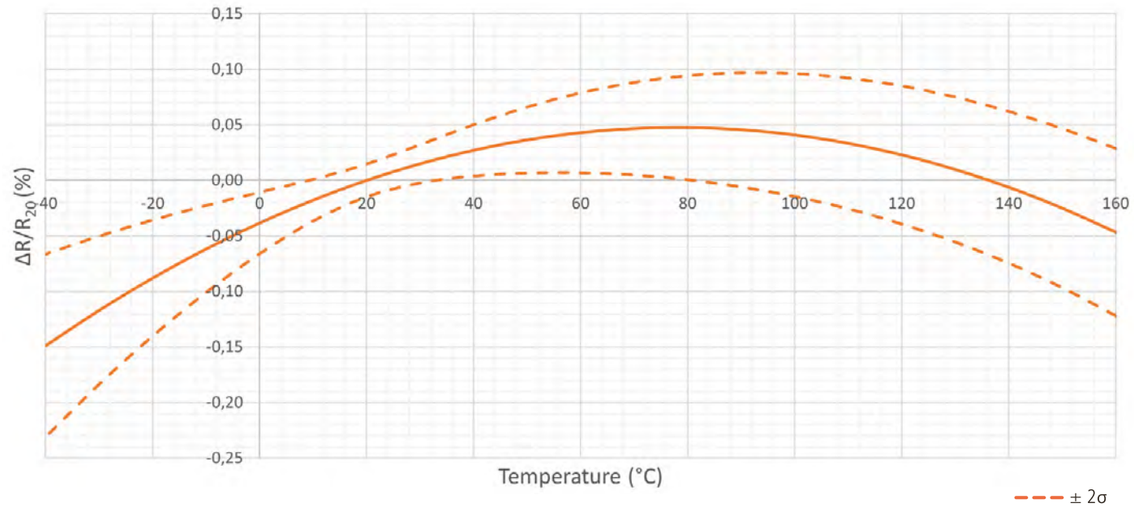
Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

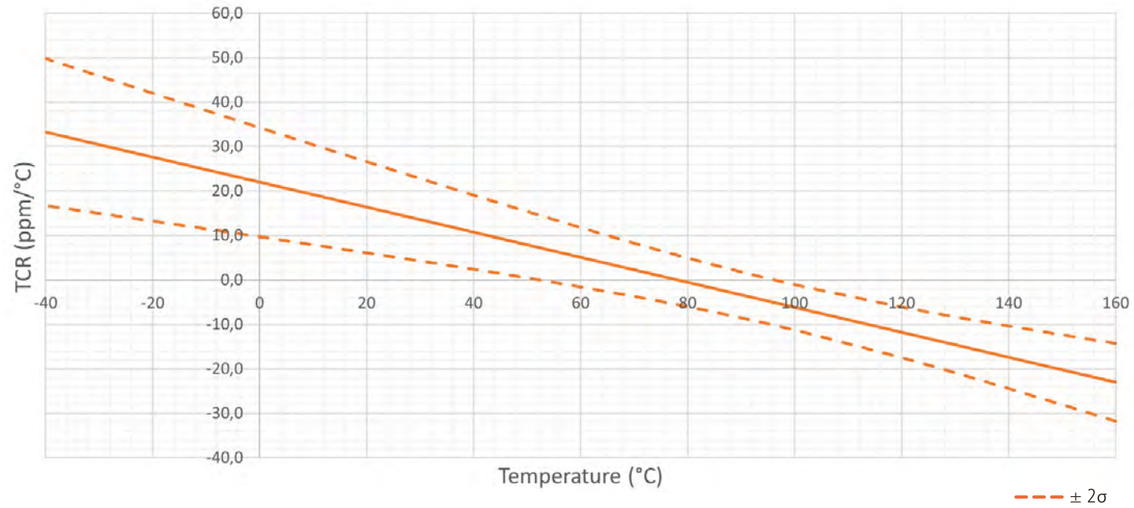
OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

RESISTANCE CHANGE VS TEMPERATURE



TCR CHANGE VS TEMPERATURE



Disclaimer : Data for information only, non-contractual

Niclal® 38

CuMn10Ni4

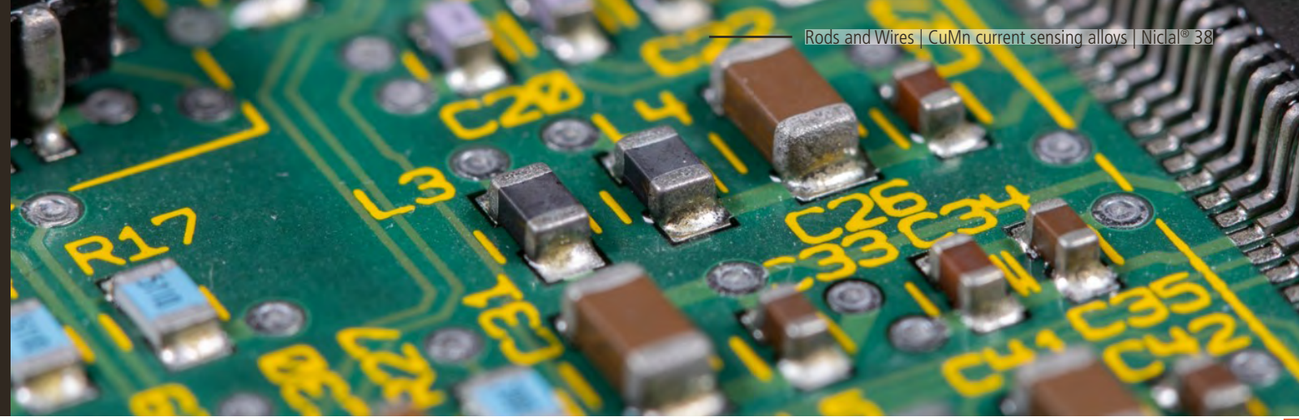
29 63.546 Cu copper

25 54.938 Mn manganese

28 58.6934 Ni nickel

Back

Niclal® 38 is a copper-manganese-nickel alloy designed and produced by Lebronze alloys.
It exhibits high thermal stability of electrical resistance centered around 38 µΩ.cm and good transformation ability (stamping, welding etc...).



Rods and Wires | CuMn current sensing alloys | Niclal® 38

MATERIAL DESIGNATION

ISO	UNS	Others
CuMn10Ni4	NA	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Mn	Ni
Balance	10%	4%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm³
Thermal conductivity at 20 °C	22 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	18 x 10^{-6}/°C
Melting point	950 °C
Electrical properties	
Resistivity at 20 °C	38 µΩ.cm
Temperature coefficient of electrical resistance from - 40 to 160 °C	0 ± 15 ppm/°C
Temperature coefficient of electrical resistance from 20 to 60 °C	0 ± 20 ppm/°C
Thermal EMF against copper between 15 and 25 °C	0 ± 1.7 µV/°C
Long-term stability (after 4000 hours at 100 °C)	0 ± 0.25 %

TYPICAL APPLICATIONS

Precision resistors
Electrical shunts in electricity meters
Electrical shunts in DC ammeters

COMPATIBLE DOWNSTREAM PROCESS

Cold forming
Welding
Soldering
Stamping

KEY FEATURES

High thermal stability of electrical resistance centered around 38 µΩ.cm

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

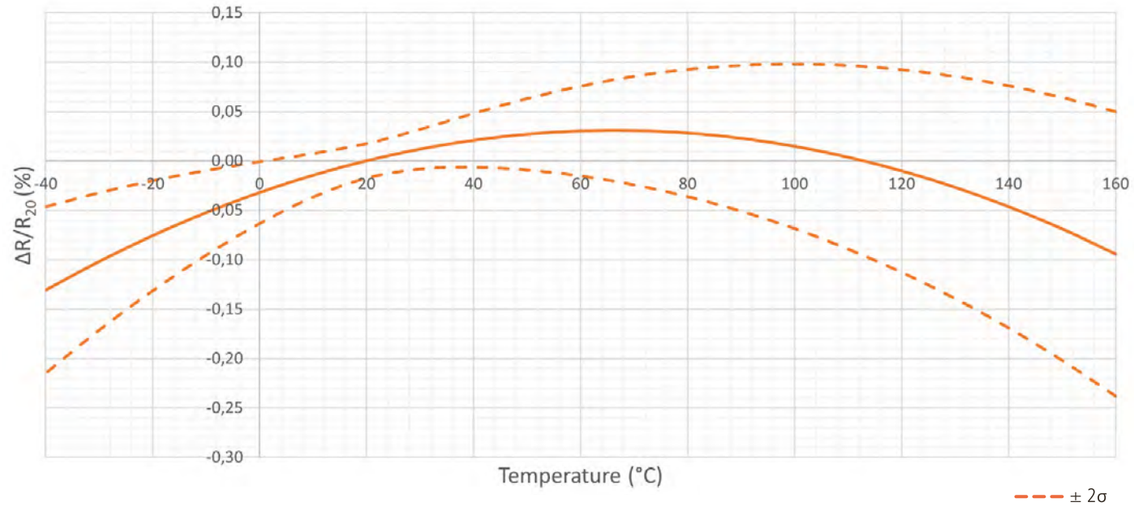
OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

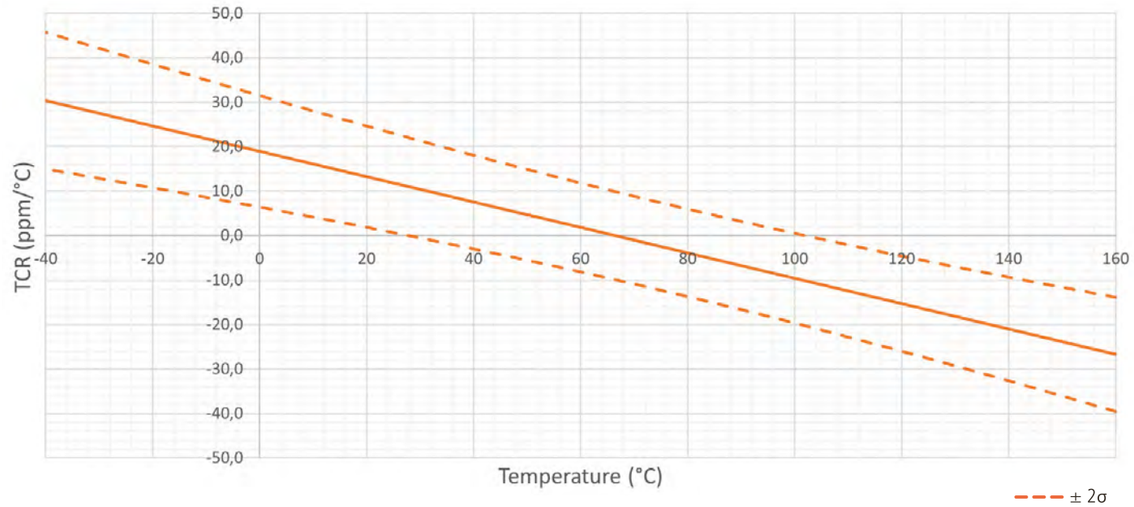
MECHANICAL PROPERTIES

Temper	Tensile Strength (MPa)	Yield Strength 0.2% (MPa)	Elongation (%)	Hardness (HV)
Other tempers on demand				
Annealed	< 420	< 180	> 40 %	< 100

RESISTANCE CHANGE VS TEMPERATURE



TCR CHANGE VS TEMPERATURE



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Niclal® 42

CuMn11Ni4

Cu copper | Mn manganese | Ni nickel

Back

Niclal® 42 is a copper-manganese-nickel alloy designed and produced by Lebronze alloys.
It exhibits high thermal stability of electrical resistance centered around 42 µΩ.cm and good transformation ability (stamping, welding etc...).

MATERIAL DESIGNATION

ISO	UNS	Others
CuMn11Ni4	NA	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Mn	Ni
Balance	11%	4%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm³
Thermal conductivity at 20 °C	22 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	18 x 10^{-6}/°C
Melting point	940 °C
Electrical properties	
Resistivity at 20 °C	42 µΩ.cm

TYPICAL APPLICATIONS

Precision resistors
Electrical shunts in electricity meters
Electrical shunts in DC ammeters

COMPATIBLE DOWNSTREAM PROCESS

Cold forming
Welding
Soldering
Stamping

KEY FEATURES

High thermal stability of electrical resistance centered around 42 µΩ.cm

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

We also produce copper alloys bars and hollow bars.

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

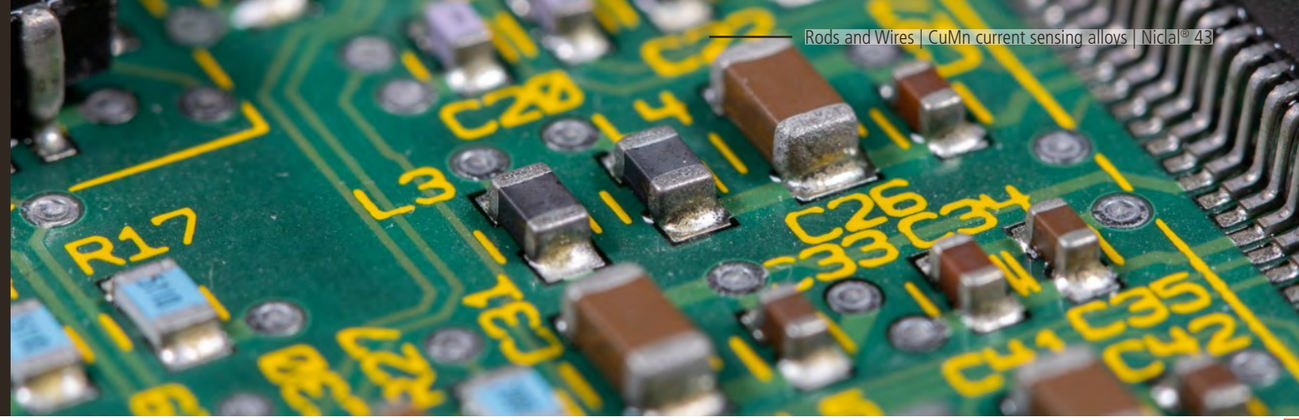
Niclal® 43

CuMn12Ni4

Cu copper | Mn manganese | Ni nickel

Back

Niclal® 43 is a copper-manganese-nickel alloy designed and produced by Lebronze alloys.
It exhibits high thermal stability of electrical resistance centered around 43 µΩ.cm and good transformation ability (stamping, welding etc...).



Rods and Wires | CuMn current sensing alloys | Niclal® 43

MATERIAL DESIGNATION

ISO	UNS	Others
CuMn12Ni4	NA	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Mn	Ni
Balance	12%	4%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm³
Thermal conductivity at 20 °C	22 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	18 x 10^{-6}/°C
Melting point	940 °C
Electrical properties	
Resistivity at 20 °C	43 µΩ.cm
Temperature coefficient of electrical resistance from - 40 to 160 °C	0 ± 20 ppm/°C
Temperature coefficient of electrical resistance from 20 to 60 °C	0 ± 25 ppm/°C
Thermal EMF against copper between 15 and 25 °C	0 ± 1.2 µV/°C
Long-term stability (after 4000 hours at 100 °C)	ΔR < 0,2 %

TYPICAL APPLICATIONS

Precision resistors
Electrical shunts in electricity meters
Electrical shunts in DC ammeters

COMPATIBLE DOWNSTREAM PROCESS

Cold forming
Welding
Soldering
Stamping

KEY FEATURES

High thermal stability of electrical resistance centered around 43 µΩ.cm

STANDARD CAPABILITY

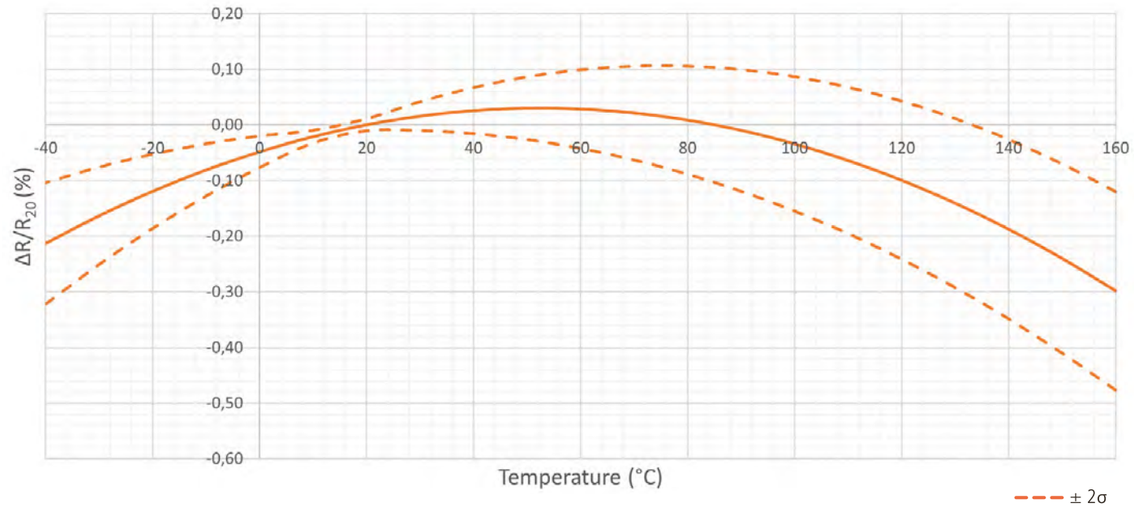
Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

