AEROSPACE MATERIAL SPECIFICATION

AMS2772™	REV. H
Issued 1997-01 Revised 2023-03 Superseding AMS2772G	

Heat Treatment of Aluminum Alloy Raw Materials

RATIONALE

AMS2772H results from a Five-Year Review and update of this specification with changes to update and clarify purpose (1.1), definitions (2.2), equipment qualification (3.1, 3.1.3), pyrometry (3.2, 3.2.1.2, 3.2.1.3, 3.2.1.4, 3.2.1.4.1), heating media for solution heat treatment (3.3.2), cleanliness (3.4.1), racking and spacing (3.4.2.2, 3.4.2.2.1, 3.4.2.2.2), temperatures (3.5.1.1), solution heat treatment (3.6.1), soaking (3.6.2.3, 3.6.2.4), quenching (3.6.3, 3.6.3.2, 3.6.3.3, 3.6.3.5.1. 3.6.3.7), temper conversion (3.8.1.2), procedure for response-to-heat-treatment tests (3.9), processing to -O1 temper (3.11), procedure for electrical conductivity testing (4.3.2.6), and acceptance criteria (4.3.2.7).

1. SCOPE

1.1 Purpose

This specification covers requirements and recommendations for the heat treatment of wrought aluminum alloy raw materials (see 2.2.1) by producers. It supersedes AMS-H-6088 and replaces MIL-H-6088.

1.1.1 Tempers

Aluminum alloy tempers are described in ANSI H35.1.

1.1.2 Other Alloys

This specification may be used for alloys other than those specified herein providing temperatures, times, and quenchant are specified.

1.1.2.1 For those material specifications that specify proprietary heat treat and/or aging practices, all other requirements of AMS2772 apply.

1.1.3 Other Heat Treatment

1.1.3.1 Parts (see 2.2.2)

Are made from wrought raw material but are not being heat treated by or for the original raw material producer. These shall be heat treated in accordance with AMS2770.

1.1.3.2 Castings and Parts Made from Castings

Are not covered by this specification; heat treatment of aluminum castings and parts made from such castings is covered by AMS2771.

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For more information on this standard, visit
https://www.sae.org/standards/content/AMS2772H/

1.1.3.3 Temper Conversion

Warehouses, distributors, etc., shall be in conformance with 3.8 and AS6279 when required by the raw material specification.

1.1.3.4 Procedure for Response-to-Heat-Treatment Tests

Shall be in accordance with 3.9.

2. REFERENCES

2.1 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.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2750	Pyrometry
AMS2770	Heat Treatment of Wrought Aluminum Alloy Parts
AMS2771	Heat Treatment of Aluminum Alloy Castings
AMS-H-6088	Heat Treatment of Aluminum Alloys
ARP1962	Training and Approval of Heat-Treating Personnel
ARP7500	Minimization of High Temperature Oxidation, Aluminum Alloy Heat Treatment
AS6279	Standard Practice for Production, Distribution, and Procurement of Metal Stock
AS7766	Terms Used in Aerospace Metals Specifications

2.1.2 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.

ASTM B557	Tension Testing Wrought and Cast Aluminum- and Magnesium-Alloy Products
ASTM B557M	Tension Testing Wrought and Cast Aluminum- and Magnesium-Alloy Products (Metric)
ASTM B666/B666M	Identification Marking of Aluminum and Magnesium Products
ASTM G110	Evaluating Intergranular Corrosion Resistance of Heat Treatable Aluminum Alloys by Immersion in Sodium Chloride + Hydrogen Peroxide Solution
ASTM STP15D	Manual on Presentation of Data and Control Chart Analysis

2.1.3 U.S. Government Publications

Copies of these documents are available online at https://quicksearch.dla.mil.

MIL-H-6088 Heat Treatment of Aluminum Alloys

MIL-STD-1537 Electrical Conductivity Test for Verification of Heat Treatment of Aluminum Alloys, Eddy Current Method

2.1.4 ANSI Accredited Publications

Copies of these documents are available online at https://webstore.ansi.org/.

ANSI H35.1 American National Standard Alloy and Temper Designation Systems for Aluminum

2.1.5 MMPDS Publications

Available from MMPDS, Tel 614-424-6557, www.mmpds.org, bcommpds@battelle.org.

MMPDS Metallic Materials Properties Development and Standardization (MMPDS)

2.2 Definitions

Terms used in AMS2772 are defined in AS7766 and as follows:

2.2.1 RAW MATERIAL (e.g., Sheet, Plate, Wire, Rod and Bar, Tubing, Forging, Extrusion)

Usually is identified by a heat or lot number and is usually tested destructively for acceptance. It is heat treated, by or for a material producer, in accordance with a material specification which may require, by reference, conformance to a heat treating specification.

2.2.2 PARTS

Usually are identified by a part number and are produced from raw material in accordance with requirements of a drawing and are usually tested by nondestructive techniques only. They are heat treated by or for a fabricator, in accordance with a drawing, purchase order, fabrication order, or heat treatment specification. At the time of heat treatment, they may resemble raw material.

2.2.3 THICKNESS

For forgings and extrusions, thickness is the minimum dimension of the heaviest section.

2.2.4 MANDATORY AND NON-MANDATORY PROVISIONS

The word “shall” identifies mandatory provisions; “should,” “may,” and “recommended” identify non-mandatory provisions.

2.2.5 PRODUCT FORMS

“Forging” includes die and hand forgings and rolled or forged rings. “Extrusion” includes wire, rod, bar, profiles (shapes), and tube. When “wire,” “bar,” and “rod” are specified, they refer to cold finished or rolled products.

2.2.6 HEAVY LOAD

A load is heavy if the volume of the metal in the load is more than 10% of the volume of the qualified work (soaking) zones.

2.2.7 LIGHT LOAD

A load is light if the volume of the metal in the load is less than 10% of the volume of the qualified work (soaking) zones.