SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS3372 REV. B

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Superseding AMS3372A

Silicone Resin, Elastomeric High Tear Strength Elevated Temperature Cure

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

STABILIZED NOTICE

This document has been declared "Stabilized" by SAE G-9, Aerospace Sealing Committee, and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

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1. SCOPE:

1.1 Form:

This specification covers a silicone resin in the form of a two-component liquid.

1.2 Application:

Primarily for encapsulation and conformal coating applications, where dielectric properties are important and an elevated temperature cure is desired.

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 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. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 Standards and Test Methods
AMS 2825 Material Safety Data Sheets

2.2 ASTM Publications:

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

ASTM D 150 A-C Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulating Materials
ASTM D 412 Rubber Properties in Tension
ASTM D 445 Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)
ASTM D 792 Specific Gravity and Density of Plastics by Displacement
ASTM D 2240 Rubber Property - Durometer Hardness

2.3 U.S. 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 Material:

Product shall consist of two parts, a liquid silicone resin and a separate catalyst which, when mixed in proper proportions, will cure at elevated temperature. The product shall be transparent.

3.2 Properties:

Product shall conform to the following requirements; tests shall be conducted in accordance with specified ASTM methods, insofar as practicable, at 25 °C ± 1 (77 °F ± 2):

3.2.1 Uncatalyzed Resin:

3.2.1.1 Viscosity: Shall be not higher than 150,000 centipoises, (150 Pa·s) determined on a Brookfield Viscometer, Type HAF with a No. 6 spindle at 5 revolutions per minute.

3.2.2 Uncatalyzed Resin and Catalyst:

3.2.2.1 Storage Life: Uncatalyzed resin and catalyst stored in closed containers at a temperature not exceeding 30 °C (86 °F), mixed in proper proportions at any time up to 6 months from date of shipment, shall meet the requirements of 3.2.3 and 3.2.4.

3.2.3 Catalyzed Resin: Shall have a pot life of not less than 2 hours, determined by the time necessary for the viscosity to double in centipoise value from zero-hour catalyzed viscosity. Viscosity shall be determined in accordance with ASTM D 445.

3.2.4 Catalyzed and Cured Resin: The product shall conform to the following requirements; test specimens shall be prepared by mixing and de-airing 100 parts by weight of the basis resin and 10 parts by weight of the catalyst, casting into appropriate shapes, and curing at 145 to 155 °C (293 to 311 °F) for not less than one hour.

TABLE 1

3.2.4.1	Hardness, Durometer A	25 - 45	ASTM D 2240
3.2.4.2	Specific Gravity	1.07 - 1.17	ASTM D 792, Method A
3.2.4.3	Dielectric Constant at 1 MHz and 100 MHz, maximum	3.20	ASTM D 150
3.2.4.4	Dissipation Factor at 1 MHz and 100 MHz, maximum	0.01	ASTM D 150
3.2.4.5	Elongation, minimum	350%	ASTM D 412
3.2.4.6	Tear Resistance, minimum	50 pounds force/inch (8755 N/m)	ASTM D 412, Die B
3.2.4.7	Tensile Strength, minimum	550 psi (3.79 MPa)	ASTM D 412

3.3 Quality:

Product, as received by purchaser, shall be uniform in quality and condition, homogeneous, and free from foreign materials and from imperfections detrimental to usage of the product.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of the product shall supply all samples for vendor's tests 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 sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to the following requirements are classified as acceptance tests and shall be performed on each lot:

TABLE 2

Requirement	Paragraph Reference
Uncatalyzed Resin	
Viscosity	3.2.1.1
Catalyzed Resin	
Pot Life	3.2.3
Catalyzed and Cured Resin	
Hardness	3.2.4.1
Specific Gravity	3.2.4.2
Dielectric Constant	3.2.4.3
Elongation	3.2.4.5
Tear Resistance	3.2.4.6

4.2.2 Preproduction Tests: Tests to determine conformance to all technical requirements of this specification are classified as preproduction tests and shall be performed prior to or on the initial shipment of resin to a purchaser, when a change in material, processing, or both requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

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

4.3 Sampling:

Shall be as follows:

4.3.1 For Acceptance Tests: Sufficient product shall be taken at random from each lot to perform all required tests. The number of determinations for each requirement shall be as specified in the applicable test procedure or, if not specified therein, not less than three, with the exception that tests for viscosity of the base resin and pot life of the mixed components shall require only one determination.

4.3.1.1 A lot shall be all product from the same batch of raw materials processed in one continuous run and presented for vendor's inspection at one time. An inspection lot shall not exceed 5000 pounds (2268 kg). A lot may be packaged in smaller quantities and delivered under the basic lot approval provided lot identification is maintained.

4.3.1.2 When a statistical sampling plan and acceptance quality level (AQL) have been agreed upon by purchaser and vendor, sampling shall be in accordance with such plan in lieu of sampling as in 4.3.1 and the report of 4.5.1 shall state that such plan was used.

4.3.2 For Preproduction Tests: As agreed upon by purchaser and vendor.

4.4 Approval:

4.4.1 Sample resin shall be approved by purchaser before resin for production use is supplied, unless such approval be waived by purchaser. Results of tests on production resin 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 resin which are essentially the same as those used on the approved sample resin. If necessary to make any change 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, processing, or both and, when requested, sample resin. Production resin made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Reports:

4.5.1 The vendor of the resin shall furnish with each shipment a report showing the results of tests to determine conformance to the acceptance test requirements and stating that the resin conforms to the other technical requirements of this specification. This report shall include the purchase order number, AMS 3372B, vendor's compound number, lot number, and quantity.

4.5.2 A material safety data sheet conforming to AMS 2825, or equivalent, shall be supplied to each purchaser prior to, or concurrent with, the report of preproduction test results or, if preproduction testing be waived by purchaser, concurrent with the first shipment of the resin for production use. Each request for modification of resin formulation shall be accompanied by a revised data sheet for the proposed formulation.