



AEROSPACE STANDARD

AS8485™

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Electrostatic Spray Application of AMS3143 Powder Coating Materials

RATIONALE

There is a need for companion standard for detailing equipment and process requirements for AMS3143 powder coatings.

1. SCOPE

1.1 Purpose

This standard provides the recommended requirements for electrostatic spray application of AMS3143 powder coatings to aerospace components. Adherence to these requirements will facilitate satisfactory performance of the applied powder coating.

1.2 Application

The requirements covered by this standard are applicable to AMS3143 powder coating usage on metallic or electrically conductive substrates without a liquid primer. The requirements may also be useful for powder coatings that meet the performance requirements of other material specifications.

1.3 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 with 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 AS8485

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Documents

Standard 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.

AMS3143	Powder Coating Material
AMS3721	Tape for Organic Coatings Adhesion Testing
AMS3819	Cloths, Cleaning, For Aircraft Primary and Secondary Structural Surfaces
AMS-STD-595	Colors Used in Government Procurement

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 D523	Standard Test Method for Specular Gloss
ASTM D740	Standard Specification for Methyl Ethyl Ketone
ASTM D2244	Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
ASTM D3359	Standard Test Methods for Rating Adhesion by Tape Test
ASTM D5402	Standard Practice for Assessing the Solvent Resistance of Organic Coatings Using Solvent Rubs
ASTM D7378	Standard Practice for Measurement of Thickness of Applied Coating Powders to Predict Cured Thickness
ASTM E308	Standard Practice for Computing the Colors of Objects by Using the CIE System
ASTM E376	Standard Practice for Measuring Coating Thickness by Magnetic-Field or Eddy Current (Electromagnetic) Testing Methods

2.1.3 PRI Publications

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

PRI-QPL-AMS3143 Products Qualified Under AMS3143

2.1.4 U.S. Government Publications

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

MIL-STD-1504	Abrasive Blasting
TT-C-490	Chemical Conversion Coatings and Pretreatments for Metallic Substrates (Base for Organic Coatings)
TT-I-735	Isopropyl Alcohol

2.1.5 Other Publications

NACE No. 2/SSPC-SP 10 Near-White Metal Blast Cleaning

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 U.S. Government Publications

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

MIL-DTL-85891 Engineered Media for Removal of Organic Coatings

2.3 Definitions

2.3.1 BLOOM

Visual defect that occurs during the powder coating curing process. This defect is most commonly observed as a white haze on the surface of the coating.

2.3.2 COGNIZANT ENGINEERING AUTHORITY

The cognizant engineering authority has the responsibility for the design of the item to which powder coating material is being applied.

2.3.3 ELECTROSTATIC SPRAY APPLICATION

Common method of powder coating application which consists of sending a fluidized mixture of powder and air through an electric field produced by an electrode. The powder particles become negatively charged in the electric field, which are then attracted to grounded components.

2.3.4 FARADAY CAGE EFFECT

A phenomenon where negatively charged powder particles are unable to reach recessed areas or tight corners because of a stronger attraction to grounded surfaces that are more accessible.

2.3.5 GEL TIME

The amount of time required for the powder coating to stiffen due to resin polymerization. The gel time is between the start of polymerization and full cure. This time is used to melt and partially cure powder primer coatings such as zinc-rich epoxy primers before topcoat application in order to ensure intercoat adhesion.

2.3.6 MIL

A unit of measurement commonly used for coating thickness that is equivalent to a thousandth of an inch (0.001 inch).

2.3.7 POWDER COATING

A homogenous powder mixture of resin, curing agent, catalyst, fillers, and flow control agents that can be applied to conductive substrates. Powder coatings are exposed to elevated temperatures after application so that they melt, resulting in a continuous and durable film. Powder coatings with thermoset resin systems require additional heat exposure so that the resin chains crosslink into a continuous network which provides additional strength. Powder coatings based on thermoplastic resins can be removed from elevated temperatures once the material has completed the flow step because no crosslinking is required.