



# AEROSPACE MATERIAL SPECIFICATION

**AMS4595™****REV. A**

Issued 2011-07  
Reaffirmed 2018-05  
Revised 2025-11

Superseding AMS4595

Copper-Nickel-Tin Alloy Plate,  
77Cu - 15Ni - 8Sn,  
Solution Annealed and Spinodal Hardened (TX02, formerly TX00)  
(Composition similar to UNS C72900)

## RATIONALE

AMS4595A results from a Five-Year Review and update of this specification with changes to correct the temper designation per ASTM B601 from TX00 to TX02 (see Title, 3.2, 3.3.2, and 8.7), prohibit unauthorized exceptions (see 3.4.3, 3.7, 4.4.1, 5.1.1, and 8.6), relocate Definitions (see 2.3), update Form (see 1.1), Applicable Documents (see Section 2), Composition (see 3.1), size range in Table 2, and Ordering Information (see 8.8), and allow use of the immediate prior revision of this specification (see 8.5).

## 1. SCOPE

### 1.1 Form

This specification covers a copper-nickel-tin alloy in the form of plate over 0.188 to 4.50 inches (4.77 to 114.3 mm) in nominal thickness (see 8.8).

### 1.2 Application

Plate products are for use in parts requiring high strength, wear resistance, and corrosion resistance at moderate temperatures, but usage is not limited to such applications.

## 2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

### 2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (U.S. and Canada only) or +1 724-776-4970 (outside U.S. and Canada), [www.sae.org](http://www.sae.org).

AMS2750 Pyrometry

AS7766 Terms Used in Aerospace Metals Specifications

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## 2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, [www.astm.org](http://www.astm.org).

|             |                                                                                                                                                                                               |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ASTM B248   | General Requirements for Wrought Copper and Copper-Alloy Plate, Sheet, Strip, and Rolled Bar                                                                                                  |
| ASTM B248M  | General Requirements for Wrought Copper and Copper-Alloy Plate, Sheet, Strip, and Rolled Bar (Metric)                                                                                         |
| ASTM B601   | Temper Designations for Copper and Copper Alloys - Wrought and Cast                                                                                                                           |
| ASTM B929   | Standard Specification for Copper-Nickel-Tin Spinodal Alloy Rod and Bar                                                                                                                       |
| ASTM E8/E8M | Tension Testing of Metallic Materials                                                                                                                                                         |
| ASTM E18    | Rockwell Hardness of Metallic Materials                                                                                                                                                       |
| ASTM E140   | Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness |
| ASTM E478   | Chemical Analysis of Copper Alloys                                                                                                                                                            |

## 2.3 Definitions

Terms used in AMS are defined in AS7766.

2.3.1 Copper temper designations are defined in ASTM B601.

## 3. TECHNICAL REQUIREMENTS

### 3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined in accordance with ASTM E478 or by other analytical methods acceptable to the purchaser (see 8.8).

**Table 1 - Composition**

| Element (see 3.1.1)                           | Min       | Max  |
|-----------------------------------------------|-----------|------|
| Nickel (+ Cobalt)                             | 14.5      | 15.5 |
| Tin                                           | 7.5       | 8.5  |
| Iron                                          | --        | 0.50 |
| Zinc                                          | --        | 0.50 |
| Manganese                                     | --        | 0.30 |
| Columbium (Niobium)                           | --        | 0.10 |
| Magnesium                                     | --        | 0.15 |
| Lead                                          | --        | 0.02 |
| Copper (see 3.1.2)                            | remainder |      |
| Copper + sum of<br>Named Elements (see 3.1.3) | 99.5      |      |

3.1.1 These composition limits do not preclude the presence of other elements. Limits may be established and analysis required for unnamed elements by agreement between the manufacturer or supplier and purchaser.

3.1.2 Copper may be reported as "remainder," or as the difference between the sum of results for all elements and 100%, or as the result of direct analysis.