



# AEROSPACE MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.  
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

## AMS 3682B

Superseding AMS 3682A

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### COATING MATERIAL, ELECTRICALLY CONDUCTIVE Silver - Organic Resin

#### 1. SCOPE:

1.1 Form: This specification covers a silver-filled epoxy resin in a suitable vehicle and a curing agent, supplied in kit form.

1.2 Application: Primarily to provide an electrically-conductive coating on either metals or non-metals for shielding purposes or as a precoat prior to electroplating.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (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., 400 Commonwealth Drive, Warrendale, PA 15096.

##### 2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM B117 - Salt Spray (Fog) Testing

ASTM D257 - D-C Resistance or Conductance of Insulating Materials

ASTM G21 - Determining Resistance of Synthetic Polymeric Materials to Fungi

2.3 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

##### 2.3.1 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

#### 3. TECHNICAL REQUIREMENTS:

3.1 Composition: The coating material shall consist of an epoxy resin in a suitable vehicle and shall be filled with silver. A curing agent shall be supplied as a separate package.

3.2 Shelf Life: The coating material shall meet the requirements of this specification at any time up to 6 months from date of manufacture when the vehicle and curing agent are stored in separate, unopened containers at temperatures not higher than 86°F (30°C).

SAE Technical Board rules provide that: "All technical reports, including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

3.3 Properties: The coating material shall have the following properties when mixed, applied, and cured at  $77^{\circ}\text{F} \pm 2$  ( $25^{\circ}\text{C} \pm 1$ ) for not more than 24 hr in accordance with manufacturer's instructions; panels for the salt spray resistance test shall be of a size and shape and be prepared as agreed upon by purchaser and vendor:

Ø 3.3.1	Surface Resistivity, max	0.005 ohm/sq	ASTM D527
Ø 3.3.2	Salt Spray Resistance, min	48 hr	ASTM B117
Ø 3.3.3	Fungus Resistance	Pass (Rating 1)	ASTM G21

3.3.4 Consistency: Shall be suitable for application by brushing or, after thinning if necessary, by spraying.

3.3.5 Appearance: The coating shall be smooth and free from sags, runs, bubbles, blisters, pits, and streaks.

3.3.6 Corrosion: The coating shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service. Discoloration of metal shall not be considered objectionable.

3.4 Quality: The coating material and the applied coating shall be uniform in quality and condition, clean, and free from foreign materials and from internal and external imperfections detrimental to fabrication, appearance, or performance of parts.

#### 4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the coating material 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 ensure that the coating material conforms to the requirements of this specification.

4.2 Classification of Tests: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and as qualification tests.

4.2.1 For direct U. S. Military procurement, substantiating test data and, when requested, qualification test material shall be submitted to the cognizant qualification agency as directed by the procuring activity, the contracting officer, or the request for procurement.

4.3 Sampling: Sufficient coating material shall be selected from each lot to perform each acceptance test on at least one specimen; a lot shall be all material produced in a single production run from the same batch of raw materials under the same fixed conditions and submitted for vendor's inspection at one time.

#### 4.4 Approval:

4.4.1 Sample material shall be approved by purchaser before material for production use is supplied, unless such approval be waived. Results of tests on production material shall be essentially equivalent to those on the approved sample.

4.4.2 Vendor shall use ingredients, manufacturing procedures, processes, and methods of inspection on production material which are essentially the same as those used on the approved sample material. If any change is necessary in ingredients, in type of equipment for processing, or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed changes in material and processing and, when requested, sample material. Production material made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Reports:

- 4.5.1 The vendor of coating material shall furnish with each shipment three copies of a report showing the results of tests to determine conformance to the technical requirements of this specification. This report shall include the purchase order number, material specification number and its revision letter, vendor's formula number, lot or batch number, and quantity.
- 4.5.2 The vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number and its revision letter, contractor or other direct supplier of material, supplier's material designation, part number, and quantity. When coating material for application to parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.
- 4.6 Resampling and Retesting: If any specimen used in the above tests fails to meet the specified requirements, disposition of the material may be based on the results of testing three additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the material represented and no additional testing shall be permitted. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Packaging and Identification:

- 5.1.1 Packaging shall be accomplished in such a manner as to ensure that the material, during shipment and storage, will be protected from exposure to weather or any normal hazard.
- 5.1.2 Each container shall be permanently and legibly marked to show the following information:
  - COATING MATERIAL, ELECTRICALLY CONDUCTIVE
  - AMS 3682B
  - LOT OR BATCH NUMBER \_\_\_\_\_
  - DATE OF MANUFACTURE \_\_\_\_\_
  - PURCHASE ORDER NUMBER \_\_\_\_\_
  - MANUFACTURER'S IDENTIFICATION \_\_\_\_\_
  - QUANTITY \_\_\_\_\_
  - MIXING, APPLICATION, AND CURING INSTRUCTIONS
- 5.1.3 Containers shall be prepared for shipment in accordance with commercial practice to ensure carrier acceptance and safe transportation to the point of delivery. Packaging shall conform to carrier rules and regulations applicable to the mode of transportation.
- 5.1.4 For direct U.S. Military procurement, packaging shall be in accordance with MIL-STD-794, Level A or Level C, as specified in the request for procurement. Commercial packaging as in 5.1.3 will be acceptable if it meets the requirements of Level C.

6. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS: Material not conforming to this specification or to authorized modifications will be subject to rejection.

8. NOTES: