

# NS30

Copper Nickel Silicon Alloy  
High Thermal Conductivity and High Strength



lebronze alloys

## Automotive

**NS30** is a wrought copper nickel silicon alloy **CuNi7Si2Cr1** designed for applications requiring a combination of high thermal dissipation, high strength, resistance to shocks and that is also corrosion resistant.

It is easily machined into complex components whilst being **environmentally friendly, being both lead and beryllium free.** It is a **direct replacement to CuBe2 C172000** that exhibits a superior combination of properties.

**NS30** is used within the automotive industry thanks to its **outstanding physical and mechanical properties.**

Lebronze alloys has developed a full range of **Copper Chromium, Copper Nickel Aluminum Bronzes, Spinodal Copper Nickel Tin grades** all exceeding industry standards for use in many varied applications

### NS30 Key Features

- High thermal & electrical conductivity
- High strength
- Excellent wear and galling resistance
- Excellent softening resistance
- Good corrosion resistance
- Fair machinability
- Non-sparking
- Good impact and fatigue resistance
- Low magnetic permeability
- Stable performance at elevated temperatures up to 662°F (350°C)
- Dimensional stability

### Benefits for Automotive

- Reduction in “knocking” effect
- Mitigated head distortion
- Improved spark advance
- Minimized crevice volume

**Lebronze alloys manufacturing process for NS30 is fully integrated:** internal processes include casting, hot and cold working stage, heat treatment and non-destructive testing. **Being fully integrated ensures reactivity and complete traceability.**

### NS30 Physical Properties

Electrical conductivity at 68°F (20°C)	32	% IACS
Thermal conductivity at 77°F (25°C) Thermal conductivity at 212°F (100°C) Thermal conductivity at 482°F (250°C)	<b>Contact us for more complete information:</b> <a href="mailto:contact@lebronze-alloys.com">contact@lebronze-alloys.com</a>	
Coefficient of thermal expansion at 68°F to 392°F (20°C to 200°C)		
Density	0.322 (8.7)	lb/in <sup>3</sup> (g/cm <sup>3</sup> )

**Optimize your TCO:** NS30 demonstrates **an outstanding resistance against metal-to-metal wear**, thus ensuring a longer lifespan and a **reduction of failures.**

## NS30 Applications in Automotive (1/2)

**Fuel and CO<sub>2</sub> efficient Touring Cars, Valve Seats, Valve Guides, Liners, Bearings and Bushings. Valvetrain Components for Racing Cars.**

Thanks to its **superior thermal conductivity to beryllium copper** and its elevated mechanical strength NS30 provides designers both a higher efficiency and higher reliability, allowing to **change radically the internal combustion engine design** increasing the break effective mean pressure.



## NS30 Applications in Automotive (2/2)

Internal combustion engines operating at higher pressures enables a **reduction engine of size and weight** with a better fuel efficiency and contributes to **lower CO<sub>2</sub> emission levels**.

The NS30 alloy enables higher engine performance **reducing crevice volume, head distortion** and is lowering the exhaust bridge temperature, piston mass and overall temperature. NS30 also mitigates the “**knocking**” effect and optimizes the spark advance.

For valvetrain applications, NS30 demonstrates outstanding **wear, corrosion, temperature and pressure resistance**.

NS30 thus provides a **longer service life** and a **better total cost of ownership (TCO)** compared to beryllium copper conventional other copper-based alloys.



## NS30 Products Portfolio

NS30 is manufactured complying with RWMA III / IV. The following table indicates NS30 products available for Automotive, Metallurgy and Welding Industries.

NS30 Mechanical Properties							
LBA designation	Minimum Yield Strength 0.2% offset ksi (MPa)	Minimum UTS (Rm) ksi (MPa)	Elongation 5.65 √S0 (%)	Minimum Hardness* (HB)	Minimum Hardness* (HRC)	Available forms	Available sizes  Inches (mm)
NS30	123 (850)	131 (900)	7	270	26	Contact us for more complete information: <a href="mailto:contact@lebronze-alloys.com">contact@lebronze-alloys.com</a>	
NS30	102 (700)	116 (800)	5	250	25		

*\*Hardness is tested via Brinell Test Method at 3,000 kg load and equivalent HRC values converted per ASTM-E-140. Properties may vary by shape and thickness. Measurements made in laboratory conditions. Non contractual document, for guidance only.*

**Lebronze alloys was born from the integration of companies specialized in the production of copper alloys, copper, nickel alloys, aluminum and special steels.**

Thanks to its multidisciplinary know-how, the Group provides innovative solutions to all major industries such as Automotive, Aerospace, Oil & Gas, Energy, Off-highway Mining and Railways, but is also present in sectors that manufacture personal equipment.

Our 10 production sites and 1,100 employees master a unique range of metal processing technologies: continuous and semi-continuous casting, sand casting, chill casting (manual, mechanized, robotic), centrifugal casting, extrusion, ring rolling, hot and cold rolling, drawing, free forging, forging, die stamping, stamping, heat treatment, cold stamping, machining, non-destructive tests, etc.

Offering a solution that is suited and optimized to the needs of each industry is our Group's commitment.

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## Injection Tooling, Welding Components

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**NS30** is used within the automotive, tooling and welding industries thanks to its **outstanding physical and mechanical properties.**

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**Optimize your TCO:** NS30 demonstrates **an outstanding resistance against metal-to-metal wear**, thus ensuring a longer lifespan and providing a reduction of **failures** and hence **maintenance downtimes.**

## NS30 Applications for Injection Tooling

### Plastic Injection & Molding

Injection and Blow Cores and Cavities

### High Pressure Die Casting Tooling

Plunger Tips / Pistons, Moving Plates Bushings

NS30 is used in tooling, thanks to the combination of its thermal and mechanical strength, **excelling in high-speed production cycles** where **high and rapid heat dissipation is needed**, thus allowing high production rates supported by high quality finishing.



## NS30 Applications for Welding Components

### Welding Shanks, Welding Casting Wheels



For these applications, Lebronze alloys can offer ready-to-use products thanks to its integrated supply chain.

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