



AEROSPACE STANDARD

AS8491™

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Application of AMS3144 Anodic Electrodeposition Primer

RATIONALE

New standard to explain the requirements for application of AMS3144 primer.

1. SCOPE

1.1 Purpose

This standard establishes the recommended requirements for application of AMS3144 anodic electrodeposition primer to aerospace components. Adherence to these requirements will help facilitate satisfactory performance of the applied primer.

1.2 Application

The AMS3144 anodic electrodeposition primer described in this process standard is a 200 to 210 °F (93 to 99 °C) cure system applicable to aluminum alloy aircraft parts and assemblies to provide a consistent finish coating and in-service corrosion protection. It is safe to use on heat-treated aluminum alloy substrates.

The specified process is not intended for steel or titanium parts, with the exception of overcoating steel and titanium fasteners in aluminum alloy parts and assemblies. Additional alloys/substrates may be coated if validated and approved by the relevant program office.

1.3 Safety

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 that 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. REFERENCES

2.1 Applicable Documents

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

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Full document details: SAE AS8491

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Documents

Standard, visit Sharing Hub

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

AMS3144 Primer, Anodic Electrodeposition for Aircraft Applications

AMS3819 Cloths, Cleaning, For Aircraft Primary and Secondary Structural Surfaces

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 D329 Standard Specification for Acetone

ASTM D740 Standard Specification for Methyl Ethyl Ketone

ASTM D770 Standard Specification for Isopropyl Alcohol

ASTM D5402 Standard Practice for Assessing the Solvent Resistance of Organic Coatings Using Solvent Rubs

ASTM D7091 Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals

2.1.3 U.S. Government Publications

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

TT-I-735 Isopropyl Alcohol

2.1.4 ISO Publications

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

ISO 8573-1 Compressed air - Part 1: Contaminants and purity classes

2.1.5 PRI Publications

Available from Performance Review Institute, 161 Thorn Hill Road, Warrendale, PA 15086-7527, Tel: 724-772-1616, www.p-r-i.org.

PRI QPL-AMS3144 Products Qualified Under AMS3144

2.2 Definitions

The following definitions apply to terms that are uncommon or have special meaning as used in this standard:

2.2.1 ECOAT

A process whereby the primer coating is applied to a conductive substrate via electrical current. It is also commonly referred to as electrocoat, electrodeposition, or anaphoretic (in the case of anodic technology).

2.2.2 PERMEATE

Clear fluid extracted from the Ecoat bath by the ultrafilter. Used in the rinsing system and to remove ionic contaminants and by-products.

2.2.3 TEMPERATURE DATA RECORDER (DATA LOGGER)

An instrument used to characterize the time required for the entire coated component to reach the necessary cure temperature. The data logger should have four to six channels with one thermocouple assigned to each channel so that multiple temperature measurements can be made across the surface of the component. The instrument should come with a software package for operation and management of recorded data.

2.2.4 ULTRAFILTER

A semipermeable membrane used to separate Ecoat bath solids from water, ionic constituents, and small molecule, hydrophilic solvents.

2.2.5 WITNESS COUPON

A 4 inch x 6 inch (10.16 cm x 15.24 cm), or similar sized, flat panel coupon that is fabricated from the same or similar alloy to parts being coated, with a thickness corresponding to the thickest part being processed on a rack. A witness coupon shall be attached to each rack and should be used to check film thickness and cure.

3. REQUIREMENTS

3.1 Materials

The following materials are used in the Ecoat process:

3.1.1 Primers

Primers qualified to AMS3144 and listed on PRI QPL-AMS3144 shall be used in the electrodeposition process. The primer components are used to establish the bath for primer makeup. PRI QPL-AMS3144 is the approved qualified product list (QPL) managed by the Performance Review Institute (PRI). The primer components should be stored in accordance with the manufacturer's recommendations.

3.1.2 Substrates

This technology is applicable for substrates that are fabricated from a material that is conductive and does not mechanically degrade when exposed to temperatures in the 200 to 210 °F (93 to 99 °C) range.

3.1.3 Masking Materials

Masking materials, such as vinyl tapes/discs, silicone plugs, and/or caps, should be used to prevent certain areas of a component from being coated. The masking materials should be able to withstand temperatures between 200 to 210 °F (93 to 99 °C) if they are not removed prior to the curing cycle.

Masking materials must be compatible with the primer bath. Consult with the primer manufacturer for recommendations on approved masking materials and/or material alternatives.

3.1.4 Solvents

A solvent such as ASTM D329 acetone or TT-I-735 or ASTM D770 isopropyl alcohol applied to a cleaning cloth should be used to clean the substrate surface before pretreatment operations.

ASTM D740 methyl ethyl ketone (MEK) or ASTM D329 acetone is used for the wipe test to determine extent of cure.