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400 Commonwealth Dr., Warrendale, PA 15096

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

AMS 3362B
Superseding AMS 3362A

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SILICONE RUBBER COMPOUND
Room Temperature Vulcanizing, 15,000 Centipoise Viscosity
Durometer 35 - 55

1. SCOPE:

1.1 Form: This specification covers a room temperature vulcanizing 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 (-65° to +445°F). For mechanical applications where compression set resistance is important, elevated temperature post-curing of parts may be required.

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

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

ASTM D149 - Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies
ASTM D395 - Rubber Property - Compression Set
ASTM D412 - Rubber Properties in Tension
ASTM D573 - Rubber - Deterioration in an Air Oven
ASTM D746 - Brittleness Temperature of Plastics and Elastomers by Impact
ASTM D2240 - 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: 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 x 6 in. (150 x 150 mm) and 0.075 in. + 0.005 (2.00 mm ± 0.12) thick, with a curing temperature of 25°C ± 2 (77°F ± 4).

3.2.1	As Received:		
3.2.1.1	Viscosity	5000 - 25,000 cps	4.5.1
3.2.2	As Cured:		
3.2.2.1	Application Life	2 - 6 hr	4.5.2
3.2.2.2	Hardness, Durometer "A" or equiv.	35 - 55	ASTM D2240
3.2.2.3	Tensile Strength, min	250 psi (1.72 MPa)	ASTM D412, Die B or C
3.2.2.4	Elongation, min	100%	ASTM D412, Die B or C

3.2.2.5 Dielectric Strength, min	300 v per mil (11,800 V/mm)	ASTM D149 Electrode Dia. 2 in. (50 mm) Rate of rise 500 v per sec
3.2.2.6 Linear Shrinkage, max	1%	4.5.3
3.2.3 Dry Heat Resistance:		ASTM D573 Temp: 225°C + 3 (435°F ∓ 5) Time: 24 hr ∓ 0.5
3.2.3.1 Hardness Change, Durometer "A" or equiv.	-10 to +10	
3.2.3.2 Tensile Strength Change, max	-25%	
3.2.3.3 Elongation Change, max	-25%	
3.2.4 Compression Set:		ASTM D395, Method B Temp: 100°C + 1 (212°F ∓ 2) Time: 22 hr ∓ 0.5
3.2.4.1 % of Original Deflection, max	60	
3.2.5 Low-Temperature Brittleness:	Pass	ASTM D746, Proc. B Temp: -55°C + 3 (-67°F ∓ 5) Time: 10 min. ± 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 and 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. Results of such tests shall be reported to the purchaser as required by 4.6. 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 to determine conformance to the following requirements are classified as acceptance tests and shall be performed on each lot:

Requirement	Paragraph Reference
Viscosity, as received	3.2.1.1
Application Life, as cured	3.2.2.1
Hardness, as cured	3.2.2.2
Tensile Strength, as cured	3.2.2.3
Elongation, as cured	3.2.2.4

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 compound 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, the contracting officer, or the 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.

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 lb (225 kg). A lot may be packaged in smaller quantities 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 4.6.1 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 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 material, processing, or both 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 3.3 and the following:

4.5.1 Viscosity: Shall be measured in a Brookfield viscometer at 25°C ± 1 (77°F ± 2). Viscometer spindle and speed shall be consistent with the viscosity of the material 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 g ± 0.10 sample of compound into a cup or dish 2 - 2.5 in. (50 - 62.5 mm) in diameter. Add the recommended type and amount of catalyst (See 8.2) and mix well with a small spatula for 60 sec ± 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 in. (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 in. (3.2 mm).

4.5.3 Shrinkage: Compound mixed with the recommended catalyst addition (See 8.2) and free of air (See 8.3) shall shrink no more than 1% in any direction when cured at 25°C ± 2 (77° ± 4) in a mold for 24 hr ± 0.1 followed by 48 hr ± 0.1 in open air. Test specimen shall be a slab nominally 6 x 6 in. (150 x 150 mm) and 0.075 in. ± 0.005 (2.0 mm ± 0.12) thick.

4.6 Reports: The vendor of the compound shall furnish with each shipment a report showing the results of tests to determine conformance to the acceptance test requirements and stating that the compound conforms to the other technical requirements of this specification. This report shall include the purchase order number, AMS 3362B, formula number, batch number, and quantity.