



C61000 Copper Aluminum Alloy

C61000 is an aluminum bronze alloy with high strength, excellent corrosion resistance, and good wear performance.

C61000 Aluminum Bronze is a high-performance copper-based alloy containing approximately 6.0 – 8.5% aluminum (nominal ~8%). Known for its excellent combination of mechanical strength, superior corrosion resistance (especially in seawater), and outstanding wear performance, C61000 is widely used in demanding industrial environments such as marine engineering, pump and valve components, bearings, and heavy-duty machinery.

Compared to standard copper alloys, C61000 offers good fatigue resistance and anti-galling properties, making it ideal for high-load and friction applications.



Chemical Composition

Element	Minimum (%)	Maximum (%)
Copper (Cu)	Remainder	-
Aluminum (Al)	6.0	8.5
Iron (Fe)	-	0.50
Zinc (Zn)	-	0.20
Lead (Pb)	-	0.02
Silicon (Si)	-	0.10

- Cu + named elements $\geq$ 99.5%
- Typical composition: ~92% Cu + 8% Al

Physical Properties

Density	7.78 g/cm ³	Elastic Modulus	117 GPa
Shear Modulus	44 GPa	Poisson's Ratio	0.34
Thermal Expansion Coefficient	17.8×10 ⁻⁶ /°C (20~300°C)	Thermal Conductivity	69 W/(m·K)
Conductivity	18% IACS	Melting Point Range	1030~1060 °C

Material Characteristics

UNS C61000 is a low-iron single-phase aluminum bronze featuring high strength, superior toughness, excellent wear resistance and anti-seizure performance. It exhibits outstanding corrosion resistance against seawater, fresh water, steam and weak acid, with good resistance to stress corrosion cracking. The alloy possesses reliable cold and hot workability, which supports forging, bending and welding operations with moderate machinability. It is widely applicable for marine engineering, heavy-duty machinery and chemical anti-corrosion service conditions.

Mechanical Properties (Room Temperature)

Condition	Tensile Strength (MPa)	Yield Strength (MPa)	Elongation (%)	Hardness (HB)
O (Annealed)	≥480	≥205	≥25	140~160
M (Hot Rolled/Forged)	500~650	250~400	15~22	150~180
H (Hard Drawn)	≥620	≥450	≤10	180~220

Main Features & Applications

Marine engineering accessories, seawater pumps and valves, bearing bushes, heavy-duty gears, hydraulic valve bodies, chemical corrosion-resistant pipelines, mechanical wear-resistant sliding parts, conductive wear-resistant components and other industrial precision parts.

- Advantages: Excellent corrosion resistance (sea water, atmosphere, some acids), good wear and cavitation resistance, weldable, hot/cold workable.
- Common Applications: Valve & pump components, bearings, shafts, fasteners, marine hardware, wear overlays on steel, chemical equipment, and welding wire.
- Equivalent Grades: CuAl8 (EN/DIN 2.0920/2.0921), CA104 (British Standard), etc.

