



AEROSPACE MATERIAL SPECIFICATION

AMS2490™

Issued

2022-02

Anodic Treatment of Aluminum Alloys
Sulfuric Acid Process
Thin Film

RATIONALE

AMS2490 is for use as a non-hexavalent chromium alternative to the AMS2470 and MIL-PRF-8625 TY I, TYIB anodize coatings.

NOTICE

ORDERING INFORMATION: The following information shall be provided to the processor by the purchaser.

1. Purchase order shall specify not less than the following:

- AMS2490
- Part number and quantity of pieces to be anodized
- Specified coating type (1.3.1) and seal classification (1.3.2)
- Basis metal to be anodized, and metal temper, and/or basis metal material specification, to be anodized
- Optional: Fixture electrical contact locations, when not specified (3.2.3)
- Optional: Alternative coating weight requirement (3.4.1)
- Special features, geometry, or processing present on parts that requires special attention by the processor

2. Parts manufacturing operations such as heat treating, forming, joining, and media finishing can, performed prior to anodize can affect the condition of the substrate and if performed after anodizing, adversely affect the finished coating and the part. The sequencing of these types of operations should be specified by the cognizant engineering organization or purchaser and is not controlled by this specification.

1. SCOPE

1.1 Purpose

This specification establishes the requirements for undyed thin anodic coatings on aluminum alloys using chemical solutions containing sulfuric acid.

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Full document details: SAE AMS2490

For more information on this standard, visit
<https://www.sae.org/standards/content/AMS2490/>

Documents

Document Sharing Hub

1.2 Application

This process has been used typically as a substitute for AMS2470 chromic acid anodize, reduced fatigue strength losses when compared to AMS2471 thicker coatings, to increase corrosion resistance and to provide surfaces that will promote adherence of paint and other organic finishes, but usage is not limited to such applications. The cognizant engineering organization shall undertake appropriate fatigue assessment prior to substituting AMS2470 with a thin film sulfuric anodize coating type (see 1.3.1).

1.3 Classification of Anodize Type and Seal Solution

1.3.1 Types of Coating

Thin film sulfuric anodize coatings shall be one of the following types (see ordering information):

Type IC - Boric-sulfuric anodize process

Type ID - Tartaric-sulfuric anodize process

Type IIB - Thin sulfuric anodize process

1.3.1.1 When no type is specified, any type may be supplied.

1.3.2 Classification of Seals (see Ordering Information)

Class 1 - Sodium or potassium dichromate seal.

Class 2A - Dilute, chromic acid seal

Class 2B - Dilute, sodium or potassium dichromate seal

Class 3 - Nickel or cobalt acetate seal.

Class 4 - Trivalent chromium seal

Class 5 - Other (seal composition and processing must be specified)

Class 6 - Unsealed

1.3.2.1 When no classification is specified, any seal type may be supplied, except Class 5 and Class 6.

1.4 Safety - Hazardous Materials

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

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 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2470	Anodic Treatment of Aluminum Alloys, Chromic Acid Process
AMS2471	Anodic Treatment of Aluminum Alloys, Sulfuric Acid Process, Undyed Coatings
AMS2472	Anodic Treatment of Aluminum Alloys, Sulfuric Acid Process, Dyed Coatings
AMS2473	Chemical Film Treatment for Aluminum Alloys, General Purpose Coating
AMS4037	Aluminum Alloy, Sheet and Plate, 4.4Cu - 1.5Mg - 0.60Mn (2024; -T3 Flat Sheet, -T351 Plate), Solution Heat Treated
AMS-STD-595	Colors Used in Government Procurement
ARP4992	Periodic Test for Processing Solutions
AS7766	Terms Used in Aerospace Metals Specifications

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

ASTM B117	Operating Salt Spray (Fog) Apparatus
ASTM B137	Measurement of Coating Mass per Unit Area on Anodically Coated Aluminum

2.3 U.S. Government

Copies of these specifications are available online at <https://quicksearch.dla.mil>.

MIL-PRF-8625	Anodic Coatings for Aluminum and Aluminum Alloy
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2.4 Definitions

Terms used in AMS are clarified in AS7766 and as follows.

2.4.1 PIT

A pit is defined as an area of localized corrosion having a depth greater than its width. Pit size may be determined by either direct dimensional measurement or by comparison to known references. A superficial pit or discontinuity in the anodize surface itself, not penetrating through to the base metal and not showing the presence of white corrosion products is not rejectable. As a general rule, a pit usually displays a characteristic tail or line of white aluminum corrosion products.

3. TECHNICAL REQUIREMENTS

3.1 Solution Types

3.1.1 Anodize solution electrolyte (see 8.2.13), of suitable concentration, shall be:

3.1.1.1 For Type IC anodic coating, an aqueous solution mixture of sulfuric and boric acid.

3.1.1.2 For Type ID anodic coating, an aqueous solution mixture of sulfuric and tartaric acid.

3.1.1.3 For Type IIB anodic coating, an aqueous solution of sulfuric acid.