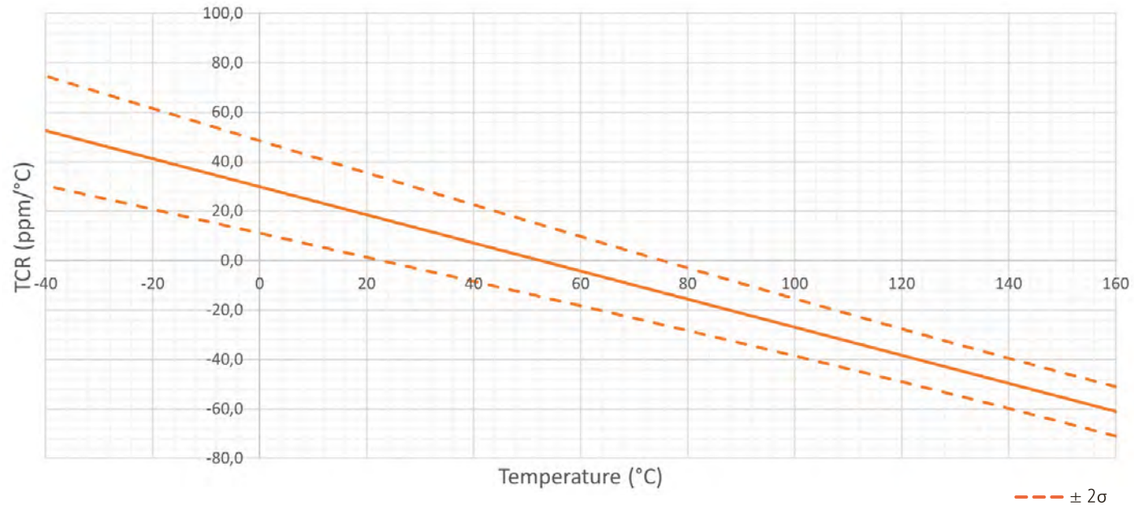
OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

RESISTANCE CHANGE VS TEMPERATURE



TCR CHANGE VS TEMPERATURE



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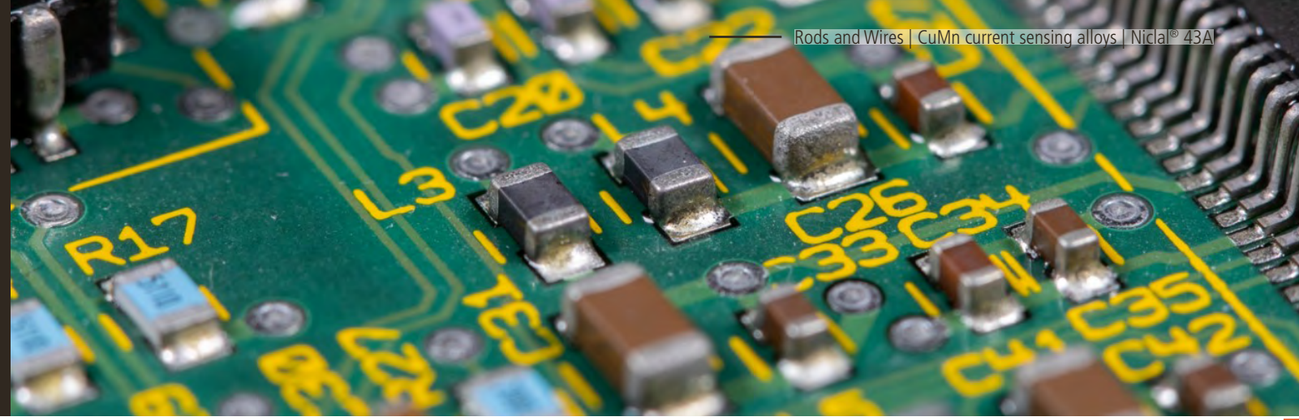
Niclal® 43A

CuMn12Ni2

Cu copper | Mn manganese | Ni nickel

Back

Niclal® 43A is a copper-manganese-nickel alloy designed and produced by Lebronze alloys.
It exhibits high thermal stability of electrical resistance centered around 43 µΩ.cm and good transformation ability (stamping, welding etc...).



Rods and Wires | CuMn current sensing alloys | Niclal® 43A

MATERIAL DESIGNATION

ISO	UNS	Others
CuMn12Ni2	NA	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Mn	Ni
Balance	12%	2%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm³
Thermal conductivity at 20 °C	22 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	18 x 10^{-6}/°C
Melting point	940 °C
Electrical properties	
Resistivity at 20 °C	43 µΩ.cm
Temperature coefficient of electrical resistance from - 40 to 160 °C	0 ± 15 ppm/°C
Temperature coefficient of electrical resistance from 20 to 60 °C	0 ± 20 ppm/°C
Thermal EMF against copper between 15 and 25 °C	0 ± 0.3 µV/°C
Long-term stability (after 4000 hours at 100 °C)	ΔR < 0.25 %

TYPICAL APPLICATIONS

Precision resistors
Electrical shunts in electricity meters
Electrical shunts in DC ammeters

COMPATIBLE DOWNSTREAM PROCESS

Cold forming
Welding
Soldering
Stamping

KEY FEATURES

High thermal stability of electrical resistance centered around 43 µΩ.cm with an optimized thermal EMF against copper from 15 to 25 °C

STANDARD CAPABILITY

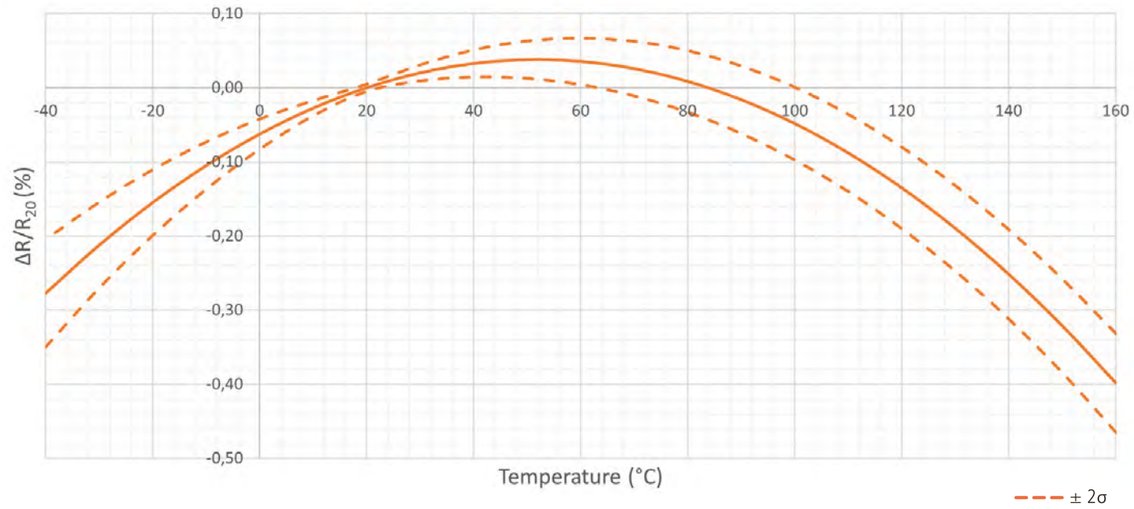
Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

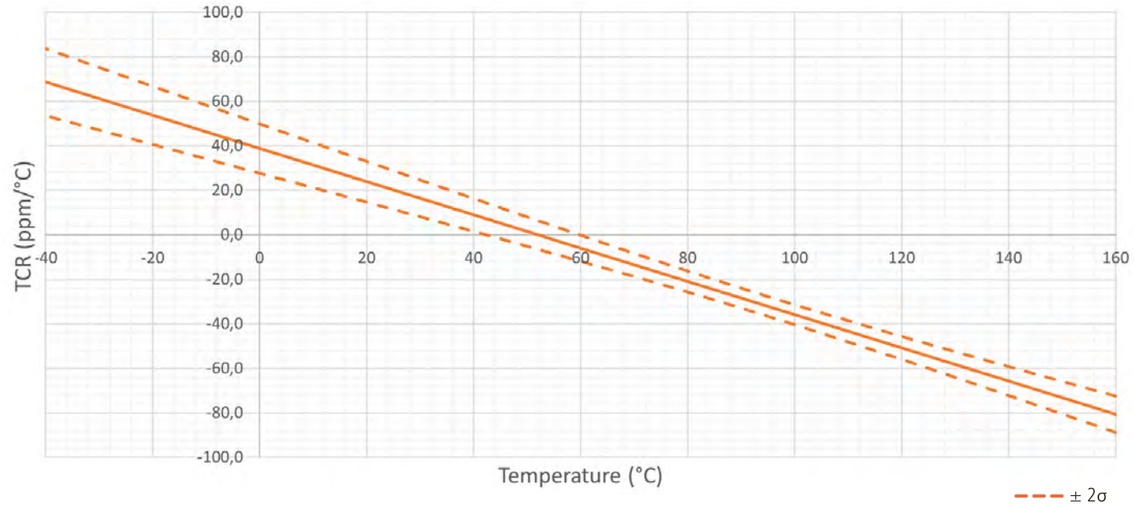
OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

RESISTANCE CHANGE VS TEMPERATURE



TCR CHANGE VS TEMPERATURE



Disclaimer : Data for information only, non-contractual

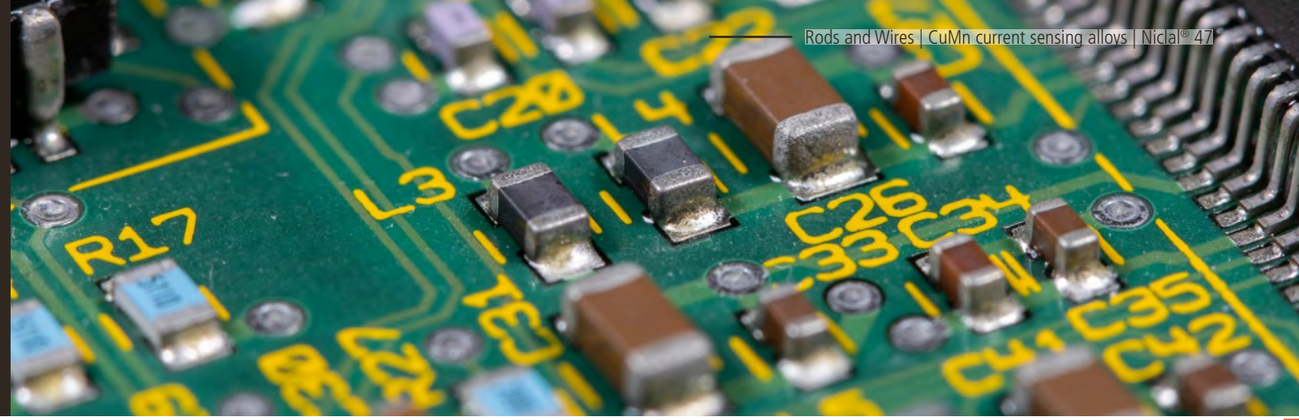
Niclal® 47

CuMn14Ni2

Cu copper | Mn manganese | Ni nickel

Back

Niclal® 47 is a copper-manganese-nickel alloy designed and produced by Lebronze alloys.
It exhibits high thermal stability of electrical resistance centered around 47 µΩ.cm and good transformation ability (stamping, welding etc...).



Rods and Wires | CuMn current sensing alloys | Niclal® 47

MATERIAL DESIGNATION

ISO	UNS	Others
CuMn14Ni2	NA	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Mn	Ni
Balance	14%	2%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm³
Thermal conductivity at 20 °C	22 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	18 x 10^{-6}/°C
Melting point	930 °C
Electrical properties	
Resistivity at 20 °C	47 µΩ.cm
Temperature coefficient of electrical resistance from - 40 to 160 °C	0 ± 20 ppm/°C
Temperature coefficient of electrical resistance from 20 to 60 °C	0 ± 20 ppm/°C
Thermal EMF against copper from 15 to 25 °C	0 ± 0.3 µV/°C
Long-term stability (after 4000 hours at 100 °C)	0 ± 0.35 %

TYPICAL APPLICATIONS

Precision resistors
Electrical shunts in electricity meters
Electrical shunts in DC ammeters

COMPATIBLE DOWNSTREAM PROCESS

Cold forming
Welding
Soldering
Stamping

KEY FEATURES

High thermal stability of electrical resistance centered around 47 µΩ.cm

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

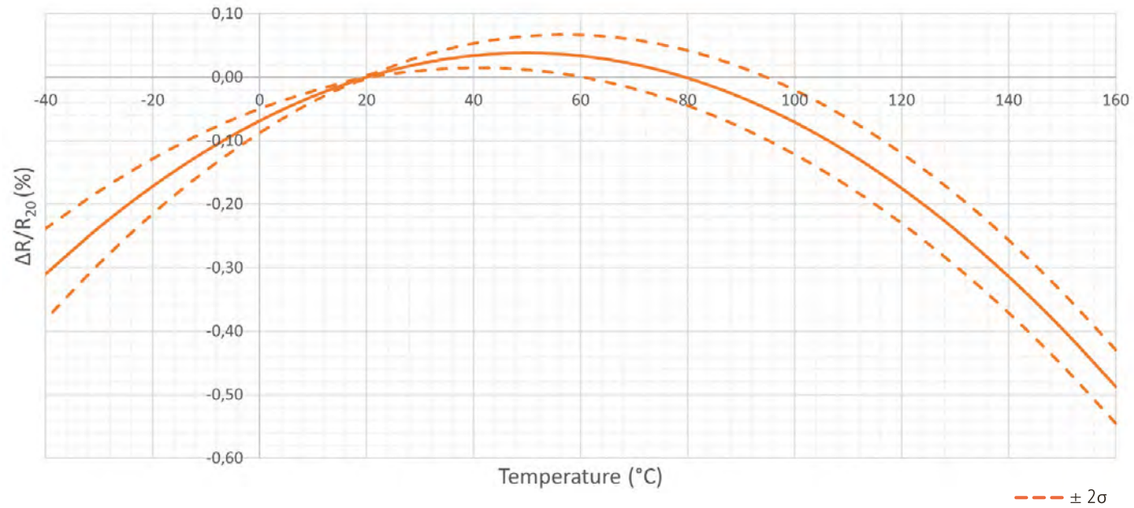
OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

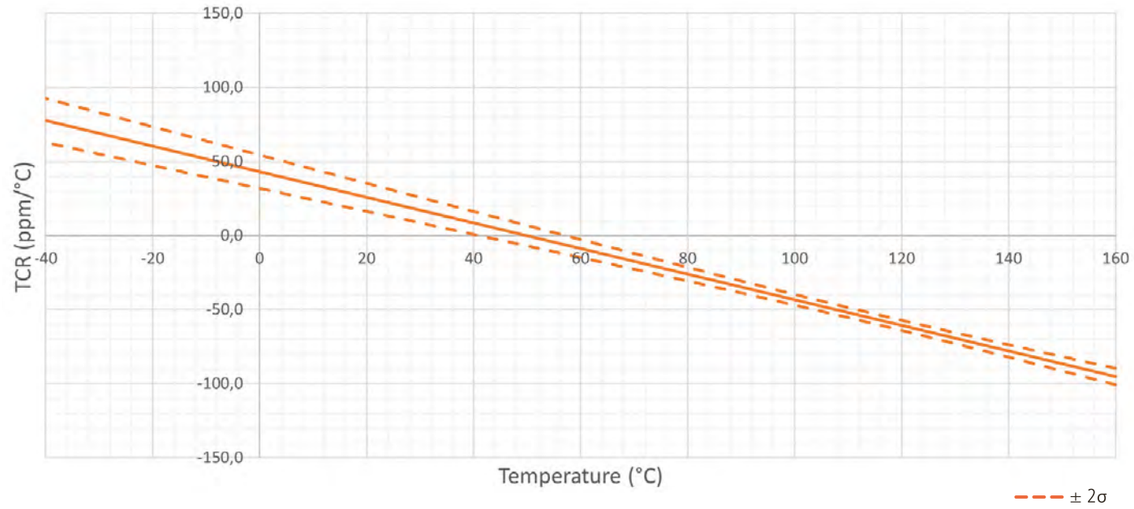
MECHANICAL PROPERTIES

Temper	Tensile Strength (MPa)	Yield Strength 0.2% (MPa)	Elongation (%)	Hardness (HV)
Other tempers on demand				
Annealed	< 420	< 180	> 40 %	< 100

RESISTANCE CHANGE VS TEMPERATURE



TCR CHANGE VS TEMPERATURE



Disclaimer : Data for information only, non-contractual

Niclal® 48

CuMn13Ni4

Cu copper | Mn manganese | Ni nickel

Back

Niclal® 48 is a copper-manganese-nickel alloy designed and produced by Lebronze alloys.
It exhibits high thermal stability of electrical resistance centered around 48 µΩ.cm and good transformation ability (stamping, welding etc...).

MATERIAL DESIGNATION

ISO	UNS	Others
CuMn13Ni4	NA	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Mn	Ni
Balance	13%	4%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm³
Thermal conductivity at 20 °C	22 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	18 x 10^{-6}/°C
Melting point	930 °C
Electrical properties	
Resistivity at 20 °C	48 µΩ.cm

TYPICAL APPLICATIONS

Precision resistors
Electrical shunts in electricity meters
Electrical shunts in DC ammeters

COMPATIBLE DOWNSTREAM PROCESS

Cold forming
Welding
Soldering
Stamping

KEY FEATURES

High thermal stability of electrical resistance centered around 48 µΩ.cm

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Constantan 45 TCR

CuNi44Mn1Fe

Cu copper | Ni nickel | Mn manganese | Fe iron

Back

Constantan 45 TCR is a copper-nickel-manganese alloy designed and produced by Lebronze alloys. It exhibits high thermal stability of electrical resistance centered around 49 µΩ.cm and good transformation ability (stamping, welding etc...).

