

H59

Description

H59 is the most widely used and cost-effective standard brass, containing approximately 59% copper and 41% zinc. It is a leaded, free-machining brass that offers an excellent balance of mechanical properties, machinability, and affordability. It is extensively used in machinery, hardware, plumbing fixtures, and electrical components.

Features

Hot workability: Excellent—suitable for hot forging, hot extrusion, and hot rolling; Cold workability: Moderate—cold bending and cold heading are feasible, but complex cold forming operations require intermediate annealing.

Welding and brazing performance: Good. Corrosion resistance: Good in atmospheric conditions, fresh water, and ambient environments; however, performance is only fair in seawater, strong acids, or prolonged humid conditions due to susceptibility to dezincification. Generally not recommended for severe corrosive service.

Parameters

H59's Chemical Composition (%)

Composition	Fe	Cu	Pb	More
Min.	-	57	-	Zn: Balance
Max.	0.3	60	0.5	

The sum of Cu and the listed elements is 99.8%.

Iron content in non-magnetic brass $\leq 0.03\%$

Physical Properties of H59 Brass

Density: $8.5\text{g}/\text{cm}^3$

Melting range: $880\text{--}900\text{ }^\circ\text{C}$ (solidus to liquidus interval)

Specific heat capacity: $0.385\text{ kJ}/(\text{kg}\cdot^\circ\text{C})$

Thermal conductivity: Approximately $120\text{ W}/(\text{m}\cdot\text{K})$

Coefficient of linear expansion ($20\text{--}200^\circ\text{C}$): Approximately $20.6 \times 10^{-6}/^\circ\text{C}$

Resistivity (20°C): Approximately $0.062\text{ }\mu\Omega\cdot\text{m}$

Electrical conductivity: Approximately 27.5% IACS

Elastic modulus: Approximately 105 GPa

Magnetic properties: Non-magnetic