



NS30

CuNi₇Si₂Cr

2963.548Cu
copper

2858.6934Ni
nickel

1428.085Si
silicon

2451.9961Cr
chromium

NS30 is a nickel-silicon-bronze (CuNi₇Si₂Cr) alloy designed for applications requiring a combination of high thermal dissipation and high strength. NS30 is non-sparking and resistant to corrosion.

MATERIAL DESIGNATION

ISO	UNS	Other designations	Aerospace specifications	Other standards
CuNi7Si2Cr	NA	NA	NA	NA

CHEMICAL COMPOSITION (WEIGHT%)

Cu	Ni	Si	Cr
Balance	7%	2%	1%

PHYSICAL PROPERTIES

General properties		
Density at 20 °C (68 °F)	8.7 g/cm³	0.31 lb/in³
Thermal conductivity	135 W/m.°C	78 BTU/(h.ft.°F)
Coefficient of thermal expansion from 20 to 300 °C (68 °C to 572 °F)	16 x 10 ⁻⁶ /°C	8.89 µin/in °F
Young’s modulus	130 GPa	18 855 ksi
Relative magnetic permeability	1.01	
Electrical properties		
Resistivity at 20 °C (68 °F)	5.7 µΩ.cm	34.3 Ω. circ mil/ft
Electrical conductivity	30 %IACS	

TYPICAL APPLICATIONS

Automotive industry

Fuel and CO₂ efficient touring cars, valve seats, valve guides, liners. Bearings and bushings valvetrain components for racing cars

Plastic industry

Mold inserts for injection molding, injection and extrusion blow molding. Injection components (manifolds) for hot runner systems

Other applications

Welding shanks and wheels. High pressure die casting plunger tips/pistons

COMPATIBLE DOWNSTREAM PROCESS

Extrusion, forging or die stamping followed by quenching and hardening, plus cold-drawing for small diameters
Suitable for hard brazing, but loss of mechanical properties

KEY FEATURES

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



MECHANICAL PROPERTIES

Size diameter Ø or thickness a	Temper*	Yield Strength 0.2% MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Hardness	
					(HB)	(HRC)
For other dimensions and shapes, mechanical properties on demand						
Bars						
Ø ≤ 50.8 mm (Ø ≤ 2 in.)	TER	≥ 800 (≥ 116)	≥ 900 (≥ 131)	≥ 7	≥ 270	≥ 26
50.8 < Ø ≤ 127 mm (1.97 < Ø ≤ 5 in.)	TR	≥ 700 (≥ 102)	≥ 800 (≥ 116)	≥ 5	≥ 250	≥ 25
Hollow bars						
OD > 101.6 mm (OD > 4 in.) Thickness: 10-25.4 mm (0.4 to 1 in.)	TR	≥ 700 (≥ 102)	≥ 800 (≥ 116)	≥ 5	≥ 250	≥ 25
Plates						
a ≤ 50.8 mm (a ≤ 2 in.)	TR	≥ 700 (≥ 102)	≥ 800 (≥ 116)	≥ 5	≥ 250	≥ 25

*TER: solution annealed and quenched, cold worked and aged.
TR: solution annealed, quenched and aged

OTHER AVAILABLE FORMS

Billets, strips, sheets, rods, wires, standard & complex profiles, machined blanks and parts