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi44Mn1Fe	NA	DIN 17764 n°2.0842

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Mn	Fe
Balance	44%	1%	0.4%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm³
Thermal conductivity at 20 °C	25 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	13.5 x 10^{-6}/°C
Electrical properties	
Resistivity at 20 °C	50 µΩ.cm
Temperature coefficient of electrical resistance from 20 to 105°C	0 ± 40 ppm/°C
Thermal EMF against copper from 15 to 25 °C	- 40 µV/°C

TYPICAL APPLICATIONS

Precision resistors
Electrical shunts in electricity meters
Electrical shunts in DC ammeters

COMPATIBLE DOWNSTREAM PROCESS

Cold forming
Welding
Soldering
Stamping

KEY FEATURES

High thermal stability of electrical resistance centered around 45 µΩ.cm

STANDARD CAPABILITY

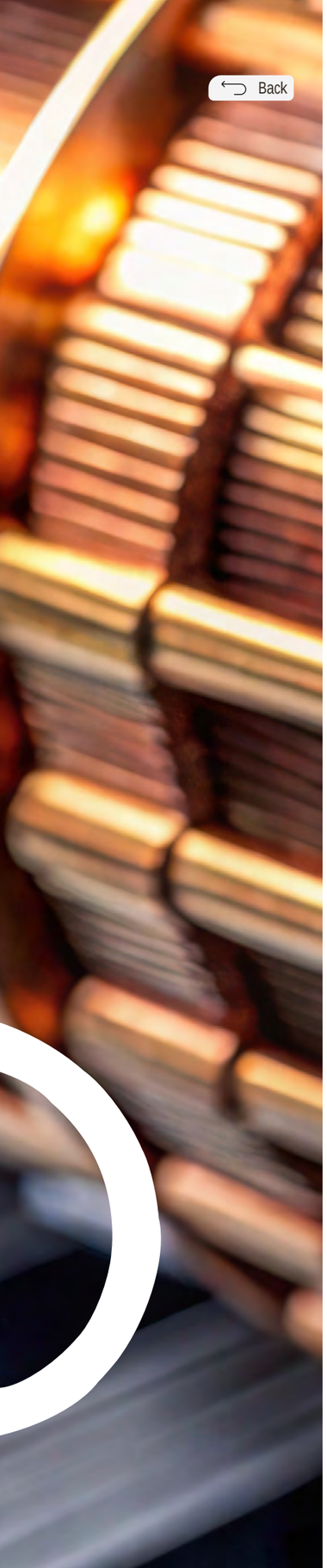
Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual



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 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 **demanding requirements of a large portfolio of customers**.

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

PRODUCT PORTFOLIO

Alloy	ISO	UNS
Hardiall®	CuNi15Sn8	C72900
Niclafor® 1000	CuNi9Sn6	C72700
Declafor® 1015	CuNi7.5Sn5Te	C72670
Niclal® 725	CuNi9Sn2	NA

STANDARD CAPABILITY

	Rods	Wires
Diameter	1.0 – 35.0 mm*	1.0 – 15.0 mm*

**Depending on alloy. 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 designed 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 who source 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

REACH compliant

RoHS compliant

Markets and applications

Automotive

- Bushings
- Sensors
- Precision mechanical components

Electronics & Telecom

- Connectors
- Electrical contacts
- Spring contacts
- Relays
- Test probes
- EMI-shielding fingerstock gaskets

Watchmaking & Precision

- Micro-components for watches
- Spectacle components
- Precision parts

Hardiall®
CuNi15Sn8

Cu copper | Ni nickel | Sn tin

Back

Hardiall® is a spinodally hardened copper-nickel-tin alloy designed for high strength applications.
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.

Rods and Wires | CuNiSn spinodal alloys | Hardiall®

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi15Sn8	C72900	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Sn
Balance	15%	8%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.94 g/cm³
Thermal conductivity at 20 °C	38 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	16.4 x 10^{-6}/°C
Young's modulus	140 GPa
Relative magnetic permeability	1.00007
Melting point	1300 °C
Electrical properties	
Electrical conductivity	7.5 %IACS
Resistivity at 20 °C (68 °F)	23 µΩ.cm

TYPICAL APPLICATIONS

Micro-components for watches and precision applications
Connectors
Springs
Electrical contacts
Test probes
Friction parts
Machined parts

COMPATIBLE DOWNSTREAM PROCESS

Cold forming
Surface coating
Soldering
Brazing
Machining
Stamping

KEY FEATURES

Non-magnetic
Mechanical wear resistance
Dimensional stability to heat treatment
Galling resistance
Stress relaxation resistance
Corrosion and erosion resistance
High hardness

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 35.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)
Other tempers on demand				
Solution annealed				
TB	> 150	> 400	> 40%	> 100
Solution annealed and cold worked				
TD4	> 600	> 750	> 4%	> 220
TDX	> 800	> 900	> 1%	> 300
Solution annealed and precipitation heat treated				
TF	> 500	> 600	> 15%	> 200
Solution annealed, cold worked and precipitation heat treated				
TH4	> 1150	> 1200	> 4%	> 320
THX	> 1250	> 1300	> 1%	> 360

OTHER AVAILABLE FORMS

Plates, billets, strips, sheets, bars, hollow bars, standard & complex profiles, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

Niclafor® 1000

CuNi9Sn6

Cu copper | Ni nickel | Sn tin

Back

Niclafor® 1000 is a range of copper-nickel-tin 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.

Rods and Wires | CuNiSn spinodal alloys | Niclafor®1000

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi9Sn6	C72700	ASTM B740

CHEMICAL COMPOSITION (WEIGHT%)

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
Young's modulus		120 GPa
Melting point		970 °C
Electrical properties		
Resistivity at 20 °C	Solution annealed	≤ 19.5 µΩ.cm
	Precipitation hardened	≤ 15 µΩ.cm
Electrical conductivity	Solution annealed	≥ 9 %IACS
	Precipitation hardened	≥ 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

Excellent mechanical properties
High conductivity
High fatigue resistance
Low friction
High elasticity formability
Very good corrosion resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)	Reduction of area (RA %)
Other tempers on demand					
Solution annealed					
TB	≥ 200	400	≥ 30%	≤ 150	≥ 80%
Solution annealed and cold rolled					
TD1	≥ 300	500 - 580	≥ 10%	150 - 180	≥ 75%
TD2	≥ 500	550 - 720	≥ 3%	180 - 230	≥ 70%
TD3	≥ 600	700 - 800	≥ 2%	220 - 260	≥ 65%
TD4	≥ 700	780 - 880	≥ 1.5%	230 - 300	≥ 60%
TDX	≥ 800	880 - 1000	≥ 0.1%	250 - 320	≥ 50%
Solution annealed and precipitation heat treated					
TF	≥ 500	770 - 870	≥ 20%	≤ 260	≥ 40%
Solution annealed, cold rolled and precipitation heat treated					
TH1	≥ 700	870 - 970	≥ 13%	260 - 300	≥ 30%
TH2	≥ 800	930 - 1030	≥ 8%	290 - 310	≥ 30%
TH3	≥ 900	1000 - 1100	≥ 5%	310 - 330	≥ 30%
TH4	≥ 1000	1100 - 1200	≥ 2%	330 - 360	≥ 30%
THX	≥ 1100	1175 - 1300	≥ 0.5%	≥ 350	≥ 30%

OTHER AVAILABLE FORMS

Strips and sheets, bars and hollow bars, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

Declafor®1015

CuNi7.5Sn5Te

Cu copper | Ni nickel | Sn tin | Te tellure

Declafor®1015 is a copper-nickel-tin alloy designed and produced by Lebronze alloys. It exhibits very high mechanical properties, excellent fatigue resistance and low friction. Declafor®1015 can substitute to leaded-beryllium-copper and beryllium-copper for various applications.

Back

Rods and Wires | CuNiSn spinodal alloys | Declafor®1015

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi7.5Sn5Te	C72670	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Sn	Other
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
Young's modulus	115 GPa
Melting point	960 °C
Electrical properties	
Electrical conductivity - Solution annealed	≤ 9 % IACS
Electrical conductivity - Heat treated	≤ 13 % IACS

TYPICAL APPLICATIONS

Electrical spring contacts
Test probes
Micro-components for watch industry
Connectors
Friction parts
Machined parts

COMPATIBLE DOWNSTREAM PROCESS

Cold forming
Surface coating
Soldering
Brazing
Machining
Stamping

KEY FEATURES

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

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)
Other tempers on demand				
Solution annealed and cold worked				
TD4	> 570	> 650	> 3%	≥ 190
TDX	> 650	> 760	> 1%	≥ 200
Solution annealed and cold worked				
THX	> 850	> 950	> 3%	≥ 300

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

Niclal® 725

CuNi9Sn2

Cu copper | Ni nickel | Sn tin

Back

Niclal® 725 is a range of copper-nickel-tin 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
CuNi9Sn2	NA	CW351H

CHEMICAL COMPOSITION (WEIGHT%)

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
Young's modulus	138 GPa
Melting point	1060 °C
Heat capacity	377 K/(kg.°C)
Electrical properties	
Electrical conductivity	11 %IACS

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

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

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

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

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, etc.).

Our ARCAP® portfolio includes:

- ARCAP® AP1 and AP1C, characterized by high strength and very good formability
- ARCAP® AP4, characterized by high corrosion resistance even at elevated temperature
- ARCAP® AP1D, characterized by outstanding machinability and no need for nickel plating
- ARCAP ZeST®, characterized by lead-free ultra-precision and full REACH/RoHS compliance

ARCAP® alloys do not require any coating, reducing downstream production steps and providing superior corrosion and friction behaviour compared to stainless steels.

These properties make ARCAP® an ideal choice for complex components operating in harsh environments.

PRODUCT PORTFOLIO

Alloy	ISO	UNS
ARCAP® AP1C	Cu56Ni25Zn19	C79360
ARCAP® AP1	Cu64Ni25Zn11	NA
ARCAP® AP4	Cu55Ni44Mn1	NA
ARCAP® AP1D	Cu61Ni25Zn11.5	C79350
ARCAP ZeST®	CuNi25Zn11.5	NA

STANDARD CAPABILITY

	Rods	Wires
Diameter	1.0 – 16.0 mm*	1.0 – 16.0 mm*

**Depending on alloy. 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 designed 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 who source 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

REACH compliant

RoHS compliant

**Excluding ARCAP® AP1D.*

Markets and applications

Aerospace

- Instruments shielding

Watchmaking & Precision

- Watch micro-components

Electronics & Telecom

- Optic fiber connectors

ARCAP® AP1C

Cu56Ni25Zn19

Cu copper | Ni nickel | Zn zinc

ARCAP® AP1C is a copper-nickel-zinc 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.

Back

Rods and Wires | Arcap alloys | ARCAP® AP1C

MATERIAL DESIGNATION

ISO	UNS	Others
Cu56Ni25Zn19	C79360	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Zn
56%	25%	Balance

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm^3
Thermal conductivity at 20 °C	22 W/m.°C
Thermal conductivity at 200 °C	25 W/m.°C
Coefficient of thermal expansion from 0 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 %
Electrical properties	
Electrical conductivity	4.3 - 4.9 %IACS

TYPICAL APPLICATIONS

Watch microcomponents
Aerospace instruments shielding
Optic fiber connectors

COMPATIBLE DOWNSTREAM PROCESS

Cold working
Soldering
Welding

KEY FEATURES

Excellent elasticity and formability
High corrosion resistance
High mechanical properties
Non-magnetic

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 60.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Tensile Strength (MPa)	Yield Strength 0.2% (MPa)	Elongation (%)	Hardness (HV)
Other tempers on demand				
H14	550 - 750	≥ 500	≥ 2 %	≥ 160
H15	≥ 700	≥ 550	< 3 %	

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

ARCAP® AP1

Cu64Ni25Zn11

Cu copper | Ni nickel | Zn zinc

Back

ARCAP® AP1 is a copper-nickel-zinc 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.

Rods and Wires | Arcap alloys | ARCAP® AP1

MATERIAL DESIGNATION

ISO	UNS	Others
Cu64Ni25Zn11	NA	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Zn
64%	25%	Balance

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm^3
Thermal conductivity at 20 °C	22 W/m.°C
Thermal conductivity at 200 °C	25 W/m.°C
Coefficient of thermal expansion from 0 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 %
Electrical properties	
Electrical conductivity	4.3 - 4.9 %IACS

TYPICAL APPLICATIONS

Watch microcomponents
Aerospace instruments shielding
Optic fiber connectors

COMPATIBLE DOWNSTREAM PROCESS

Cold working
Welding
Soldering

KEY FEATURES

Excellent elasticity and formability
High corrosion resistance
High mechanical properties
Non-magnetic

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Tensile Strength (MPa)	Yield Strength 0.2% (MPa)	Elongation (%)
Other tempers on demand			
Annealed	≤ 430	< 180	≥ 30 %

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

ARCAP® AP4

Cu55Ni44Mn1

ARCAP® AP4 is a copper-nickel alloy designed and produced by Lebronze alloys. It exhibits high mechanical properties, excellent corrosion resistance, high elasticity and fair machinability.

Cu copper | Ni nickel | Mn manganese

Back

Rods and Wires | Arcap alloys | ARCAP® AP4

MATERIAL DESIGNATION

ISO	UNS	Others
Cu55Ni44Mn1	NA	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Mn
Balance	44%	1%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm^3
Thermal conductivity at 20 °C	22.5 W/m.°C
Thermal conductivity at 200 °C	23 W/m.°C
Coefficient of thermal expansion from 0 to 300 °C	16 x 10^{-6}/°C
Modulus of elasticity	145 GPa
Melting range	1225 - 1285 °C
Optical reflection coefficient (Ag=100%)	70 %
Electrical properties	
Electrical conductivity	3.5 %IACS

TYPICAL APPLICATIONS

Watch microcomponents
Aerospace instruments shielding
Optic fiber connectors

COMPATIBLE DOWNSTREAM PROCESS

Cold working
Hot working
Brazing
Soldering
Welding

KEY FEATURES

High corrosion resistance
High mechanical properties
Non-magnetic

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Tensile Strength (MPa)	Yield Strength 0.2% (MPa)	Elongation (%)	Hardness (HV)
Other tempers on demand				
Annealed	< 450	< 180	> 30 %	< 120
H14	> 650	> 630	< 3 %	

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

ARCAP® AP1D

Cu61Ni25Zn11.5

ARCAP® AP1D is a copper-nickel-zinc alloy designed and produced by Lebronze alloys. This alloy exhibits excellent machinability, high mechanical properties, excellent corrosion resistance and absolute non-magnetism.

29 63.546 Cu copper
28 58.6934 Ni nickel
30 65.38 Zn zinc

Back

Rods and Wires | Arcap alloys | ARCAP® AP1D

MATERIAL DESIGNATION

ISO	UNS	Others
Cu61Ni25Zn11.5	C79350	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Zn	Other
Balance	25 %	11.5 %	2.5 %

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm^3
Thermal conductivity at 20 °C	22 W/m.°C
Thermal conductivity at 200 °C	25 W/m.°C
Coefficient of thermal expansion from 0 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 %
Relative magnetic permeability	1.00011
Electrical properties	
Electrical conductivity	4.3 - 4.9 %IACS

TYPICAL APPLICATIONS

Watch microcomponents
Aerospace instruments shielding
Optic fiber connectors

COMPATIBLE DOWNSTREAM PROCESS

Machining
Cold working
Soldering

KEY FEATURES

Excellent machinability
High corrosion resistance
High mechanical properties
Non-magnetic

STANDARD CAPABILITY

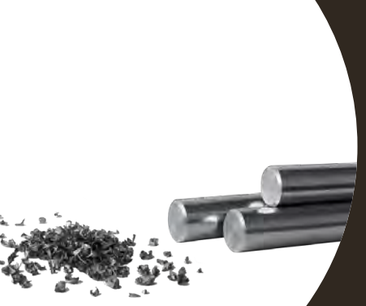
Format	Size diameter Ø
Rods	1.0 - 60.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Tensile Strength (MPa)	Yield Strength 0.2% (MPa)	Elongation (%)	Hardness (HV)
Other tempers on demand				
H13	500 - 600	500 - 550	2 - 8 %	130 - 170
H14	550 - 650	550 - 600	2 - 5 %	160 - 190

Disclaimer : Data for information only, non-contractual



ARCAP ZeST®

CuNi25Zn14.5

29 63.546 Cu copper
28 58.6934 Ni nickel
30 65.38 Zn zinc

Back

ARCAP ZeST® is a copper-nickel-zinc alloy designed and produced by Lebronze alloys. This lead-free alloy exhibits high mechanical properties, excellent corrosion resistance, absolute non-magnetism and very good machinability. This alloy is a direct substitute to ARCAP® AP1D.

Rods and Wires | Arcap alloys | ARCAP ZeST®

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi25Zn14.5	NA	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Zn	Pb	Other
Balance	25 %	14.5 %	<0.01 %	(incl. Te) 0.5 %

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm^3
Thermal conductivity at 20 °C	22 W/m.°C
Coefficient of thermal expansion from 0 to 300 °C	16 x 10^{-6}/°C
Young's modulus	165 GPa
Melting point	1150 °C
Relative magnetic permeability	1.0004
Electrical properties	
Resistivity at 20 °C	38 µΩ - cm
Electrical conductivity	4.5 %IACS

TYPICAL APPLICATIONS

Watch micro-component
Optic fiber connector
Aerospace instruments shielding

COMPATIBLE DOWNSTREAM PROCESS

Cold forming
Brazing
Soldering
Turning

KEY FEATURES

Strictly non-magnetic
Very good corrosion resistance
High machinability
Dimensional stability
No plating needed
Excellent polishing ability

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 60.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Tensile Strength (MPa)	Yield Strength 0.2% (MPa)	Elongation (%)	Hardness (HV)
Other tempers on demand				
H14	550 - 650	550 - 600	2 - 5 %	160 - 190

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

CuAl alloys
Aluminium Bronzes

Friction performance and corrosion resistance

Our Group offers a wide range of copper-aluminium alloys, often reinforced with nickel or iron to improved strength and corrosion resistance.

These alloys combine excellent resistance to corrosion, shocks, vibrations and wear with good friction behavior and machinability.

They are widely used in aerospace, electrical connectors, marine and railway industries, as well as in components such as fasteners, bearing rings, wear plates and valves.

We supply these products mainly as rods for demanding applications.

