



AEROSPACE MATERIAL

Society of Automotive Engineers, Inc.
TWO PENNSYLVANIA PLAZA, NEW YORK, N. Y. 10001

SPECIFICATION

AMS 2506

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Revised

COATING OF FASTENERS Aluminum Filled, Ceramic Bonded Coating

1. SCOPE:

- 1.1 Process: This specification covers the procedure for application to fasteners of a corrosion and heat resistant aluminum coating material having a thermosetting inorganic binder and the properties of the finished coating.
- 1.2 Application: Primarily to provide an anodic coating on fasteners to provide corrosion and oxidation resistance up to 1000 F (538 C)

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specification (AMS) shall apply; the applicable issue of other documents shall be as specified in AMS 2350.

- 2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., Two Pennsylvania Plaza, New York, New York 10001.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

AMS 3126 - Aluminum Coating, Corrosion and Heat Resistant,
Thermosetting Inorganic Binder

- 2.2 Government Publications: Available from Superintendent of Documents, Government Printing Office, Washington, D. C. 20402.

2.2.1 Military Standards:

MIL-STD-1312 - Fasteners, Test Methods

3. TECHNICAL REQUIREMENTS:

- 3.1 Material: The coating material shall conform to AMS 3126.

3.2 Preparation for Coating:

- 3.2.1 Parts shall be stress relieved prior to coating if they have been subjected to operation which may cause detrimental residual stresses. Temperatures to which the parts are heated and time at temperature shall be such that maximum stress relief is obtained without affecting properties of the material.
- 3.2.2 Any residual compressive stress-inducing operation such as shot peening, fillet rolling, and thread rolling shall follow stress relieving.
- 3.2.3 Before coating, parts shall have clean, roughened surfaces, prepared with minimum erosion, pitting, or unintended abrasion. Roughening of the surfaces may be accomplished by wet or dry grit blasting.

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3.3 Procedure:

- 3.3.1 The cleaned parts shall be coated with AMS 3126. Parts may be coated by any suitable technique capable of producing a uniform coating conforming to the requirements of this specification.
- 3.3.2 The coating on parts, and on specimens representing parts when used, shall be cured at such temperature and for such time as required to meet the requirements of 3.4 and 3.5 without reducing properties of parts below drawing or specification limits. Unless otherwise specified the curing temperature shall be within the range 350 - 700 F (176.7 - 371.1 C).

3.4 Properties:

- 3.4.1 Thickness: Unless otherwise specified, coating thickness shall be within the range of 0.0003 to 0.007 in. (0.008 to 0.018 mm). Thickness shall be determined on representative parts or on separate specimens representing parts and coated simultaneously with the parts. Determination of coating thickness shall be made by any method specified in Test No. 12 of MIL-STD-1312. For referee tests, the microscopic method shall be used. Distribution of coating shall be such that parts are within drawing tolerances after coating.
- 3.4.2 Heat Resistance: Coating on parts, or on specimens representing parts and processed through the complete cleaning and coating process, shall be capable of being heated in air at $1000\text{ F} \pm 25$ ($537.8\text{ C} \pm 14$) for 4 hr and cooled in air without evidence of blistering or cracking.
- 3.4.3 Adhesion: Coating shall be continuously bonded to the basis metal. Parts or specimens shall be capable of withstanding a scrape test so conducted as to indicate quality of the bond. Coating shall shear away from the basis metal without bond failure of the adjacent coating. This requirement applied to parts as coated, as well as after the heat resistance test of 3.4.2.
- 3.4.4 Corrosion Resistance:
- 3.4.4.1 Parts, or specimens processed with the parts, shall be capable of withstanding continuous exposure for 1000 hr to salt spray test in accordance with Test No. 1 of MIL-STD-1312 without evidence of corrosion of the basis metal.
- 3.4.4.2 Parts, or specimens processed with the parts, subjected to the heat resistance test of 3.4.2 shall be capable of withstanding continuous exposure for 200 hr to salt spray test as in 3.4.4.1 without evidence of corrosion of the basis metal.
- 3.5 Quality: The coating shall be smooth, continuous, adherent, uniform in appearance, and free from pin holes, blisters, nodules, pits, and other harmful imperfections.

4. QUALITY ASSURANCE PROVISIONS:

- 4.1 Responsibility for Inspection: The vendor shall supply all samples and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.5. Purchaser reserves the right to perform such confirmatory testing as he deems necessary to assure that material conforms to the requirements of this specification.
- 4.2 Classification of Tests:
- 4.2.1 Routine Control Tests: Tests to determine conformance to thickness (3.4.1) and quality (3.5) are classified as routine control tests.
- 4.2.2 Periodic Control Tests: Tests to determine conformance to heat resistance (3.4.2), adhesion (3.4.3), and corrosion resistance (3.4.4) requirements are classified as qualification and/or periodic control tests.