

LEAD AND TIN BRASS ALLOYS

Flat, Shaped and Round Wire

Applications

Leaded Brass:

Clock and watch components, Meter components, Lock components, Key blanks, Gears

Tin Brass:

Electrical switch springs, Fuse clips, Pen clips, Electrical connectors, Electrical Terminals

Description

Leaded Brasses:

Used for their high machinability and atmospheric corrosion resistance. The machinability of brass is increased by the addition of lead because it acts as a microscopic chip breaker and tool lubricant. The leaded brasses are used for copper base screw machine material. The alloys have excellent machinability, good strength and corrosion resistance. Lead can be added to any brass to increase machinability and provide pressure tightness by sealing the shrinkage pores. There are low, medium and high leaded brasses, with lead contents up to 3.5%. The lead brasses are used for architectural hardware, general purpose screw machine parts, screws, valves, fittings, bearings and specialty fasteners.

Tin Brass:

Used for its increased corrosion resistance and somewhat higher strength than straight brass. This family of alloys is made with zinc contents ranging from 2 to 40% zinc, and 0.2 to 3.0% tin. Tin reduces susceptibility of the high zinc brass to dezincification. Dezincification is the selective leaching of zinc from the brass leaving a porous copper structure.

Chemistry Typical

UNS #	COPPER	TIN	LEAD	IRON	ZINC	PHOSPHORUS
Leaded Brass						
C35000	60.0-63.0	---	0.8-2.0	0.15 max	Balance	---
C35300	60.0-63.0	---	1.5-2.5	0.15 max	Balance	---

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LEAD AND TIN BRASS ALLOYS

UNS #	COPPER	TIN	LEAD	IRON	ZINC	PHOSPHORUS
Tin Brass						
C42200	86.0-89.0	0.8-1.4	0.05 max	0.05 max	Balance	0.35 max
C42500	87.0-90.0	1.5-3.0	0.05 max	0.05 max	Balance	0.35 max

- * Contact Ulbrich Wire for request regarding the availability of other copper alloys.
- * Contact Ulbrich Technical Department for limits for additional trace elements and impurity levels.
- * Copper plus sum of named elements 99.6% min.
- * Copper 61.0% min. for rod.
- * Copper plus named elements 99.5% min.
- * For flat products, iron 0.10% max.
- * Copper plus named elements 99.7% min.

Physical Properties

Typical Density:

Leaded Brass: 0.306 lb/in³, 8.47 g/cm³

Tin Brass: 0.317 lb/in³, 8.78 g/cm³

Electrical Conductivity: (% IACS at 68°F 20°C, annealed):

Leaded Brass: 26%

Tin Brass: 28-31%

Thermal Conductivity: BTU-in/hr-ft²-°F

At 68°F: 67 - 75

Mean Coefficient of Thermal Expansion: μ in/in-°F

68 - 572 °F: 10.2 - 11.3

Modulus of Elasticity: KSI

15 - 16 x 10³ in tension

Forms

Profile, Round, Flat, Square

Mechanical Properties at Room Temperature

Properties: Annealed Typical

Leaded Brass

Ultimate Tensile Strength: 46 KSI min (317 MPa min)

Yield Strength: 21 KSI min (144 MPa min)

Elongation: 50% min

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Tin Brass

Ultimate Tensile Strength: 41 KSI min (282 MPa min)

Yield Strength: 17 KSI min (117 MPa min)

Elongation: 45% min

Properties: Tempered

Lead and Tin Brass alloys can be cold worked to various tempers.

** Actual physical and mechanical properties are alloy dependent. Contact Ulbrich Technical Service for alloy specific properties.*

Additional Properties

Corrosion Resistance

Contact Ulbrich Wire for specific information.

Wire Finishes

XC - Extra clean. Annealed or annealed and cold rolled.

Contact Ulbrich Wire with special finish requests.

Heat Treatment

Lead and Tin Brass alloys are not hardenable by heat treatment.

Welding

Contact Ulbrich Wire for specific information.

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