PRODUCT PORTFOLIO

Alloy	ISO	UNS
AL7	CuAl7Si2	C64210
AL8	CuAl6Si2Fe	NA
D1	CuAl9	NA
D10	CuAl10Ni5Fe4	C63000
D11	CuAl11Ni5Fe5	C63020
D13	CuAl13Fe4Mn2	C62500
D14	CuAl10Fe4	C62400
D16	CuAl9Fe3	C62300
D18	CuAl10Fe3Mn2	NA
D3	CuAl9Mn6Ni2Fe2	NA
D4	CuAl9Ni3Fe2	NA
D7	CuAl10Ni5Fe4	NA
S01	CuAl9Ni5Fe4	C63200

STANDARD CAPABILITY

	Rods
Diameter	8.0 - 80.0 mm*

**Depending on alloy. 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 designed 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 who source 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 aluminium bronze alloys are :
- RoHS and REACH compliant
- Mainly produced from recycled raw materials

REACH compliant

RoHS compliant

Markets and applications

Aerospace

- Valves & high-pressure fittings
- Sliding components

Automotive

- Bushings
- Pumps

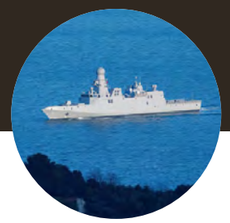
Industrial

- Bearings
- Wear parts

Watchmaking & Precision

- Watch micro-components

Marine



- Valves & valve seats
- Nuts, bolts, screws

AL7

CuAl7Si2

Cu copper | Al aluminum | Si silicon

Back

AL7 is a high-strength aluminum bronze offering excellent corrosion resistance and wear properties. It is widely used for precision microcomponents in watchmaking where durability and dimensional stability are critical.

Rods and Wires | CuAl alloys | AL7

MATERIAL DESIGNATION

ISO	UNS	Others
CuAl7Si2	C64210	CW302G, EN 12 163, EN 12165, EN 12167, ASTM B150

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Al	Si
Balance	6.8%	1.7%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	7.7 g/cm^3
Thermal conductivity at 20 °C	45 W/m.°C
Coefficient of thermal expansion from 20 to 300 °C	18 x 10^{-6}/°C
Young's modulus	110 GPa
Thermal capacity	430 J/Kg.K
Electrical properties	
Electrical conductivity	8 %IACS

TYPICAL APPLICATIONS

Watchmaking industry

COMPATIBLE DOWNSTREAM PROCESS

Cold working
Hot working
Soldering
Welding

KEY FEATURES

Excellent anti-friction properties
Good mechanical properties

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	6.0 - 80.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Size	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HB)
Other tempers on demand					
R500	6 ≤ Ø ≤ 80 mm	≥ 250	≥ 500	≥ 20%	
H120					120 - 150
R600	6 ≤ Ø ≤ 40 mm	≥ 350	≥ 600	≥ 12%	
H140					> 140

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

AL8

CuAl6Si2Fe

Cu copper | Al aluminum | Si silicon | Fe iron

AL8 is an aluminum bronze alloy combining high mechanical strength with superior corrosion resistance in marine environments. It is commonly used for valve seats and fastening components such as screws and bolts in demanding marine applications.

Back

Rods and Wires | CuAl alloys | AL8

MATERIAL DESIGNATION

ISO	UNS	Others
CuAl6Si2Fe	NA	CW301G, DEF STAN 02-834, DEF STAN 02-879, NES 834

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Al	Si	Fe
Balance	6.8%	2.2%	0.6%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	7.7 g/cm^3
Thermal conductivity at 20 °C	45 W/m.°C
Coefficient of thermal expansion from 20 to 300 °C	18 x 10^{-6}/°C
Young's modulus	110 GPa
Thermal capacity	430 J/Kg.K
Electrical properties	
Electrical conductivity	8 %IACS

TYPICAL APPLICATIONS

Marine industry

Valve seats

Screws

Bolts

COMPATIBLE DOWNSTREAM PROCESS

Cold working

Hot working

Soldering

Welding

KEY FEATURES

Good anti-friction properties

Good mechanical properties

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	8.0 - 80.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Size	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HB)
Other tempers on demand					
R500	8 ≤ Ø ≤ 80 mm	≥ 250	≥ 500	≥ 20%	
H120					120 - 150
R600	8 ≤ Ø ≤ 40 mm	≥ 350	≥ 600	≥ 12%	
H140					> 140

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

D1
CuAl9

Cu copper | Al aluminum

Back

D1 is an aluminum bronze alloy providing excellent strength and corrosion resistance. It is widely used for nuts, screws, and bolts in applications requiring high reliability under harsh conditions.

Rods and Wires | CuAl alloys | D1

MATERIAL DESIGNATION

ISO	UNS	Others
CuAl9	NA	NFA 51 116

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Al	Mn	Ni
Balance	9.3%	0.5%	0.1%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	7.6 g/cm^3
Thermal conductivity at 20 °C	63 W/m.°C
Coefficient of thermal expansion from 20 to 300 °C	18 x 10^{-6}/°C
Young's modulus	120 GPa
Thermal capacity	418 J/Kg.K
Electrical properties	
Electrical conductivity	13 %IACS

TYPICAL APPLICATIONS

Fasteners (Nuts, Screws, Bolts)

COMPATIBLE DOWNSTREAM PROCESS

Cold working
Hot working
Soldering
Welding

KEY FEATURES

Good anti-friction properties
Good mechanical properties
Sea-water corrosion resistance
Saline mist resistance
Oxyidation resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	6.0 - 80.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Size	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HB)
Other tempers on demand					
H / M2	6 ≤ Ø ≤ 25 mm	≥ 180	≥ 460	≥ 15%	≥ 125
	25 < Ø ≤ 50 mm	≥ 170	≥ 450	≥ 20%	≥ 115
	50 < Ø ≤ 80 mm	≥ 160	≥ 440	≥ 25%	≥ 105

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

D10

CuAl10Ni5Fe4

D10 is a high-performance aluminum bronze designed for exceptional strength and corrosion resistance.
It is used in aerospace and marine industries for critical components exposed to extreme environments.

Cu copper | Al aluminum | Ni nickel | Fe iron

Back

Rods and Wires | CuAl alloys | D10

MATERIAL DESIGNATION

ISO	UNS	Others
CuAl10Ni5Fe4	C63000	CW307G, AMS 4640 F, ASTM B150, DIN 17665, NFA 51 116, NFL 14-705, 2.0966

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Al	Ni	Fe	Mn
Balance	10%	4.9%	3.8%	0.7%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	7.6 g/cm^3
Thermal conductivity at 20 °C	39 W/m.°C
Coefficient of thermal expansion from 20 to 300 °C	17 x 10^{-6}/°C
Young's modulus	127 GPa
Thermal capacity	419 J/Kg.K
Electrical properties	
Electrical conductivity	7 %IACS

TYPICAL APPLICATIONS

Aerospace and Marine Industries

COMPATIBLE DOWNSTREAM PROCESS

Hot working
Soldering
Welding

KEY FEATURES

Good anti-friction properties
Good mechanical properties
Sea-water corrosion resistance
Saline mist resistance
Oxyidation resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	8.0 - 80.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Size	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HB)
Other tempers on demand					
R680	8 ≤ Ø ≤ 80 mm	≥ 320	≥ 680	≥ 10%	
H170					170 - 210
R740		≥ 400	≥ 740	≥ 8%	
H200					> 200

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

D11

CuAl11Ni5Fe5

Cu	Al	Ni	Fe
copper	aluminum	nickel	iron

Back

D11 is an aluminum bronze alloy offering outstanding wear resistance and high-pressure capability.
It is widely applied in aerospace and marine industries for valves, sliding components, and high-pressure steam fittings.

Rods and Wires | CuAl alloys | D11

MATERIAL DESIGNATION

ISO	UNS	Others
CuAl11Ni5Fe5	C63020	CW308G

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Al	Ni	Fe	Mn
Balance	11%	5.2%	5.2%	0.9%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	7.6 g/cm^3
Thermal conductivity at 20 °C	39 W/m.°C
Coefficient of thermal expansion from 20 to 300 °C	17 x 10^{-6}/°C
Young's modulus	127 GPa
Thermal capacity	419 J/Kg.K
Electrical properties	
Electrical conductivity	7 %IACS

TYPICAL APPLICATIONS

Aerospace Industries
Valves
Valve seats
Sliding components
Wear parts
Marine industries
High-pressure steam fittings

COMPATIBLE DOWNSTREAM PROCESS

Hot working
Soldering
Welding

KEY FEATURES

Good anti-friction properties
Good mechanical properties
Sea-water corrosion resistance
Saline mist resistance
Oxyidation resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	8.0 - 80.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Size	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HB)
Other tempers on demand					
R740	8 ≤ Ø ≤ 80 mm	≥ 420	≥ 740	≥ 5%	
H220					220 - 260
R830		≥ 550	≥ 830		
H240					> 240

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

D13

CuAl13Fe4Mn2

D13 is a durable aluminum bronze alloy with excellent wear and corrosion resistance. It is commonly used for pads, bushings, slides, and sprockets in heavy-duty mechanical systems.

Cu copper | Al aluminum | Fe iron | Mn manganese

Back

Rods and Wires | CuAl alloys | D13

MATERIAL DESIGNATION

ISO	UNS	Others
CuAl13Fe4Mn2	C62500	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Al	Fe	Mn
Balance	13%	4.7%	1.8%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	7.2 g/cm^3
Thermal conductivity at 20 °C	45 W/m.°C
Coefficient of thermal expansion from 20 to 300 °C	16 x 10^{-6}/°C
Young's modulus	110 GPa
Thermal capacity	420 J/Kg.K
Electrical properties	
Electrical conductivity	10 %IACS

TYPICAL APPLICATIONS

Pads
Bushings
Slides
Sprockets

COMPATIBLE DOWNSTREAM PROCESS

Hot forming
Soldering
Welding

KEY FEATURES

Good anti-friction properties
Good mechanical properties

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	8.0 - 80.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Size	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HB)
Other tempers on demand					
R680	8 ≤ Ø ≤ 80 mm	≥ 320	≥ 680	≥ 10%	
H170					170 - 210
R740		≥ 400	≥ 740	≥ 8%	
H200					> 200

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

D14

CuAl10Fe4

Cu	Al	Fe
copper	aluminum	iron

Back

D14 is a high-strength aluminum bronze combining excellent corrosion resistance with good wear properties. It is widely used in aerospace and automotive industries for valves and pumps operating under severe conditions.

Rods and Wires | CuAl alloys | D14

MATERIAL DESIGNATION

ISO	UNS	Others
CuAl10Fe4	C62400	ASTM B150

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Al	Fe
Balance	10.4%	3.8%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	7.4 g/cm^3
Thermal conductivity at 20 °C	59 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	16 x 10^{-6}/°C
Young's modulus	117 GPa
Thermal capacity	420 J/Kg.K
Electrical properties	
Electrical conductivity	12 %IACS

TYPICAL APPLICATIONS

Aerospace and Automotive Industries
Valves
Pumps
Marine industry

COMPATIBLE DOWNSTREAM PROCESS

Hot working
Soldering
Welding

KEY FEATURES

Good anti-friction properties
Good mechanical properties

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	8.0 - 80.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Process	Size	Yield Strength 0.5% (MPa)	Tensile Strength (MPa)	Elongation (%)
Other tempers on demand				
HR50	8 ≤ Ø ≤ 12 mm	≥ 310	≥ 655	≥ 10%
	12 < Ø ≤ 25 mm	≥ 310	≥ 655	≥ 12%
	25 < Ø ≤ 50 mm	≥ 295	≥ 620	≥ 12%
	50 < Ø ≤ 80 mm	≥ 275	≥ 620	≥ 12%

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

D16

CuAl9Fe3

Cu copper | Al aluminum | Fe iron

Back

D16 is an aluminum bronze alloy designed for superior corrosion resistance in marine environments.
It is commonly used for nuts, bolts, rods, and valve guides where strength and durability are essential.

Rods and Wires | CuAl alloys | D16

MATERIAL DESIGNATION

ISO	UNS	Others
CuAl9Fe3	C62300	AMS 4635, ASTM B150

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Al	Fe
Balance	9.4%	3.4%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	7.6 g/cm^3
Thermal conductivity at 20 °C	53 W/m.°C
Coefficient of thermal expansion from 20 to 300 °C	16 x 10^{-6}/°C
Young's modulus	117 GPa
Thermal capacity	420 J/Kg.K
Electrical properties	
Electrical conductivity	12 %IACS

TYPICAL APPLICATIONS

Marine Industry
Nuts
Bolts
Rods
Valve guides

COMPATIBLE DOWNSTREAM PROCESS

Hot working
Soldering
Welding

KEY FEATURES

Good anti-friction properties
Good mechanical properties

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	6.0 - 80.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Size	Yield Strength 0.5% (MPa)	Tensile Strength (MPa)	Elongation (%)
Other tempers on demand				
HR50	6 ≤ Ø ≤ 12 mm	≥ 345	≥ 620	≥ 12%
	12 < Ø ≤ 25 mm	≥ 305	≥ 605	≥ 15%
	25 < Ø ≤ 50 mm	≥ 275	≥ 580	≥ 15%
	50 < Ø ≤ 80 mm	≥ 255	≥ 525	≥ 20%

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

D18

CuAl10Fe3Mn2

Cu copper | Al aluminum | Fe iron | Mn manganese

D18 is a robust aluminum bronze alloy offering excellent resistance to corrosion and wear. It is widely used in marine and chemical industries for nuts, bolts, rings, bearings, and bushings.

Back

Rods and Wires | CuAl alloys | D18

MATERIAL DESIGNATION

ISO	UNS	Others
CuAl10Fe3Mn2	NA	CW306G

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Al	Fe	Mn
Balance	10.6%	3%	2%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	7.6 g/cm^3
Thermal conductivity at 20 °C	54 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	16 x 10^{-6}/°C
Young's modulus	120 GPa
Thermal capacity	420 J/Kg.K
Electrical properties	
Electrical conductivity	12 %IACS

TYPICAL APPLICATIONS

Marine and Chemical industries

Nuts
Bolts
Rings
Bearings
Bushings
Sockets

COMPATIBLE DOWNSTREAM PROCESS

Hot working
Soldering
Welding

KEY FEATURES

Good anti-friction properties
Good mechanical properties

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	8.0 - 80.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Size	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HB)
Other tempers on demand					
R590	8 ≤ Ø ≤ 80 mm	≥ 330	≥ 590	≥ 12%	
H140					140 - 180
R690	8 ≤ Ø ≤ 50 mm	≥ 510	≥ 690	≥ 6%	
H170					> 170

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

D3

CuAl9Mn5NiFe

Cu copper · Al aluminum · Mn manganese · Ni nickel · Fe iron

Back

D3 is a copper-aluminium alloy offering excellent anti-friction properties, high corrosion resistance, and good mechanical strength. It is widely used for valves and fluid connection components in electrical and heating systems where reliability under harsh conditions is essential.

MATERIAL DESIGNATION

ISO	UNS	Others
CuAl9Mn6Ni2Fe2	NA	NFA 51-116

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Al	Mn	Ni	Fe
Balance	8.9%	5%	1%	0.8%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	7.6 g/cm^3
Thermal conductivity at 20 °C	29 W/m.°C
Coefficient of thermal expansion from 20 to 300 °C	16 x 10^{-6}/°C
Young's modulus	120 GPa
Thermal capacity	420 J/Kg.K
Electrical properties	
Electrical conductivity	5 %IACS

TYPICAL APPLICATIONS

Electrical equipment
Heating
Fluid connections
Valves

COMPATIBLE DOWNSTREAM PROCESS

Hot working
Soldering
Welding

KEY FEATURES

Good anti-friction properties
Good mechanical properties
Sea-water corrosion resistance
Saline mist resistance
Oxyidation resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	8.0 - 80.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Size	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HB)
Other tempers on demand					
H / M2	8 ≤ Ø ≤ 25 mm	≥ 280	≥ 640	≥ 15%	≥ 165
	25 < Ø ≤ 50 mm	≥ 270	≥ 640	≥ 16%	≥ 160
	50 < Ø ≤ 80 mm	≥ 250	≥ 620	≥ 16%	≥ 155

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

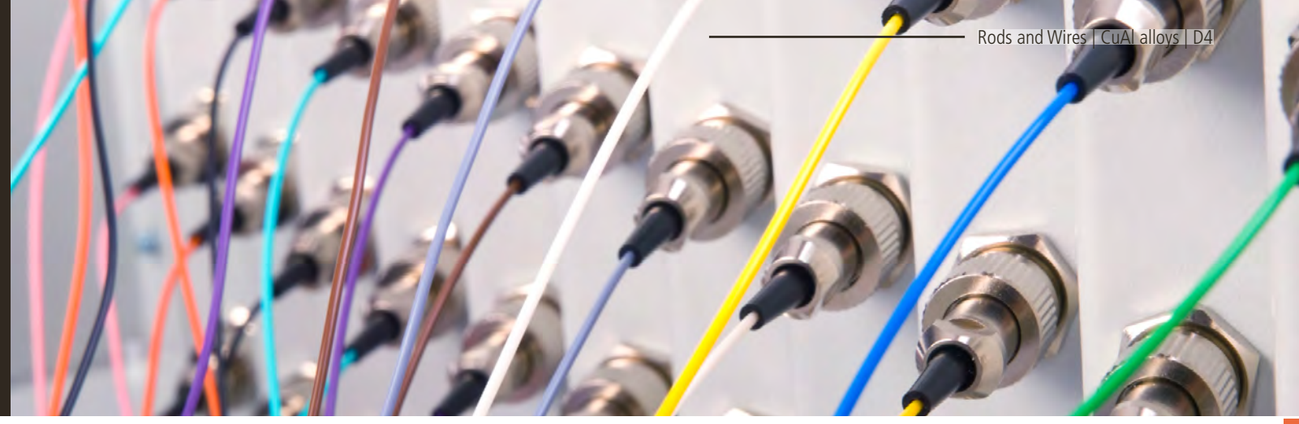
D4

CuAl9Ni3Fe2

Cu copper | Al aluminum | Ni nickel | Fe iron

Back

D4 is a copper-aluminium alloy combining excellent wear resistance with high corrosion protection. It is commonly used for nuts, slides, and bolts in machine tools and fastening systems requiring durability and precision.



