



AEROSPACE MATERIAL SPECIFICATION

AMS03™-25**REV. A**Issued 2015-05
Stabilized 2017-10

Superseding AMS03-25

Sulfuric Acid Anodizing of Aluminum and Aluminum Alloys

RATIONALE

AMS03-25A stabilizes this document because this document contains mature technology that is not expected to change and thus no further revisions are anticipated.

STABILIZED NOTICE

AMS03-25A has been declared "STABILIZED" by the SAE AMS B Finishes Processes and Fluids Committee. This document will no longer be updated and may no longer represent standard industry practice. Users of this document should refer any certification issues (e.g., exceptions listed on the certification report) to the cognizant engineering organization for their disposition.

NOTE: In many cases the purchaser may be a sub tier supplier and not the cognizant engineering organization.

AMS Committee B recommends that the following similar (e.g., properties, fit, form, function) specifications be considered for future procurement. This listing does not constitute authority to substitute these specifications for the "STABILIZED" specification.

- AMS2471 Anodic Treatment of Aluminum Alloys Sulfuric Acid Process, Undyed Coating
- AMS2472 Anodic Treatment of Aluminum Alloys, Sulfuric Acid Process, Dyed Coating
- AMS2514 Anodic Coating on Aluminum Alloys Sulfuric Acid Process, Resin-Sealed

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2017 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
<http://www.sae.org>

SAE WEB ADDRESS:

Full document details: [SAE AMS03_25A](#)

SAE values your input. To provide feedback on this Technical Report, please visit http://standards.sae.org/AMS03_25A

Documents
Document Sharing Hub

LICENSING AGREEMENT

Ministry of Defence. © Crown Copyright 2015. Reproduced under the terms of the Open Government License.

FOREWORD

REVISION NOTE

This Defence Standard was raised to Issue 5 to update its content and incorporate the latest MoD/DStan policy in place at the time.

HISTORICAL RECORD

This standard supersedes the following:

Def 151 dated March 1965

Def Stan 03-25 Issue 1 dated 6 September 1984

Def Stan 03-25 Issue 2 dated 14 September 1988

Def Stan 03-25 Issue 3 dated 22 August 1997

Def Stan 03-25 Issue 4 dated 16 December 2003

INTRODUCTION

This SAE Standard specifies the properties of sulphuric acid anodizing of aluminum and aluminum alloys.

Sulphuric acid in mist form is considered a carcinogenic (see Health Protection Agency Guidance on the use of Sulphuric Acid) and care must be exercised where mist sprays are produced during processing. The latest Health and Safety Executive guidance recommends the use of "pumped flow eductor systems" to help minimize the effects of mist sprays.

TABLE OF CONTENTS

1.	SCOPE	4
2.	WARNING	4
3.	NORMATIVE REFERENCES	4
4.	DEFINITIONS	5
5.	INFORMATION TO BE SUPPLIED TO THE PROCESSOR	5
6.	PROCESS CONTROL	6
7.	APPLICATIONS AND LIMITATIONS	6
7.1	Applications	6
7.2	Compatibility with Explosives, Propellants, and Pyrotechnics	6
7.3	Limitations	6
8.	PROCESS REQUIREMENTS	7
8.1	Surface Preparation	7
8.2	Anodizing	7
8.2.1	Process	7
8.2.2	Coating Thickness	7
8.3	Washing	7
8.4	Dyeing	7
8.5	Sealing	7
8.6	Drying	8
8.7	Re-Anodizing	9
9.	INSPECTION AND TEST	9
9.1	Processing	9
9.2	Frequency of Testing	9
9.3	Appearance	9
9.4	Thickness of Coating	9
9.5	Dyed Coatings	9
9.5.1	Resistance to Leaching	9
9.5.2	Fastness to Light	9
9.6	Sealing Assessment	10
9.7	Electrical Insulation	10
9.8	Abrasion resistance	10
9.9	Reflectivity	10
9.10	Corrosion Test	10
10.	NOTES	10
ANNEX A	SULFURIC ACID ANODIZING PROCESS FOR ALUMINIUM AND ALUMINIUM ALLOYS	11
ANNEX B	ANALYSIS OF SULFURIC ACID ELECTROLYTE	12
ANNEX C	STRIPPING SOLUTIONS FOR THE REMOVAL OF ANODIC COATINGS	14
Table 1	Sealing solutions	8

1. SCOPE

This SAE Standard specifies the properties of sulphuric acid anodizing of aluminum and aluminum alloys.

2. WARNING

This section which appeared in DEF STAN 03-25 Issue 5 has been deliberately deleted.

3. NORMATIVE REFERENCES

3.1 The publications shown below are referred to in the text of this standard. Publications are grouped and listed in alpha-numeric order.

BS EN ISO 3696	Water for Analytical Laboratory Use: Specification and Test Methods
BS EN ISO 2360	Non-Conductive Coatings on Non-magnetic Basis Metals. Measurement of Coating Thickness. Amplitude Sensitive Eddy Current Method.
BS EN ISO 9227	Corrosion Tests in Artificial Atmospheres. Salt Spray Tests.
BS EN 12373-2	Aluminium and Aluminium Alloys. Anodizing. Determination of Mass Per Unit Area (Surface Density) of Anodic Oxidation Coatings. Gravimetric Method.
BS EN 12373-5	Aluminium and Aluminium Alloys. Anodizing. Assessment of Quality of Sealed Anodic Oxidation Coatings by Measurement of Admittance.
BS EN 12373-8	Aluminium and Aluminium Alloys. Anodizing. Determination of the Comparative Fastness to Ultra-Violet Light and Heat of Coloured Anodic Oxidation Coatings.
BS EN 12373-9	Aluminium and Aluminium Alloys. Anodizing. Measurement of Wear Resistance and Wear Index of Anodic Oxidation Coatings Using an Abrasive Wheel Wear Test Apparatus
BS EN 12373-10	Aluminium and Aluminium Alloys. Anodizing. Measurement of Mean Specific Abrasion Resistance of Anodic Oxidation Coatings Using an Abrasive Jet Test Apparatus
BS EN 12373-17	Aluminium and Aluminium Alloys. Anodizing. Determination of Electrical Breakdown Potential.
BS 6161 Part 18	Methods of Test for Anodic Oxidation Coatings on Aluminium and Its Alloys. Determination of Surface Abrasion Resistance
Def Stan 03-2	Cleaning and Preparation of Metal Surfaces
AMS03-2	Cleaning and Preparation of Metal Surfaces
Def Stan 03-21	Mechanical Methods for the Inducement of Compressive Surface Residual Stresses
Def Stan 03-24	Chromic Acid Anodizing of Aluminium and Aluminium Alloys
Def Stan 07-85 Pt 2	Design Requirements for Weapons and Associated Equipment. Supplementary and Design Process Requirements