



C94700 Tin Bronze Casting Material

Introduction

C94700 is a tin bronze sand-casting grade specified in ASTM B584. The standard specifies composition and applicable mechanical requirements for general applications. Casting process options include Sand Casting, subject to the applicable specification and component requirements.

Manufacturing Process

Sand Casting

Equivalent Grades

N/A

Reference Standards

Standard	Standard Title	Edition	Specification	Identifier
ASTM B584	Standard Specification for Copper Alloy Sand Castings for General Applications	14	C94700	UNS C94700, source_designation nickel-tin bronze Grade A

Physical Properties

N/A

Chemical Composition

Element	ASTM B584 Edition 14 · wt.%
Cu	85.0–90.0
Zn	1.0–2.5
Sn	4.5–6.0
Pb	≤ 0.09 ^[1]
Fe	≤ 0.25
Al	≤ 0.005
Mn	≤ 0.20
Si	≤ 0.005
P	≤ 0.05
Sb	≤ 0.15
S	≤ 0.05



Notes

ASTM B584 · Edition 14

^[1] Pb: It is possible that mechanical requirements of C94700 heat treated will not be obtained if lead exceeds 0.01 %. This warning is not a replacement Pb maximum.

Heat Treatment

ASTM B584-14 · HT

Step	Operation	Temperature / holding time	Cooling
1	: solution treatment	1425–1475 degF; Holding time: ≥ 2 h ^[1]	water quench
2	: precipitation hardening	580–620 degF; Holding time: 5 h ^[2]	—

Notes

ASTM B584 · Edition 14

^[1] HT: Suggested Heat Treatments;; actual practice may vary by manufacturer, 6.1; {"temperature_C_min": "775", "temperature_C_max": "800"}

^[2] HT: Suggested Heat Treatments;; actual practice may vary by manufacturer, 6.1; {"temperature_C_min": "305", "temperature_C_max": "325"}

Mechanical Properties

Conditions are not identical. Compare each stated condition and applicability separately.

Property	ASTM B584 Edition 14 HT ^[1]	ASTM B584 Edition 14 base ^[2]
Elongation	≥ 5 %	≥ 25 %
Tensile Strength	≥ 75 ksi / 517 MPa (reference) ^[3]	≥ 45 ksi / 310 MPa (reference) ^[4]
Yield Strength	≥ 50 ksi / 345 MPa (reference) ^[5]	≥ 20 ksi / 138 MPa (reference) ^[6]

Notes

ASTM B584 · Edition 14

^[1] All properties in this column; HT: separately cast test bar; 2 in. or 50 mm; 8.1

^[2] All properties in this column; base: separately cast test bar; 2 in. or 50 mm; 8.1

^[3] Tensile Strength; HT: inch-pound

^[4] Tensile Strength; base: inch-pound

^[5] Yield Strength; HT: inch-pound; 0.5% extension under load

^[6] Yield Strength; base: inch-pound; 0.5% extension under load

Welding Conditions

N/A



Applications

At the material-family level, typical applications include custom tin bronze sand-cast components for general industrial use. Selection for a particular application depends on the specified alloy and component requirements.

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CASTING QUALITY



Casting Quality Industrial

As a professional manufacturer in China, We Casting Quality focus on Metal Parts OEM industry, and provide solutions and services in Metal Casting field as following:

Sand Casting

Investment Casting, Lost Wax process

Shell Casting

Lost Form Casting

Permanent Mold Casting

CNC Machining

CAD Design

Tools/Mold Design

Material Supplied

Cast Iron Castings (Grey Iron, Malleable Iron, Ductile Iron)

Carbon Steel and Alloy Steel Castings

Stainless Steel and Duplex Stainless Steel Castings

Aluminum Castings

Bronze and Brass Castings

Titanium and Cobalt Alloy Castings

What We Can Do

Design Ability

Our engineers will help you to improve the designs based on casting technology, then The simulation software will be processed to verify the casting pouring system. Pro/E, Solidworks, AutoCAD and ProCast are available in Casting Quality Industrial.

Saving Cost

Some manufacture processes may lead high cost. We will analyses the designs and advise the suitable methods to our customers. The best solution will be adopted.

Quality Control

From the raw material selecting to bulk production processing, all procedures will follow PPAP program if necessary. The certificates will be provided including chemistry, hardness, mechanical property or NDT testing.

Production Capacity

The max iron/steel castings can reach 30tons in weight, meanwhile the minus casting is around 1gram only.

We also have prototyping and 3D scanning ability for sample plan.

Logistic Service

The products will be delivered directly to customer's workshop, which will save plenty of work for clients.

Contact with Us Immediately:

Mark Wang

Email: mark@castingquality.com

WhatsApp: +861396488078

Website: www.castingquality.com