Rods and Wires | CuAl alloys | D4

MATERIAL DESIGNATION

ISO	UNS	Others
CuAl9Ni3Fe2	NA	CW304G, GAM MM11, NFA 51-116

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Al	Ni	Fe	Mn
Balance	8.9%	3.1%	2.7%	1.3%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	7.7 g/cm^3
Thermal conductivity at 20 °C	50 W/m.°C
Coefficient of thermal expansion from 20 to 300 °C	17 x 10^{-6}/°C
Young's modulus	120 GPa
Thermal capacity	418 J/Kg.K
Electrical properties	
Electrical conductivity	10 %IACS

TYPICAL APPLICATIONS

Nuts
Slides
Bolts for machine tools
Connectors
Fasteners

COMPATIBLE DOWNSTREAM PROCESS

Hot working
Soldering
Welding

KEY FEATURES

Good anti-friction properties
Good mechanical properties
Sea-water corrosion resistance
Saline mist resistance
Oxyidation resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	6.0 - 80.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Size	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HB)
Other tempers on demand					
H31	6 ≤ Ø ≤ 25 mm	≥ 280	≥ 640	≥ 15%	≥ 165
	25 < Ø ≤ 50 mm	≥ 270	≥ 640	≥ 16%	≥ 160
	50 < Ø ≤ 80 mm	≥ 250	≥ 620	≥ 16%	≥ 155

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

D7

CuAl10Ni5Fe4

D7 is a copper-aluminium alloy providing outstanding lubricity, mechanical strength, and corrosion resistance. It is widely applied in marine and aerospace industries for critical components exposed to severe environments.

Cu copper | Al aluminum | Ni nickel | Fe iron

Back

Rods and Wires | CuAl alloys | D7

MATERIAL DESIGNATION

ISO	UNS	Others
CuAl10Ni5Fe4	NA	BS B23, BS 2874, CW307G, NFA 51-116

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Al	Ni	Fe	Mn
Balance	10.6%	4.65%	4.25%	0.3%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	7.6 g/cm^3
Thermal conductivity at 20 °C	39 W/m.°C
Coefficient of thermal expansion from 20 to 300 °C	17 x 10^{-6}/°C
Young's modulus	127 GPa
Thermal capacity	419 J/Kg.K
Electrical properties	
Electrical conductivity	7 %IACS

TYPICAL APPLICATIONS

Aerospace and Marine Industries

COMPATIBLE DOWNSTREAM PROCESS

Hot working
Soldering
Welding

KEY FEATURES

Good anti-friction properties
Good mechanical properties
Sea-water corrosion resistance
Saline mist resistance
Oxyidation resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	8.0 - 80.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Size	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HB)
Other tempers on demand					
R680	8 ≤ Ø ≤ 80 mm	≥ 320	≥ 680	≥ 10%	
H170					170 - 210
R740		≥ 400	≥ 740	≥ 8%	
H200					> 200

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

SO1

CuAl9Ni5Fe4

Cu copper | Al aluminum | Ni nickel | Fe iron

Back

SO1 is a copper-aluminium alloy offering excellent anti-friction, high corrosion resistance, and robust mechanical properties. It is commonly used in marine and aerospace applications for components requiring long-term reliability under extreme conditions.

Rods and Wires | CuAl alloys | SO1

MATERIAL DESIGNATION

ISO	UNS	Others
CuAl9Ni5Fe4	C63200	ASTM B150, NFA 51-116, GAM MM11, GAM MM13

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Al	Ni	Fe	Mn
Balance	9.2%	4.4%	3.9%	1.3%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	7.6 g/cm^3
Thermal conductivity at 20 °C	35 W/m.°C
Coefficient of thermal expansion from 20 to 300 °C	17 x 10^{-6}/°C
Young's modulus	125 GPa
Thermal capacity	440 J/Kg.K
Electrical properties	
Electrical conductivity	8 %IACS

TYPICAL APPLICATIONS

Aerospace and Marine Industries

Nuts
Slides
Bearings
Bushings
Bolts

COMPATIBLE DOWNSTREAM PROCESS

Hot working
Soldering
Welding

KEY FEATURES

Good anti-friction properties
Good mechanical properties
Sea-water corrosion resistance
Saline mist resistance
Oxyidation resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	8.0 - 80.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)
Other tempers on demand		
> 240	> 480	> 15%

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

Speciality low alloyed coppers

Very high electrical & thermal conductivity

Our Group offers a unique range of speciality low alloyed coppers, combining very high electrical and thermal conductivity with enhanced strength and reliability.

These alloys ensure excellent purity and performance in harsh conditions, while meeting stringent forming and machining requirements.

They are used in components requiring durability, precision, and optimal conductivity.

We supply these products mainly as strips, rods, and wires for complex parts.

PRODUCT PORTFOLIO

Alloy	ISO	UNS
C97®	CuNi1Pb1P	C19160
B97	CuNi1P	NA
C98®	CuNi1Pb0.5P	C19140
B98	CuNi1P	C19000
C99	CuPb1P	C18700
NIB1	CuNi1Si	C70260
NIB2	CuNi2Si	C64700
NIB3	CuNi3Si	NA
CT	CuTeP	C14500
Cupro-U®	CuCrZr	NA
Cupro-U® 650	Proprietary	NA

STANDARD CAPABILITY

	Rods	Wires
Diameter	1.0 – 16.0 mm*	1.0 – 16.0 mm*

**Depending on alloy. 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 designed 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 who source 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 speciality low alloyed coppers are :

- RoHS and REACH compliant
- Mainly produced from recycled raw materials

REACH compliant

RoHS compliant

Markets and applications

Electronics

- Connectors (incl. male contacts)
- Spring contacts
- High-power connectors
- Conductor cables (single & multi-core)

Fasteners

- Screws, bolts, nuts
- Conductive fasteners (thermal & electrical)

Rail & Marine

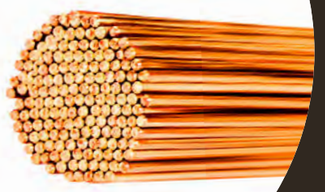
- Overhead line fittings (railways)
- Ship components

Industrial & Machinery

- Machined connector components
- Welding nozzles
- Electrical equipment

EMI / Shielding

- Electromagnetic shielding



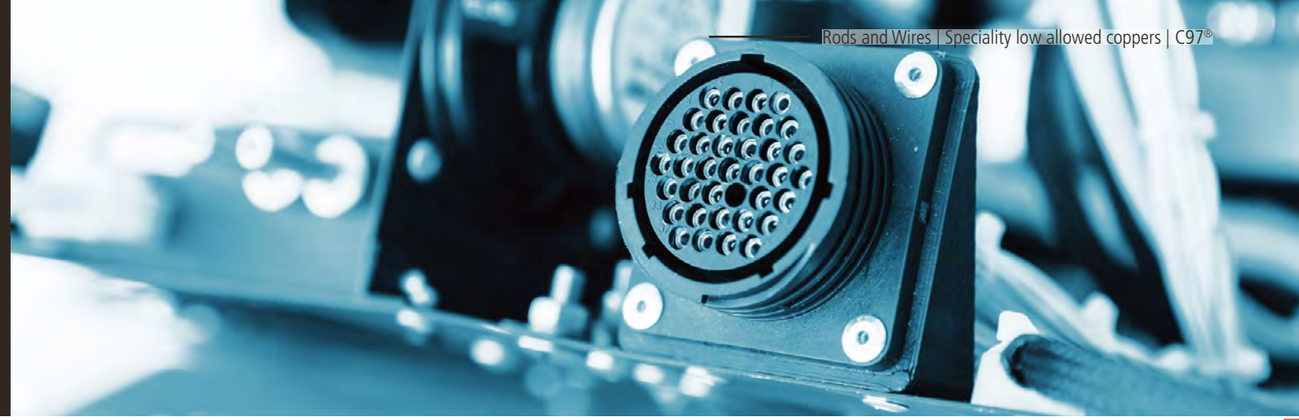
C97®

CuNi1Pb1P

Cu	Ni	Pb	P
copper	nickel	Lead	phosphorus

Back

C97® is a copper-nickel alloy with optimized lead content for superior machinability and consistent electrical performance. It is well-suited for precision connectors and spring contacts requiring high reliability and mechanical endurance.



MATERIAL DESIGNATION

ISO	UNS	Others
CuNi1Pb1P	C19160	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Pb	P
Balance	0.8 - 1.2%	0.8 - 1.2%	0.15 - 0.3%

PHYSICAL PROPERTIES

General properties		
Density at 20 °C	8.9 g/cm³	
Thermal conductivity at 20 °C	245 W/m.°C	
Electrical properties		
Electrical conductivity	Age hardened	30 % IACS
	Solution annealed	50 % IACS

TYPICAL APPLICATIONS

Connectors
Spring contacts

COMPATIBLE DOWNSTREAM PROCESS

Cold working
Hot working
Soldering
Welding

KEY FEATURES

Good corrosion resistance (to stress corrosion to industrial atmosphere, rural atmosphere, fresh water, marine, vinegar)

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 16.0 mm
Wires	1.0 - 16.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

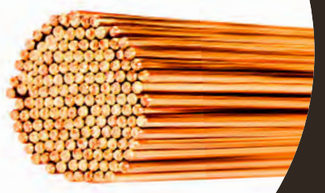
Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)	
				(HB)	(HV)
Other tempers on demand					
R250	140	≥ 250	≥ 20%		
H065				65 - 95	70 - 100
R500	430	≥ 500	≥ 5%		
H135				135 - 175	140 - 180
R650*	500	≥ 650	≥ 8%		
H190				≥ 190	≥ 200

**On request*

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

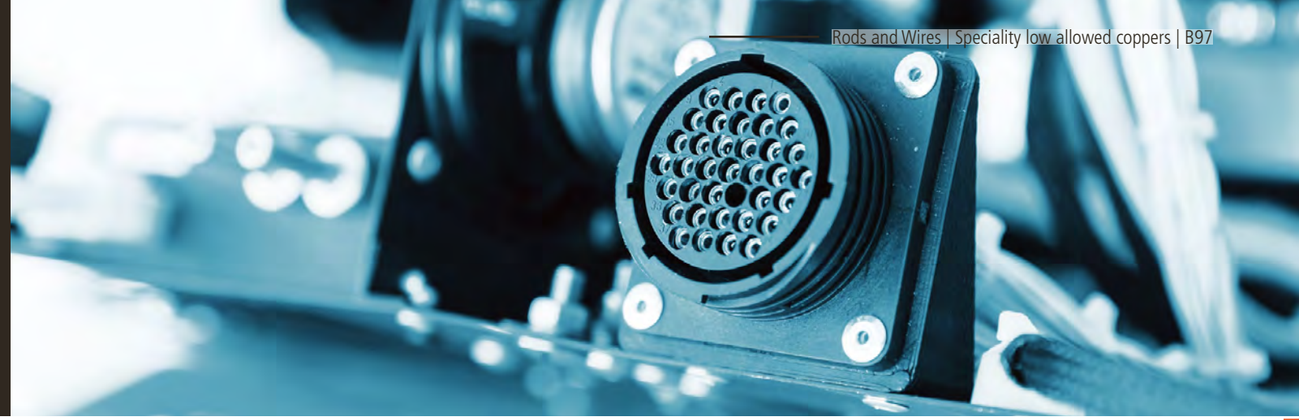


B97
CuNi1P

29 63.546 Cu copper
28 58.6934 Ni nickel
15 30.97376200 P phosphorus

Back

B97 is a copper-nickel-phosphorus alloy offering excellent electrical conductivity and good machinability. It is optimized for high-reliability machined connector components and spring contacts in demanding electrical engineering applications.



Rods and Wires | Speciality low allowed coppers | B97

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi1P	NA	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	P	Pb
Balance	0.8 - 1.2%	0.15 - 0.25%	< 0.1%

PHYSICAL PROPERTIES

General properties		
Density at 20 °C	8.9 g/cm³	
Thermal conductivity at 20 °C	245 W/m.°C	
Electrical properties		
Electrical conductivity	Age hardened	30 % IACS
	Solution annealed	50 % IACS

TYPICAL APPLICATIONS

Machined connectors components
Spring contacts
Electrical engineering
Conducting wires

COMPATIBLE DOWNSTREAM PROCESS

Cold working
Hot working
Soldering
Welding

KEY FEATURES

Good corrosion resistance (stress corrosion cracking, water and water vapour, to industrial atmosphere, saline solutions)

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 16.0 mm
Wires	1.0 - 16.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

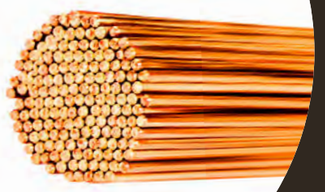
Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)	
				(HB)	(HV)
Other tempers on demand					
R250	140	≥ 250	≥ 20%		
H065				65 - 95	70 - 100
R500	430	≥ 500	≥ 5%		
H135				135 - 175	140 - 180
R650*	500	≥ 650	≥ 8%		
H190				≥ 190	≥ 200

**On request*

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

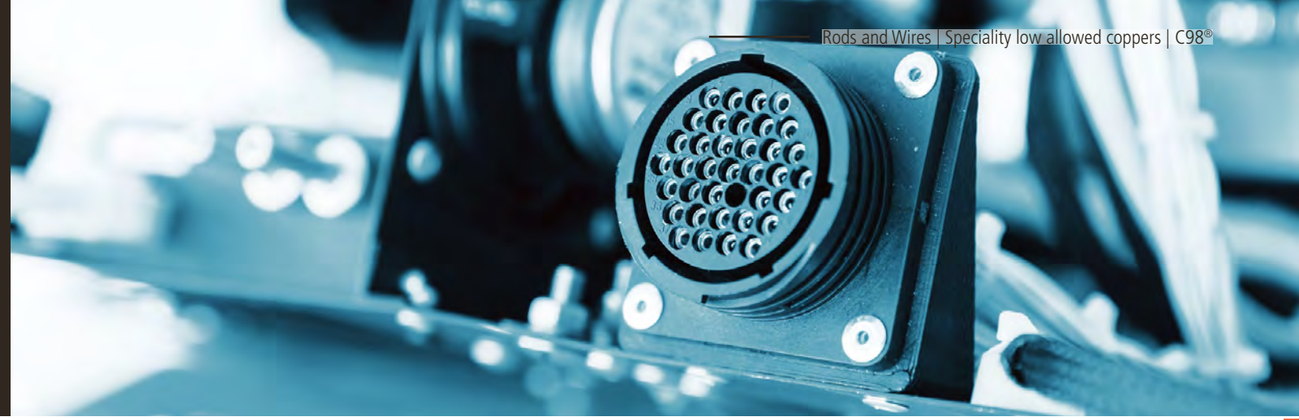


C98®
CuNi1Pb0.5P

Cu copper | Ni nickel | Pb Lead | P phosphorus

C98® is a copper-nickel-phosphorus alloy with added lead for enhanced machinability and electrical conductivity. It is ideal for high-performance machined connector components and spring contacts requiring excellent wear resistance and reliable electrical function.

Back



Rods and Wires | Speciality low allowed coppers | C98®

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi1Pb0.5P	C19140	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Pb	P
Balance	0.8 - 1.2%	0.4 - 0.7%	0.15 - 0.3%

PHYSICAL PROPERTIES

General properties		
Density at 20 °C	8.9 g/cm³	
Thermal conductivity at 20 °C	245 W/m.°C	
Electrical properties		
Electrical conductivity	Age hardened	30 % IACS
	Solution annealed	50 % IACS

TYPICAL APPLICATIONS

Machined connectors components
Spring contacts

COMPATIBLE DOWNSTREAM PROCESS

Cold working
Hot working
Soldering
Welding

KEY FEATURES

Good corrosion resistance (to stress corrosion to industrial atmosphere, rural atmosphere, fresh water, marine, vinegar)

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 16.0 mm
Wires	1.0 - 16.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)	
				(HB)	(HV)
Other tempers on demand					
R250	140	≥ 250	≥ 20%		
H065				65 - 95	70 - 100
R500	430	≥ 500	≥ 5%		
H135				135 - 175	140 - 180
R650*	500	≥ 650	≥ 8%		
H190				≥ 190	≥ 200

**On request*

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

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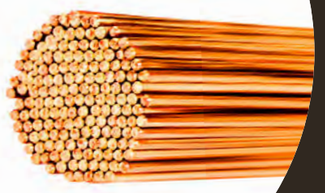
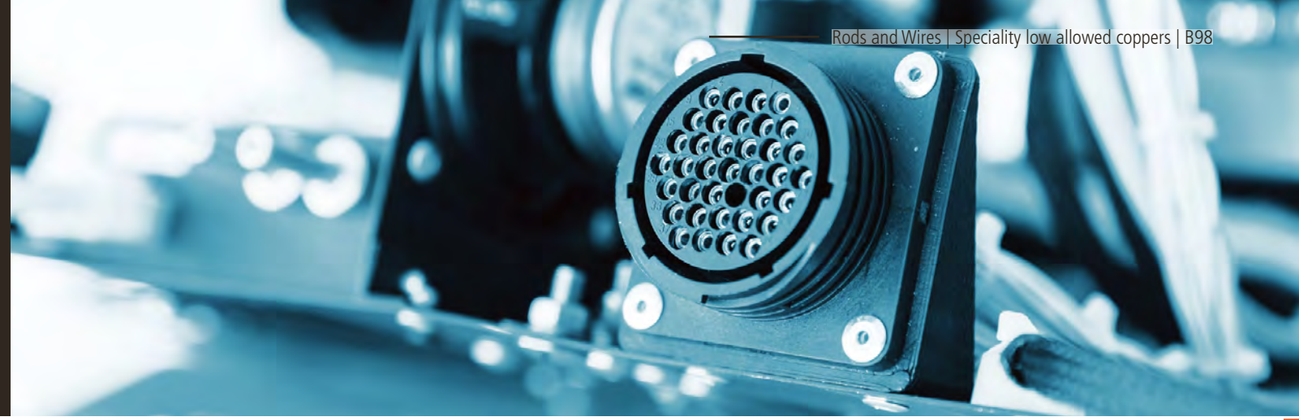


B98
CuNi1P

Cu copper | Ni nickel | P phosphorus

Back

B98 is a copper-nickel-phosphorus lead-free alloy engineered for high electrical conductivity and stable mechanical properties. It is particularly suited for precision-machined connector components and spring contacts in advanced electrical systems. Additionally, it serves as a substitute for C97® in certain applications, offering similar performance with improved sustainability.



