SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS3363 REV. E

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Superseding AMS3363D

Silicone Rubber Compound
Room Temperature Vulcanizing, 50,000 Centipoise Viscosity
Durometer 30 - 45

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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FOREWORD

This Reaffirm contains format/editorial changes only.

1. SCOPE:

1.1 Form:

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

1.2 Application:

Primarily for potting or encasement of electrical and electronic components with an elastomeric medium or for production of mechanical rubber parts in low-pressure tooling. Elastomeric properties are retained in operation from -55 to +230 °C (-67 to +446 °F). For mechanical applications, where compression set resistance is important, elevated temperature post-curing of parts may be required.

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 applicable issue of referenced publications shall be the issue in effect on the date of the purchase order.

2.1 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM D 149	Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies
ASTM D 395	Rubber Property - Compression Set
ASTM D 412	Rubber Properties in Tension
ASTM D 573	Rubber - Deterioration in an Air Oven
ASTM D 746	Brittleness Temperature of Plastics and Elastomers by Impact
ASTM D 2240	Rubber Property - Durometer Hardness

2.2 U.S. Government Publications:

Available from Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

2.2.1 Military Standards:

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

3. TECHNICAL REQUIREMENTS:

3.1 Material:

Compound shall be based on a polysiloxane polymer and shall be supplied with the applicable curing agent. The base compound shall polymerize (cure) at room temperature when mixed with the curing agent (catalyst) in accordance with manufacturer's recommendations (See 8.2).

3.2 Properties:

Compound, mixed with the recommended catalyst and cured, shall conform to the following requirements; tests shall be performed, insofar as practicable, on slabs 6 inches (152 mm) square by 0.075 inch ± 0.005 (1.90 mm ± 0.13) thick, with a curing temperature of 25 °C ± 2 (77 °F ± 4).

TABLE 1

3.2.1	As Received:		
3.2.1.1	Viscosity	35,000 - 70,000 cps (35 - 70 Pa·s)	4.5.1
3.2.1.2	Application Life	2 - 5 hours	4.5.2
3.2.2	As Cured:		
3.2.2.1	Hardness, Durometer "A" or equivalent	30 - 45	ASTM D 2240
3.2.2.2	Tensile Strength, minimum	100 psi (689 kPa)	ASTM D 412, Die B or C
3.2.2.3	Elongation, minimum	100%	ASTM D 412, Die B or C
3.2.2.4	Dielectric Strength, minimum	300 V per mil (11,800 V/mm)	ASTM D 149, Electrode Diameter 2 inches (51 mm) Rate of rise 500 V per second
3.2.2.5	Linear Shrinkage, maximum	1%	4.5.3
3.2.3	Dry Heat Resistance:		ASTM D 573 Temp: 225 °C ± 3 (437 °F ± 5) Time: 24 hours ± 0.5
3.2.3.1	Hardness Change, Durometer "A" or equivalent	-25 to +10	
3.2.3.2	Tensile Strength Change, maximum	-40%	
3.2.3.3	Elongation Change, maximum	-10%	
3.2.4	Compression Set:		ASTM D 395, Method B Temp: 100 °C ± 1 (212 °F ± 2) Time: 22 hours ± 0.5
3.2.4.1	% of Original Deflection, maximum	35	
3.2.5	Low-Temperature Brittleness:	Pass	ASTM D 746, Proc. B Temp: -55 °C ± 3 (-67 °F ± 5) Time: 10 minutes ± 1

3.2.6 Corrosion: The product shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service, determined by a procedure agreed upon by purchaser and vendor. Discoloration of metal shall not be considered objectionable.

3.3 Quality:

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

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of the compound shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the compound conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests for the following requirements are acceptance tests and shall be performed on each lot:

TABLE 2

Requirement	Paragraph Reference
Viscosity, as received	3.2.1.1
Application Life	3.2.1.2
Hardness, as cured	3.2.2.1
Tensile Strength, as cured	3.2.2.2
Elongation, as cured	3.2.2.3

4.2.2 Preproduction Tests: Tests for all technical requirements are preproduction tests and shall be performed prior to or on the initial shipment of compound to a purchaser, when a change in ingredients and/or processing 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 and Testing:

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.

4.3.1.1 A lot shall be all product from the same batch of compound processed in one continuous run and presented for vendor's inspection at one time. An inspection lot shall not exceed 500 pounds (227 kg) and 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 has 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 4.6 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 compound shall be approved by purchaser before compound for production use is supplied, unless such approval be waived by purchaser. Results of tests on production compound 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 compound which are essentially the same as those used on the approved sample compound. 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 ingredients and/or processing and, when requested, sample compound. Production compound made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Test Methods:

Shall be as specified in 3.2 and the following:

4.5.1 Viscosity: Shall be measured on the base compound with a Brookfield viscometer at 25 °C ± 1 (77 °F ± 2). Viscometer spindle and speed shall be consistent with the viscosity of the product being tested, in accordance with the instrument manufacturer's directions.

4.5.2 Application Life: Shall be determined on compound mixed with the recommended catalyst addition and maintained at not higher than 30 °C (86 °F). Weigh a 10 gram ± 0.10 sample of compound into a cup or dish 2 - 2.5 inches (51 - 63.5 mm) in diameter. Add the recommended type and amount of catalyst (See 8.2) and mix well with a small spatula for 60 seconds ± 10. Dip the spatula into the catalyzed compound and pull out strings of material. Repeat the pulling-out procedure at intervals until the strings break or pull back before stretching more than 1/8 inch (3.2 mm). Application life shall be recorded as the time interval between completion of the mixing cycle and the first breakage of strings pulled 1/8 inch (3.2 mm).