L.KLEIN SA
PREMIUM STEEL & METALS
SINCE 1946



HARDIALL

High Strength Spinodal Copper Nickel Tin Alloys

Distinctive feature and main attributes

Hardiall® is a wrought spinodally hardened copper alloy CuNi15Sn8 (C72900) designed for high performance applications including aerospace, spatial, high-performance bushings, connectors and precision watch parts.

This alloy offers outstanding physical and mechanical properties and can be quiet easily machined into complex and thin components whilst being environmentally friendly (Pb-free and Be-free).

Features and benefits:

- High hardness after heat treatment
- Elevated stress relaxation resistance (including at 200°C)
- Temperature range -125°C up to 300°C
- Excellent lubricity
- Highly corrosion resistant
- Good machinablility
- Non-magnetic
- Dimensional stability upon thermal treatment

Use and application range

- Aerospace mechanical performance parts
- Watch industry
- High strength heavy load friction wear resistance
- Oil and Gas High Pressure High Temperature (HPHT) parts
- Hydrogen storage & distribution: high strength, corrosion and pressure resistance

Norms

ISO	CuNi15Sn8
UNS	C72900

Chemical composition (% wt)

Cu	*Ni*	*Sn*
balance	15	8

Dimensions, executions and delivery conditions

Round bars: Ø 1.5 – 15 mm

Key benefits by tempers

Hardiall® is available in various tempers differing from their mechanical properties:

- TD temper offers medium formability with a possible of hardening to achieve high strength
- TH temper offers the highest elasticity, stress relaxation and fatigue resistance.

*Measurements made in laboratory conditions. Non contractual.

Modifications will not be adjusted automatically. Last update 04 / 2024

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Mechanical properties

Properties*	Solution annealed, cold worked Hardiall rods Hardiall TD4	Solution annealed, cold worked spinodally hardened Hardiall rods Hardiall TH4
Minimal Yield Strength 0.2% offset (MPa)	> 800 Mpa	1'150 (up to 1'250)
Minimal UTS (MPa)	> 900 Mpa	1'250 (up to 1'350)
Minimal Elongation 4D (%)		3 – 7
Typical Hardness (HV)	300	380 (+/- 20)
Available forms		Rods
Availbale sizes	on request	1.5 – 15 mm

Physical properties

Properties	Unit	
Electrical Conductivity at 20°C	% IACS	7.5
Thermal Conductivity at 20°C to 200°C (x10^{-6}/°C)	W/(m.°C)	38
Coefficient of Thermal Expansion at 20°C to 200°C	Per °C	16.4
Specific gravity		8.95
Young Modul	GPa	140

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