Rods and Wires | Speciality low allowed coppers | B98

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi1P	C19000	CW108C

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	P	Pb
Balance	0.8 - 1.2%	0.15 - 0.25%	< 0.1%

PHYSICAL PROPERTIES

General properties		
Density at 20 °C	8.9 g/cm³	
Thermal conductivity at 20 °C	245 W/m.°C	
Electrical properties		
Electrical conductivity	Age hardened	30 % IACS
	Solution annealed	50 % IACS

TYPICAL APPLICATIONS

Machined connectors components
Spring contacts
Electrical engineering
Conducting wires

COMPATIBLE DOWNSTREAM PROCESS

Cold working
Hot working
Soldering
Welding

KEY FEATURES

Good corrosion resistance (stress corrosion cracking, water and water vapour, to industrial atmosphere, saline solutions)

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 16.0 mm
Wires	1.0 - 16.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)	
				(HB)	(HV)
Other tempers on demand					
R250	140	≥ 250	≥ 20%		
H065				65 - 95	70 - 100
R500	430	≥ 500	≥ 5%		
H135				135 - 175	140 - 180
R650*	500	≥ 650	≥ 8%		
H190				≥ 190	≥ 200

**On request*

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

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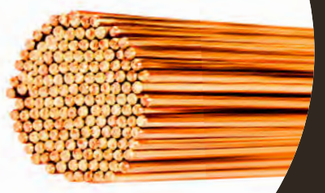


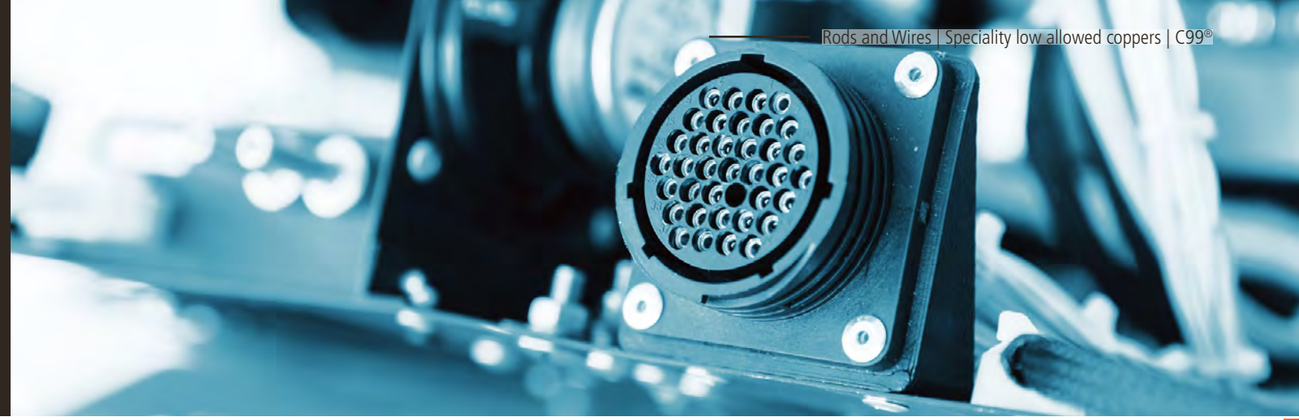
C99®

CuPb1P

29	82	15
Cu	Pb	P
copper	Lead	phosphorus

Back

C99® is a high-machinability copper-lead-phosphorus alloy designed for precision electrical applications. It excels in male connector contacts, offering reliable conductivity and durability in demanding electronic environments.



Rods and Wires | Speciality low allowed coppers | C99®

MATERIAL DESIGNATION

ISO	UNS	Others
CuPb1P	C18700	CW113C

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Pb	P
Balance	1%	0.01%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm^3
Thermal conductivity at 20 °C	350 W/m.°C
Electrical properties	
Electrical conductivity	85 %IACS

TYPICAL APPLICATIONS

Male contacts of connectors and other electronic applications

COMPATIBLE DOWNSTREAM PROCESS

Cold working
Hot working
Soldering
Welding

KEY FEATURES

Good corrosion resistance (stress corrosion, to industrial atmosphere, rural atmosphere, fresh water, marine)

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 16.0 mm
Wires	1.0 - 16.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)
Other tempers on demand				
R250	180	≥ 250	≥ 3%	
H080				80 - 110
R300	240	≥ 300	≥ 2%	
H095				95 - 130
R360	300	≥ 360		
H120				≥ 120

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

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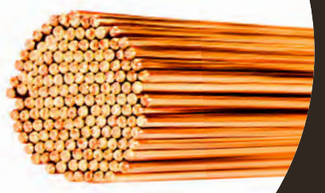


NIB1
CuNi1Si

Cu copper | Ni nickel | Si silicon

Back

NIB1 is a high-strength copper-nickel-silicon alloy offering excellent thermal and electrical conductivity. It is ideal for railway overhead line fittings and precision fasteners such as screws and bolts, where mechanical reliability and corrosion resistance are essential.

Rods and Wires | Speciality low allowed coppers | NIB1

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi1Si	C70260	CW109

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Si
Balance	1.0 - 1.6%	0.4 - 0.7%

PHYSICAL PROPERTIES

General properties		
Density at 20 °C		8.8 g/cm³
Thermal conductivity at 20 °C	Solution annealed	85 W/m.°C
	Age-hardened	150 - 250 W/m.°C
Electrical properties		
Electrical conductivity		24 - 41 %IACS

TYPICAL APPLICATIONS

Screws, bolts, nuts, fittings, overhead line fitting for railways,etc

COMPATIBLE DOWNSTREAM PROCESS

Cold working
Hot working
Soldering
Welding

KEY FEATURES

Good corrosion resistance (Industrial atmosphere, rural atmosphere, marine atmosphere and sea water, fresh water, high humidity and elevated temperature, stress corrosion)

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 16.0 mm
Wires	1.0 - 16.0 mm

Dimensions outside these ranges on request

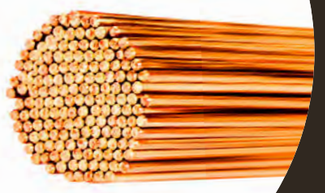
MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)
Other tempers on demand				
R440	300	≥ 440	≥ 6%	
H130				130 - 190
R540	470	≥ 540	≥ 4%	
H150				150 - 200
R590	540	≥ 590	≥ 3%	
H170				170 - 220

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual



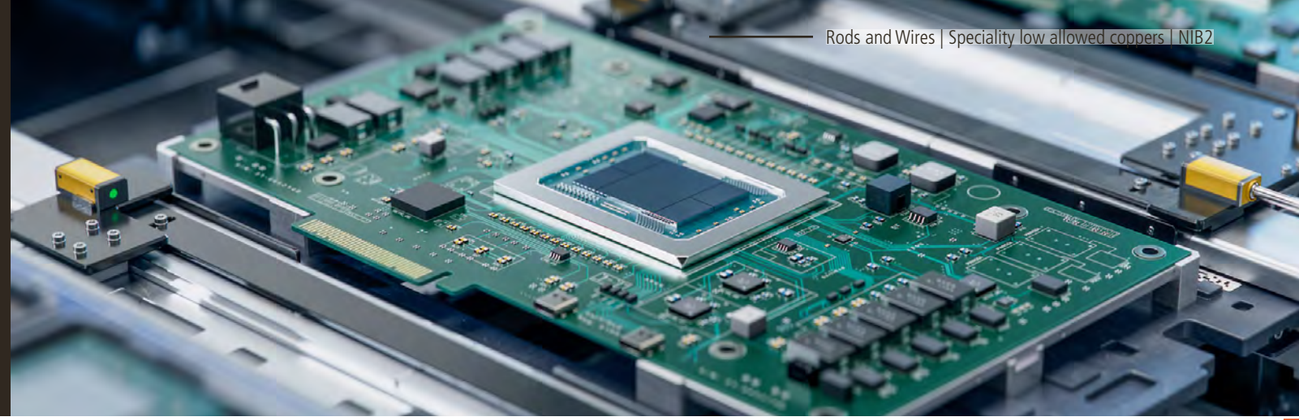
NIB2

CuNi2Si

Cu	Ni	Si
copper	nickel	silicon

Back

NIB2 is a high-strength copper-nickel-silicon alloy with excellent thermal and electrical conductivity, and good corrosion resistance in marine and industrial environments. It is ideal for electronic contacts and ship components requiring mechanical durability and stable electrical performance.



Rods and Wires | Speciality low allowed coppers | NIB2

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi2Si	C64700	CW111C

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Si
Balance	1.6 - 2.5%	0.4 - 0.8%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm^3
Thermal conductivity at 20 °C	160 W/m.°C
Electrical properties	
Electrical conductivity	> 29 %IACS

TYPICAL APPLICATIONS

Electronics industry

Electronic components, contacts, ship components, machine parts

COMPATIBLE DOWNSTREAM PROCESS

Cold working
Hot working
Soldering
Welding

KEY FEATURES

Good corrosion resistance (Industrial atmosphere, rural atmosphere, marine atmosphere and sea water, fresh water, high humidity and elevated temperature, age-hardened: stress corrosion)

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 16.0 mm
Wires	1.0 - 16.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HV)
Other tempers on demand				
R550	430	≥ 550	≥ 5%	
H160				160 - 210
R600	520	≥ 600	≥ 4%	
H175				175 - 220
R640	590	≥ 640	≥ 3%	
H190				190 - 250

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

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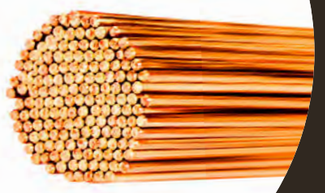


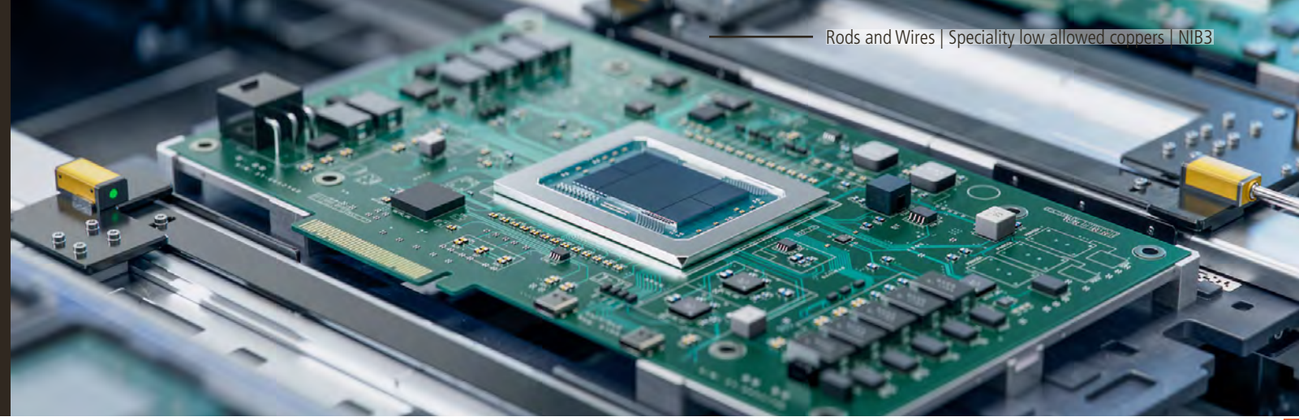
NIB3

CuNi3Si1

Cu	Ni	Si
copper	nickel	silicon

Back

NIB3 is a high-strength copper-nickel-silicon alloy with excellent thermal conductivity and stable electrical performance. It is particularly suited for electronic contacts and ship components requiring superior corrosion resistance and mechanical reliability.



Rods and Wires | Speciality low allowed coppers | NIB3

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi3Si1	NA	CW112C

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Si
Balance	2.6 - 4.5%	0.8 - 1.3%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm^3
Thermal conductivity at 20 °C	190 W/m.°C
Electrical properties	
Electrical conductivity	40 %IACS

TYPICAL APPLICATIONS

Electronics industry

Electronic components, contacts, ship components, machine parts

COMPATIBLE DOWNSTREAM PROCESS

Cold working
Hot working
Soldering
Welding

KEY FEATURES

Good corrosion resistance (Industrial atmosphere, rural atmosphere, marine atmosphere and sea water, fresh water, high humidity and elevated temperature, age-hardened: stress corrosion)

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 16.0 mm
Wires	1.0 - 16.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Hardness (HV)
Other tempers on demand			
R320	200	≥ 320	
H060			≥ 60
R500	380	≥ 500	
H140			≥ 140

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

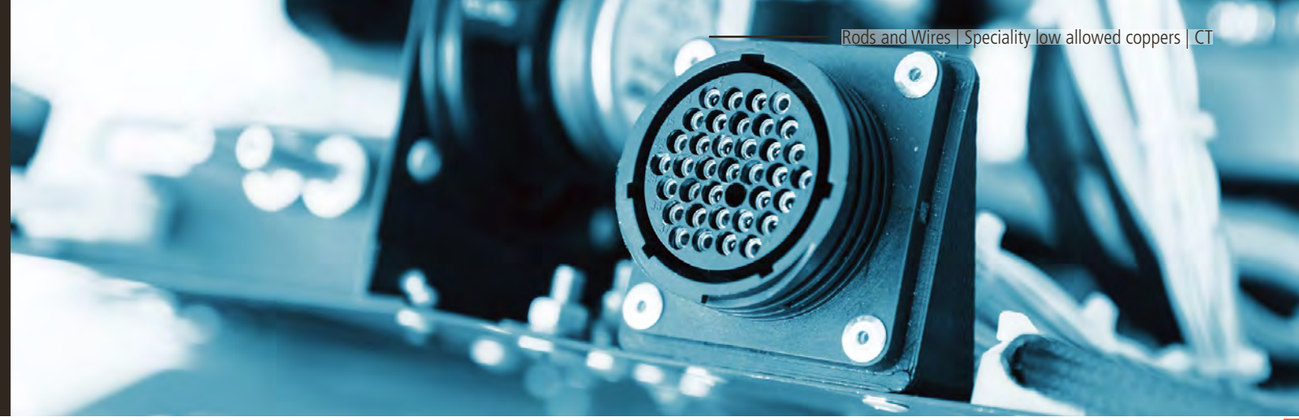
Disclaimer : Data for information only, non-contractual

CT
CuTeP

29	52	15
63.546	127.6	30,97376200
Cu	Te	P
copper	tellure	phosphorus

Back

CT is a copper-tellurium alloy with excellent machinability, cold formability and high electrical and thermal conductivity. Its low oxygen content makes it ideal for welding nozzles and precision electrical components such as connectors and fasteners.



Rods and Wires | Speciality low allowed coppers | CT

MATERIAL DESIGNATION

ISO	UNS	Others
CuTeP	C14500	ASTM B301, BS 2874, CW118C, DIN 17666, 2.1546

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Te	P
Balance	0.55%	0.008%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.94 g/cm³
Thermal conductivity at 20 °C	369 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	180 x 10^{-6}/°C
Young's modulus	120 GPa
Thermal capacity	385 J/Kg.K
Electrical properties	
Electrical conductivity	90 %IACS

TYPICAL APPLICATIONS

Welding nozzles
Connectors
Screws
Bolts
Electrical equipment

COMPATIBLE DOWNSTREAM PROCESS

Cold working
Hot working
Soldering

KEY FEATURES

Excellent electrical and thermal conductivity
Excellent corrosion resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	6.0 - 80.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Size	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HB)
Other tempers on demand					
R250	6 ≤ Ø ≤ 80 mm	≥ 180	≥ 250	≥ 7%	
H080					80 - 110
R300	6 ≤ Ø ≤ 40 mm	≥ 240	≥ 300	≥ 5%	
H095					95 - 130
R360	6 ≤ Ø ≤ 8 mm	≥ 300	≥ 360		
H120					≥ 120

OTHER AVAILABLE FORMS

Standard and complex profiled bars and wires, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

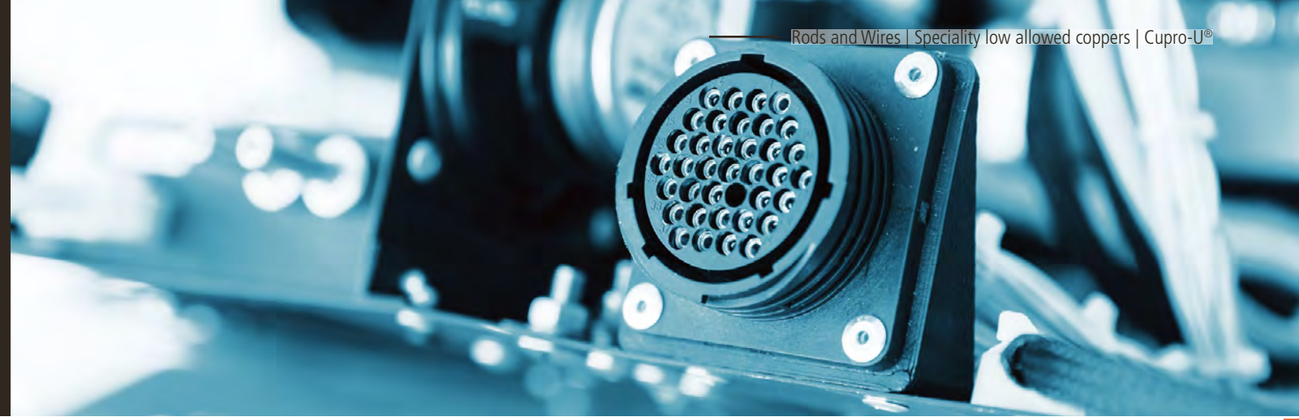
Cupro-U®

CuCrZr

Cu copper | Cr chromium | Zr zirconium

Back

Cupro-U® is a high-performance age-hardened copper-chromium-zirconium alloy combining excellent electrical conductivity with superior mechanical strength.
It is a lead-free and beryllium-free alternative to cadmium copper, ideal for single-core and multi-core conductor cables.



Rods and Wires | Speciality low allowed coppers | Cupro-U®

MATERIAL DESIGNATION

ISO	UNS	Others
CuCrZr	NA	ASTM B624

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Cr	Zr
Balance	0.1 - 0.6%	0.02 - 0.06%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.94 g/cm^3
Thermal conductivity at 20 °C	330 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	17.10 x 10^{-6}/°C
Young's modulus	120 GPa
Relative magnetic permeability	< 1.01
Electrical properties	
Electrical conductivity	≥ 88 %IACS
Electrical conduc Linear temperature coefficient of electrical resistance tivity	3370 ppm/°C

TYPICAL APPLICATIONS

Single-core and multi-core conductor cables
Electromagnetic shielding
Thermal and electrical conductive fasteners
High power connectors

COMPATIBLE DOWNSTREAM PROCESS

KEY FEATURES

High Strength and High Conductivity
High Flex Life
Fair resistance to corrosive environments
Working temperature resistance up to 400 °C
Non-magnetic
Excellent plating ability

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Diameter	Tensile Strength (MPa)	Elongation (%)
Other tempers on demand		
> 5 mm	470	13%
	450	16%
> 5 mm	480	6.5%
	550	4%
< 2 mm	650	1.5%

OTHER AVAILABLE FORMS

Bars and hollow bars, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

Back

CuNi alloys
Resistance alloys

Precision of electrical properties

Our Group offers a wide range of copper-nickel alloys **used for resistance applications**. These alloys are characterized by **highly precise electrical properties** and used as **heating elements** for various applications (ex: mineral insulated cables, household appliances, electrical devices), **bimetallic contacts** or coinage that **require controlled resistivity**. Our wide range of CuNi alloys makes us one of the **major players on this market** and allows us to meet the demanding requirements of a large portfolio of customers.

PRODUCT PORTFOLIO

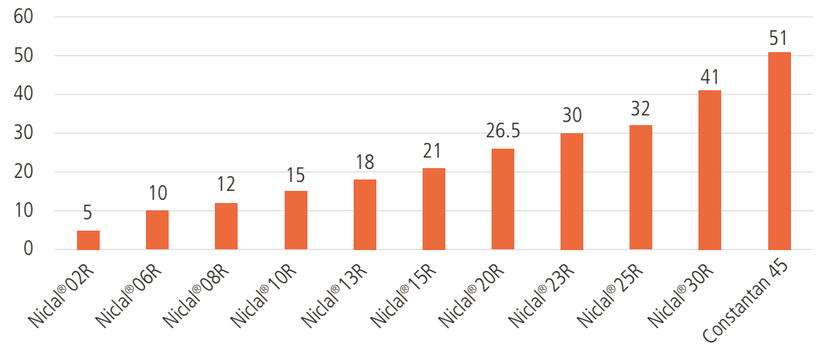
Alloy	ISO	UNS
Niclal® 02R	CuNi2	NA
Niclal® 06R	CuNi6	NA
Niclal® 08R	CuNi8	NA
Niclal® 10R	CuNi10	NA
Niclal® 13R	CuNi13	NA
Niclal® 15R	CuNi15	NA
Niclal® 20R	CuNi20	C71000
Niclal® 23R	CuNi23MnFe	NA
Niclal® 25R	CuNi25	C71300
Niclal® 30R	CuNi30	NA
Constantan 45	CuNi44Mn1	NA

STANDARD CAPABILITY

	Rods	Wires
Diameter	1.0 – 16.0 mm*	1.0 – 16.0 mm*

**Depending on alloy. Dimensions outside this range on request*

ELECTRICAL RESISTIVITY AT 20°C (µΩ.cm)



Our standard range of resistance CuNi alloys cover a large range of electrical resistivity from **5 µΩ.cm** to **51 µΩ.cm**.

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 designed 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 who source 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 CuNi alloys are :
- RoHS and REACH compliant
- Mainly produced from recycled raw materials

REACH compliant

RoHS compliant

Markets and applications

Electronics

- Bi-metallic contacts
- Heating component for circuit breaker

Energy

- Heating strips
- Mineral insulated cables

Other

- Currencies and tokens with highly controlled resistivity

Niclal® 02R

CuNi2

Cu copper | Ni nickel

Back

Niclal® 02R is a resistive copper-nickel alloy designed and produced by Lebronze alloys.
It exhibits high precision of resistivity, even at high temperatures. This alloy is compliant with ASTM B267 standard in terms of resistivity and temperature coefficient of electrical resistance.

Rods and Wires | CuNi resistance alloys | Niclal® 02R

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi2	NA	DIN 17471 n°2.0802

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni
Balance	2%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm^3
Thermal conductivity at 20 °C	140 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	17.7 x 10^{-6}/°C
Young's modulus	118 GPa
Melting point	1090 °C
Corrosion resistance	★☆☆☆☆
Electrical properties	
Resistivity at 20 °C	5 µΩ.cm
Typical temperature coefficient of electrical resistance from 25 to 105 °C	1100 - 1700 ppm/°C
Resistivity deviation	3σ = 5%

TYPICAL APPLICATIONS

Bi-metallic contacts
Heating component for circuit breakers
Heating strips
Mineral-insulated cables
Currencies and tokens with highly controlled resistivity

COMPATIBLE DOWNSTREAM PROCESS

Welding
Plating
Forming

KEY FEATURES

High precision of resistivity

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)
Other tempers on demand			
Annealed	< 100	< 260	> 30%

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

Niclal® 06R

CuNi6

Cu copper | Ni nickel

Back

Niclal® 06R is a resistive copper-nickel alloy designed and produced by Lebronze alloys.
It exhibits high precision of resistivity, even at high temperatures, as well as fair corrosion resistance.
This alloy is compliant with ASTM B267 standard in terms of resistivity and temperature coefficient of electrical resistance.

Rods and Wires | CuNi resistance alloys | Niclal® 06R

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi6	NA	DIN 17471 n°2.0807

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni
Balance	6%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm^3
Thermal conductivity at 20 °C	66 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	17.4 x 10^{-6}/°C
Young's modulus	120 GPa
Melting point	1095 °C
Corrosion resistance	★★☆☆☆
Electrical properties	
Resistivity at 20 °C	10 µΩ.cm
Typical temperature coefficient of electrical resistance from 25 to 105 °C	500 - 900 ppm/°C
Resistivity deviation	3σ = 5%

TYPICAL APPLICATIONS

Bi-metallic contacts
Heating component for circuit breakers
Heating strips
Mineral-insulated cables
Currencies and tokens with highly controlled resistivity

COMPATIBLE DOWNSTREAM PROCESS

Welding
Plating
Forming

KEY FEATURES

High precision of resistivity
Fair corrosion resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)
Other tempers on demand			
Annealed	< 100	< 280	> 30%
H15	> 400	> 430	< 5%

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

Niclal® 08R

CuNi8

Cu copper | Ni nickel

Back

Niclal® 08R is a resistive copper-nickel alloy designed and produced by Lebronze alloys.
It exhibits high precision of resistivity, even at high temperatures, as well as fair corrosion resistance.

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi8	NA	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni
Balance	8%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm^3
Thermal conductivity at 20 °C	57 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	17.3 x 10^{-6}/°C
Young's modulus	124 GPa
Specific heat capacity	0.38 J/g.°C
Corrosion resistance	★★☆☆☆
Electrical properties	
Resistivity at 20 °C	12 µΩ.cm
Resistivity deviation	3σ = 5%

TYPICAL APPLICATIONS

Bi-metallic contacts
Heating component for circuit breakers
Heating strips
Mineral-insulated cables
Currencies and tokens with highly controlled resistivity

COMPATIBLE DOWNSTREAM PROCESS

Welding
Plating
Forming

KEY FEATURES

High precision of resistivity
Fair corrosion resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

lba lebronze alloys

We are commited to decarbonation.

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

Niclal® 10R

CuNi10

Cu copper

Ni nickel

Back

Niclal® 10R is a resistive copper-nickel alloy designed and produced by Lebronze alloys.
It exhibits high precision of resistivity, even at high temperatures, as well as good corrosion resistance.
This alloy is compliant with ASTM B267 standard in terms of resistivity and temperature coefficient of electrical resistance.

Rods and Wires | CuNi resistance alloys | Niclal® 10R

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi10	NA	DIN 17471 n°2.0811

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni
Balance	10%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm^3
Thermal conductivity at 20 °C	50 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	17.1 x 10^{-6}/°C
Young's modulus	126 GPa
Melting point	1100 °C
Specific heat capacity	0.38 J/g.°C
Corrosion resistance	★★★☆☆
Electrical properties	
Resistivity at 20 °C	15 µΩ.cm
Typical temperature coefficient of electrical resistance from 25 to 105 °C	400 - 500 ppm/°C
Resistivity deviation	3σ = 5%

TYPICAL APPLICATIONS

Bi-metallic contacts
Heating component for circuit breakers
Heating strips
Mineral-insulated cables
Currencies and tokens with highly controlled resistivity

COMPATIBLE DOWNSTREAM PROCESS

Welding
Plating
Forming

KEY FEATURES

High precision of resistivity
Good corrosion resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)
Other tempers on demand			
Annealed	< 110	< 310	> 30%
H14	> 420	> 440	< 5%

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

Niclal® 13R

CuNi13

Niclal® 13R is a resistive copper-nickel alloy designed and produced by Lebronze alloys.
It exhibits high precision of resistivity, even at high temperatures, as well as good corrosion resistance.

Cu copper | Ni nickel

Back

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi13	NA	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni
Balance	13%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm³
Thermal conductivity at 20 °C	45 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	16.9 x 10^{-6}/°C
Young's modulus	140 GPa
Specific heat capacity	0.38 J/g.°C
Corrosion resistance	★★★☆☆
Electrical properties	
Resistivity at 20 °C	18 µΩ.cm
Resistivity deviation	3σ = 5%

TYPICAL APPLICATIONS

Bi-metallic contacts
Heating component for circuit breakers
Heating strips
Mineral-insulated cables
Currencies and tokens with highly controlled resistivity

COMPATIBLE DOWNSTREAM PROCESS

Welding
Plating
Forming

KEY FEATURES

High precision of resistivity
Fair corrosion resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Niclal® 15R

CuNi15

Niclal® 15R is a resistive copper-nickel alloy designed and produced by Lebronze alloys.
It exhibits high precision of resistivity, even at high temperatures, as well as good corrosion resistance.

Cu copper | Ni nickel

Back

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi15	NA	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni
Balance	15%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm³
Thermal conductivity at 20 °C	43 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	16.5 x 10^{-6}/°C
Young's modulus	142 GPa
Corrosion resistance	★★★☆☆
Electrical properties	
Resistivity at 20 °C	21 µΩ.cm
Resistivity deviation	3σ = 5%

TYPICAL APPLICATIONS

Bi-metallic contacts
Heating component for circuit breakers
Heating strips
Mineral-insulated cables
Currencies and tokens with highly controlled resistivity

COMPATIBLE DOWNSTREAM PROCESS

Welding
Plating
Forming

KEY FEATURES

High precision of resistivity
Good corrosion resistancee

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

Niclal® 20R

CuNi20

Cu copper | Ni nickel

Back

Niclal® 20R is a resistive copper-nickel alloy designed and produced by Lebronze alloys.
It exhibits high precision of resistivity, even at high temperatures, as well as good corrosion resistance.

Rods and Wires | CuNi resistance alloys | Niclal® 20R

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi20	C71000	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni
Balance	20%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm^3
Thermal conductivity at 20 °C	37.7 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	16.4 x 10^{-6}/°C
Young's modulus	144 GPa
Specific heat capacity	0.38 J/g.°C
Corrosion resistance	★★★☆☆
Electrical properties	
Resistivity at 20 °C	26.5 µΩ.cm
Resistivity deviation	3σ = 5%

TYPICAL APPLICATIONS

Bi-metallic contacts
Heating component for circuit breakers
Heating strips
Mineral-insulated cables
Currencies and tokens with highly controlled resistivity

COMPATIBLE DOWNSTREAM PROCESS

Welding
Plating
Forming

KEY FEATURES

High precision of resistivity
Good corrosion resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)
Other tempers on demand			
OSK	300 - 350	350 - 390	15 - 30%

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

Niclal® 23R

CuNi23MnFe

Cu copper | Ni nickel | Mn manganese | Fe iron

Back

Niclal® 23R is a resistive copper-nickel alloy designed and produced by Lebronze alloys.
It exhibits high precision of resistivity, even at high temperatures, as well as good corrosion resistance.
This alloy is compliant with ASTM B267 standard in terms of resistivity and temperature coefficient of electrical resistance.

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi23MnFe	NA	DIN 17471 n°2.0881

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Mn
Balance	23%	1%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm^3
Thermal conductivity at 20 °C	35 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	16.3 x 10^{-6}/°C
Young's modulus	145 GPa
Melting point	1150 °C
Corrosion resistance	★★★☆☆
Electrical properties	
Resistivity at 20 °C	30 µΩ.cm
Typical temperature coefficient of electrical resistance from 25 to 105 °C	150 - 210 ppm/°C
Resistivity deviation	3σ = 5%

TYPICAL APPLICATIONS

Bi-metallic contacts
Heating component for circuit breakers
Heating strips
Mineral-insulated cables
Currencies and tokens with highly controlled resistivity

COMPATIBLE DOWNSTREAM PROCESS

Welding
Plating
Forming

KEY FEATURES

High precision of resistivity
Good corrosion resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Niclal® 25R

CuNi25

Cu copper | Ni nickel

Back

Niclal® 25R is a resistive copper-nickel alloy designed and produced by Lebronze alloys.
It exhibits high precision of resistivity, even at high temperatures, as well as good corrosion resistance.
This alloy is compliant with ASTM B267 standard in terms of resistivity and temperature coefficient of electrical resistance.

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi25	C71300	CW350H

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni
Balance	25%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm^3
Thermal conductivity at 20 °C	33 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	16.3 x 10^{-6}/°C
Young's modulus	150 GPa
Specific heat capacity	0.38 J/g.°C
Corrosion resistance	★★★☆☆
Electrical properties	
Resistivity at 20 °C	32 µΩ.cm
Resistivity deviation	3σ = 5%

TYPICAL APPLICATIONS

Bi-metallic contacts
Heating component for circuit breakers
Heating strips
Mineral-insulated cables
Currencies and tokens with highly controlled resistivity

COMPATIBLE DOWNSTREAM PROCESS

Welding
Plating
Forming

KEY FEATURES

High precision of resistivity
Good corrosion resistancee

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

Niclal® 30R

CuNi30

Cu copper

Ni nickel

Back

Niclal® 30R is a resistive copper-nickel alloy designed and produced by Lebronze alloys.
It exhibits high precision of resistivity, even at high temperatures, as well as good corrosion resistance.
This alloy is compliant with ASTM B267 standard in terms of resistivity and temperature coefficient of electrical resistance.

MATERIAL DESIGNATION

ISO	UNS	Others
CuNi30	NA	DIN 17471 n°2.0890

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni
Balance	30%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm^3
Thermal conductivity at 20 °C	29 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	16.2 x 10^{-6}/°C
Young's modulus	154 GPa
Melting point	1180 °C
Specific heat capacity	0.38 J/g.°C
Corrosion resistance	★★★☆☆
Electrical properties	
Resistivity at 20 °C	41 µΩ.cm
Typical temperature coefficient of electrical resistance from +25 to +105 °C	3900 - 4700 ppm/°C
Resistivity deviation	3σ = 5%

TYPICAL APPLICATIONS

Bi-metallic contacts
Heating component for circuit breakers
Heating strips
Mineral-insulated cables
Currencies and tokens with highly controlled resistivity

COMPATIBLE DOWNSTREAM PROCESS

Welding
Plating
Forming

KEY FEATURES

High precision of resistivity
Good corrosion resistance

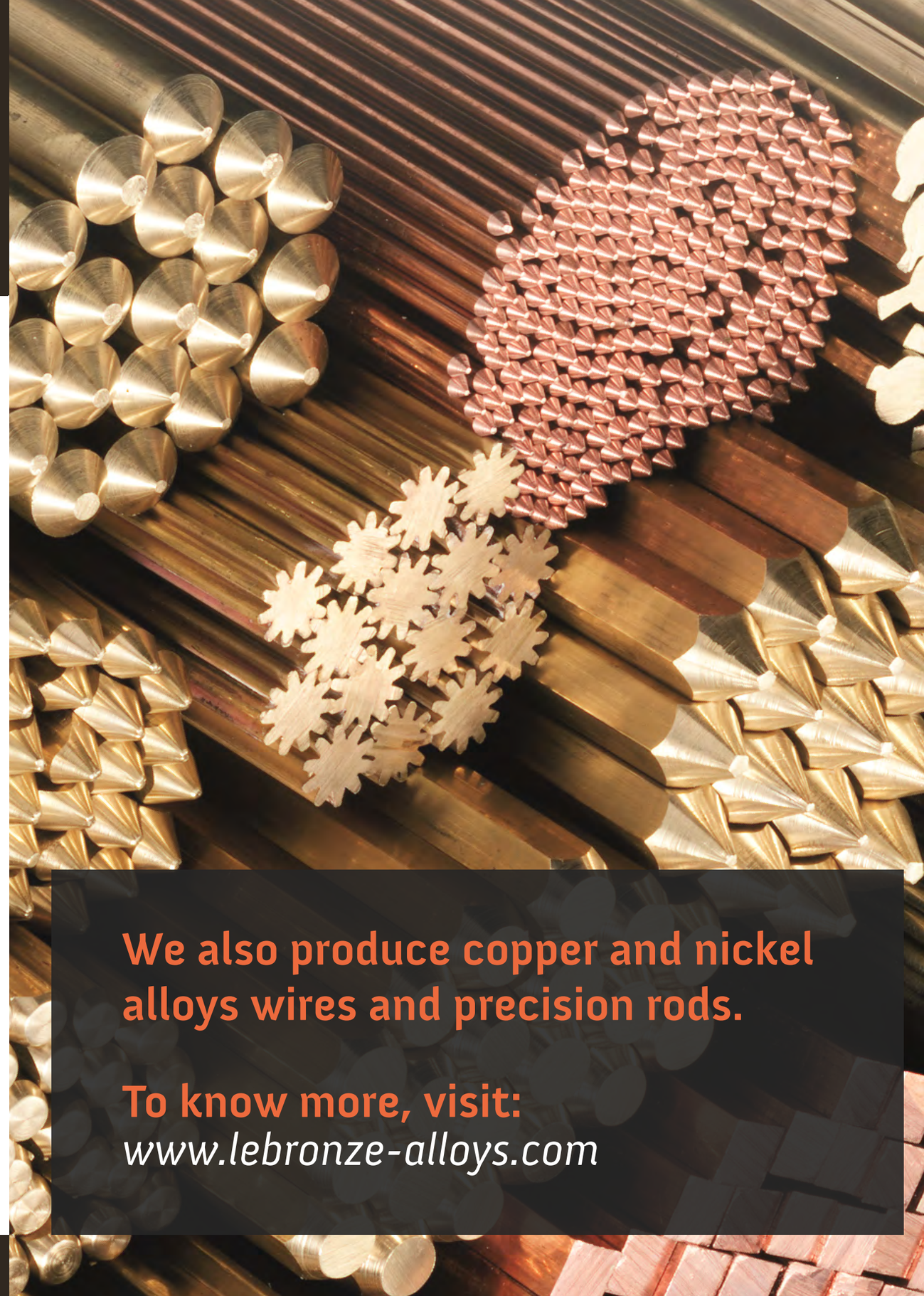
STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles



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

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

Constantan 45
CuN44Mn1

Constantan 45 is a resistive copper-nickel alloy designed and produced by Lebronze alloys.
It exhibits high precision of resistivity, even at high temperatures, as well as great corrosion resistance.

Cu copper | Ni nickel | Mn manganese

Back

Rods and Wires | CuNi resistance alloys | Constantan 45

MATERIAL DESIGNATION

ISO	UNS	Others
CuN44Mn1	NA	DIN 17471 n°2.0842

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Mn
Balance	44%	1%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm^3
Thermal conductivity at 20 °C	23 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	13.5 x 10^{-6}/°C
Young's modulus	165 GPa
Melting point	1280 °C
Specific heat capacity	0.38 J/g.°C
Corrosion resistance	★★★★☆
Electrical properties	
Resistivity at 20 °C	51 µΩ.cm
Resistivity deviation	3σ = 5%

TYPICAL APPLICATIONS

Bi-metallic contacts
Heating component for circuit breakers
Heating strips
Mineral-insulated cables
Currencies and tokens with highly controlled resistivity

COMPATIBLE DOWNSTREAM PROCESS

Welding
Plating
Forming

KEY FEATURES

High precision of resistivity
Good corrosion resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)	Hardness (HB)
Other tempers on demand				
Annealed	< 180	< 450	> 30%	< 120
H14	> 630	> 650	< 3%	-

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual

CuNi alloys
Sea-water resistance alloys

Sea-water and biofouling resistance

Our Group offers copper-nickel alloys **used for sea-water resistance applications**. These alloys exhibit high resistance to sea-water corrosion and to biofouling which provides various advantages compared to other copper alloys and steels

PRODUCT PORTFOLIO

Alloy	ISO	UNS
Niclal® 10-Fe	CuNi10FeMn	C70600
Niclal® 30-Fe	CuNi30FeMn	C71500
Niclal® 30A-Fe*	CuNi30Mn2Fe2	NA
Niclal® 30B-Fe*	CuNi31FeMn	NA
Niclal® 25*	CuNi25	C71300

**For those alloys, technical data is on demand*

STANDARD CAPABILITY

	Rods	Wires
Diameter	1.0 – 16.0 mm*	1.0 – 16.0 mm*

**Depending on alloy. 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 designed 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 who source 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 CuNi alloys are :
- RoHS and REACH compliant
- Mainly produced from recycled raw materials

REACH compliant

RoHS compliant

Markets and applications

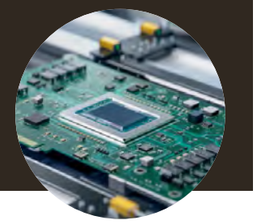
Energy

- Heat exchangers
- Mechanical and piping components
- Submarine cables shielding

Health

- Desalination

Electronics



- Deep drawn cans

Niclal® 10-Fe

CuNi10FeMn

Cu copper | Ni nickel | Fe iron | Mn manganese

Niclal® 10-Fe is a copper-nickel alloy offering excellent resistance to seawater corrosion and biofouling, ensuring superior durability compared to conventional copper alloys and steels. It is ideal for deep-drawn cans and heat exchanger components in marine environments.

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MATERIAL DESIGNATION

ISO	UNS	Others
CuNi10FeMn	C70600	CW352H

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Fe
Balance	10%	1.5%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm^3
Thermal conductivity at 20 °C	50 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	17.1 x 10^{-6}/°C
Young's modulus	126 GPa
Electrical properties	
Resistivity at 20 °C	22 µΩ.cm

OTHER AVAILABLE FORMS

Strips, sheets, bars, tubes and machined parts, standard and bespoke profiles

TYPICAL APPLICATIONS

Deep-drawn cans
Electrical contacts
Heat exchangers and desalination components

COMPATIBLE DOWNSTREAM PROCESS

Cold forming
Deep drawing
Welding (TIG, MIG, Arc)
Brazing
Machining

KEY FEATURES

Sea-water corrosion resistance
Biofouling resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

Niclal® 30-Fe

CuNi30FeMn

Cu copper | Ni nickel | Fe iron | Mn manganese

Niclal® 30-Fe is a copper-nickel alloy offering exceptional resistance to seawater corrosion and biofouling, ensuring superior durability compared to conventional copper alloys and steels. It is ideal for heat exchanger components and deep-drawn cans used in marine environments.

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MATERIAL DESIGNATION

ISO	UNS	Others
CuNi30FeMn	C71500	CW354H

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Fe
Balance	31%	0.8%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm^3
Thermal conductivity at 20 °C	29 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	16.2 x 10^{-6}/°C
Young's modulus	155 GPa
Electrical properties	
Resistivity at 20 °C	40 µΩ.cm

OTHER AVAILABLE FORMS

Strips, sheets, bars, tubes and machined parts, standard and bespoke profiles

TYPICAL APPLICATIONS

Deep-drawn cans
Electrical contacts
Heat exchangers and desalination components

COMPATIBLE DOWNSTREAM PROCESS

Cold forming
Deep drawing
Welding (TIG, MIG, Arc)
Brazing
Machining

KEY FEATURES

Sea-water corrosion resistance
Biofouling resistance

STANDARD CAPABILITY

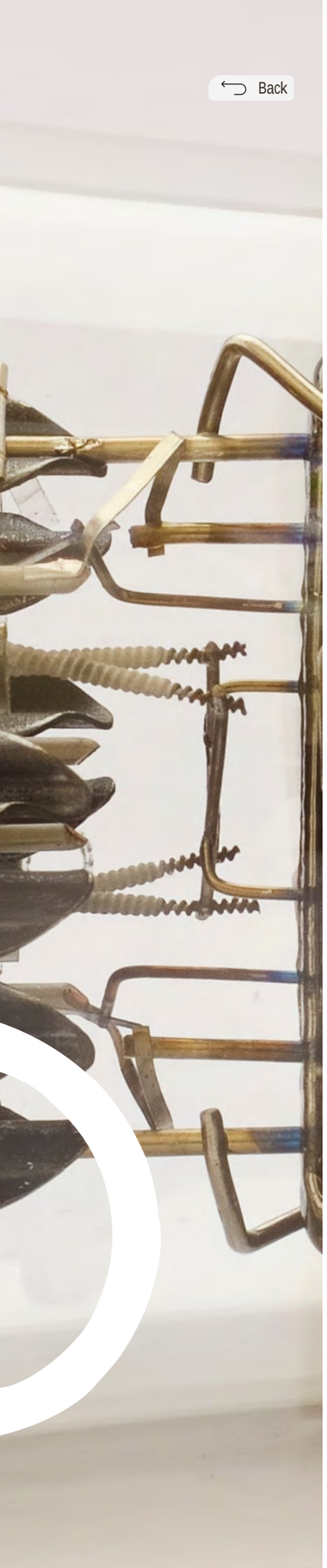
Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)
Other tempers on demand			
Annealed	< 180	< 430	> 30%

Disclaimer : Data for information only, non-contractual



CuNi alloys

Electronic grade alloys
Precision and stability in vacuum environment

Our Group offers copper-nickel alloys **used for electronic applications**. These alloys exhibit high **stability and precision of electrical properties** especially in vacuum environment thanks to a superior **metallurgical cleanliness** offered by our special production processes.

PRODUCT PORTFOLIO

Alloy	ISO	UNS
Constantan 45A	Proprietary	NA

STANDARD CAPABILITY

	Rods	Wires
Diameter	1.0 – 16.0 mm*	1.0 – 16.0 mm*

**Depending on alloy. Dimensions outside this range on request*

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- RoHS and REACH compliant
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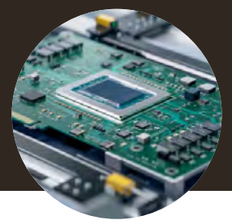
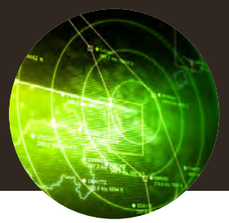
Markets and applications

Electronics



- Vacuum tubes
- Vacuum electronics

Defence



- Radars
- Sonars
- Telecommunication antennas

Constantan 45A
Proprietary

Constantan 45A is an electronic grade copper-nickel alloy designed and produced by Lebronze alloys.
It exhibits high purity (low amount of traces elements combined with low inclusion level) and high density (low amount of porosites).

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MATERIAL DESIGNATION

ISO	UNS	Others
Proprietary	NA	NA

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.9 g/cm^3
Thermal conductivity at 20 °C	23 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	13.5 x 10^{-6}/°C
Young's modulus	165 GPa
Melting point	1280 °C
Relative magnetic permeability	
Electrical properties	
Resistivity at 20 °C	49 µΩ.cm
Resistivity deviation	3σ = 5%

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

TYPICAL APPLICATIONS

Traveling Wave Tubes
High vacuum application
Sensors

COMPATIBLE DOWNSTREAM PROCESS

Welding
Plating
Forming

KEY FEATURES

High purity (low amount of traces elements combined with low inclusion level)
High density (low amount of porosites)
Good surface cleanliness
High thermal stability
Good corrosion resistance

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 110.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

We also produce high quality machined blanks and parts.

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

Disclaimer : Data for information only, non-contractual

Other high-performance Copper and Nickel alloys

Chemical corrosion resistance

Lebronze alloys offers a range of speciality nickel- and copper-based alloys designed for demanding mechanical, thermal, and corrosion-resistant applications.

This family includes NiCu and CuSi grades manufactured through a fully integrated process, from foundry to final heat treatment, ensuring full traceability and consistent high-level performance. These alloys are available in strips, sheets, rods, and wires. For other chemistries, please contact our teams.

PRODUCT PORTFOLIO

Alloy	ISO	ASTM
Nicla**l**® 400	NiCu32Fe2Mn	N04400
SI45Z*	CuSi3Fe2Zn3	C65620
Other chemistries on demand		

**For this alloy, technical data is on demand*

STANDARD CAPABILITY

	Rods	Wires
Diameter	1.0 – 16.0 mm*	1.0 – 16.0 mm*

**Depending on alloy. Dimensions outside this range on request*

ESG Performance

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Our nickel- and copper-based alloys are :

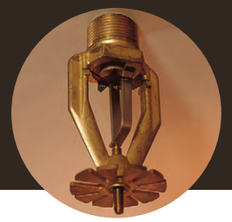
- RoHS and REACH compliant
- Mainly produced from recycled raw materials

Markets and applications

Energy

- Heat exchangers

Others



- Sprinkler parts
- Fasteners
- Chrlorine valves
- Mechanical components

Niclal® 400

NiCu32Fe2Mn

Ni nickel | Cu copper | Fe iron | Mn manganese

Back

Niclal® 400 is a nickel alloy offering excellent resistance to seawater and chloralkali corrosion, ensuring superior durability in highly aggressive environments.
It is ideal for sprinkler systems and mechanical components exposed to extreme conditions.

Rods and Wires | Other high performance alloys | Niclal® 400

MATERIAL DESIGNATION

ISO	UNS	Others
NiCu32Fe2Mn	N04400	DIN 17743 Wr N°2.4360

CHEMICAL COMPOSITION (WEIGHT%)

Ni	Cu	Fe
Balance	32%	2%

PHYSICAL PROPERTIES

General properties	
Density at 20 °C	8.8 g/cm^3
Thermal conductivity at 20 °C	22 W/m.°C
Coefficient of thermal expansion from 20 to 200 °C	13.9 x 10^{-6}/°C
Young's modulus	179 GPa
Electrical properties	
Resistivity at 20 °C	54.7 µΩ.cm
Electrical conductivity at 20 °C	7.5 %IACS

TYPICAL APPLICATIONS

Sprinkler
Fastener
Chlorine valves
Oil and Gas components
Heat exchangers
Mechanical components
Eyewear components

COMPATIBLE DOWNSTREAM PROCESS

Cold working
Deep drawing
Welding

KEY FEATURES

Excellent resistance to seawater and chloralkali corrosion
High mechanical properties

STANDARD CAPABILITY

Format	Size diameter Ø
Rods	1.0 - 15.0 mm
Wires	1.0 - 15.0 mm

Dimensions outside these ranges on request

MECHANICAL PROPERTIES

Temper	Yield Strength 0.2% (MPa)	Tensile Strength (MPa)	Elongation (%)
Other tempers on demand			
H12	> 500	> 600	> 10 %
H14	> 650	> 700	< 4 %

OTHER AVAILABLE FORMS

Strips and sheets, standard and bespoke profiles

Disclaimer : Data for information only, non-contractual / Dimensions outside these ranges on request

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Table
Rods and wires product portfolio

Alloy name	ISO	UNS	Other designations
CuMn current sensing alloys			
Niclal®28	CuMn6Sn2		
Niclal®29	CuMn7Sn2		
Niclal®37	CuMn10Ni4		
Niclal®38	CuMn10Ni4		
Niclal®42	CuMn11Ni4		
Niclal®43	CuMn12Ni4		
Niclal®43A	CuMn12Ni2		
Niclal®47	CuMn14Ni2		
Niclal®48	CuMn13Ni4		
Constantan 45 TCR	CuNi44Mn1Fe		DIN 17764 n°2.0842
Niclal®50	Proprietary		
Niclal®80	Proprietary		
Niclal®100	Proprietary		
CuNiSn spinodal alloys			
Hardiall®	CuNi15Sn8	C72900	
Niclafor® 1000	CuNi9Sn6	C72700	ASTM B740
Declafor® 1015	CuNi7.5Sn5Te	C72670	
Niclal® 725	CuNi9Sn2		CW351H
ARCAP® alloys			
ARCAP® AP1C	Cu56Ni25Zn19	C79360	
ARCAP® AP1	Cu64Ni25Zn11		
ARCAP® AP4	Cu55Ni44Mn1		
ARCAP® AP1D	Cu61Ni25Zn11.5	C79350	
ARCAP ZeST®	CuNi25Zn14.5		
CuAl aluminium bronze alloys			
AL7	CuAl7Si2	C64210	CW302G, EN 12 163, EN 12165, EN 12167, ASTM B150
AL8	CuAl6Si2Fe		CW301G, DEF STAN 02-834, DEF STAN 02-879, NES 834
D1	CuAl9		NFA 51 116
D10	CuAl10Ni5Fe4	C63000	CW307G, AMS 4640 F, ASTM B150, DIN 17665, NFA 51 116, NFL 14-705, 2.0966
D11	CuAl11Ni5Fe5	C63020	CW308G
D13	CuAl13Fe4Mn2	C62500	
D14	CuAl10Fe4	C62400	ASTM B150
D16	CuAl9Fe3	C62300	AMS 4635, ASTM B150
D18	CuAl10Fe3Mn2		CW306G
D3	CuAl9Mn6Ni2Fe2		NFA 51-116
D4	CuAl9Ni3Fe2		CW304G, GAM MM11, NFA 51-116

Table
Rods and wires product portfolio

Alloy name	ISO	UNS	Other designations
D7	CuAl10Ni5Fe4		BS B23, BS 2874, CW307G, NFA 51-116
S01	CuAl9Ni5Fe4	C63200	ASTM B150,NFA 51-116, GAM MM11, GAM MM13
Speciality low alloyed coppers			
C97®	CuNi1Pb1P	C19160	
B97	CuNi1P		
C98®	CuNi1Pb0.5P	C19140	
B98	CuNi1P	C19000	CW108C
C99®	CuPb1P	C18700	CW113C
NIB1	CuNi1Si	C70260	CW109
NIB2	CuNi2Si	C64700	CW111C
NIB3	CuNi3Si1		CW112C
CT	CuTeP	C14500	ASTM B301, BS 2874, CW118C, DIN 17666, 2.1546
Cupro-U®	CuCrZr		ASTM B624
CuNi resistance alloys			
Niclal®02R	CuNi2		DIN 17471 n°2.0802
Niclal®06R	CuNi6		DIN 17471 n°2.0807
Niclal®08R	CuNi8		
Niclal®10R	CuNi10		DIN 17471 n°2.0811
Niclal®13R	CuNi13		
Niclal®15R	CuNi15		
Niclal®20R	CuNi20	C71000	
Niclal®23R	CuNi23MnFe		DIN 17471 n°2.0881
Niclal®25R	CuNi25	C71300	CW350H
Niclal®30R	CuNi30		DIN 17471 n°2.0890
Constantan 45	CuNi44Mn1		DIN 17471 n°2.0842
CuNi sea-water resistance alloys			
Niclal®10-Fe	CuNi10FeMn	C70600	CW352H
Niclal®30-Fe	CuNi30FeMn	C71500	CW354H
CuNi electronic grade alloys			
Constantan 45A	Proprietary		
Other high-performance copper and nickel alloys			
SI45Z	CuSi3Fe2Zn3	C65620	AMS 4616
Niclal®400	NiCu32Fe2Mn	N04400	DIN 17743 Wr N°2.4360

Standard capability		
	Rods	Wires
Diameter	1.0 – 16.0 mm*	1.0 – 16.0 mm*

**Depending on alloy. Dimensions outside this range on request*

lebronze alloys

Critical metallurgy

www.lebronze-alloys.com

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