AEROSPACE MATERIAL SPECIFICATION

AMS3193	REV. E

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Superseding AMS3193D

Silicone Rubber Sponge
Closed Cell, Medium, Extreme Low Temperature

RATIONALE

This document is being revised through a limited scope ballot to remove incorrect paragraph references.

1. SCOPE

1.1 Form

This specification covers a silicone rubber sponge in the form of sheet, strip, extrusions, and molded shapes.

1.2 Application

This sponge has been used typically for general applications requiring closed-cell, medium sponge rubber that will be flexible from -166 to +401 °F (-110 to +205 °C) but usage is not limited to such applications. Compression set may be high at the higher temperature.

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 issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been spcecified, the last published issue of that document shall apply.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS2810 Identification and Packaging, Elastomeric Products

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AMS3193E

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM D 746 Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact

ASTM D 1056 Standard Specification for Flexible Cellular Materials-Sponge or Expanded Rubber

3. TECHNICAL REQUIREMENTS

3.1 Material

Shall be a compound, based on a silicone rubber, suitably cured to produce a product meeting the requirements of 3.2 and 3.3.

3.2 Finish

The top and bottom surfaces of sheet and strip and the exterior surfaces of molded parts and extrusions (except ends) shall have a natural finish.

3.3 Properties

The product shall conform to the requirements shown in Table 1, tests shall be performed on the product supplied and in accordance with ASTM D 1056, except as otherwise specified herein:

TABLE 1 - PROPERTIES

	Paragraph	Test	Requirement	Test Method
3.3.1	Compression-Deflection		6 to 14 psi (41.3 to 96.5 kPa)	25 °C ± 5 (77 °F ± 9)
3.3.2	Density, max			
		Nominal Thickness		
3.3.2.1	Under 0.25 inch (6.35 mm)		0.025 pounds/cubic inch (0.69 g/cm³)	
3.3.2.2	0.25 inch (6.35 mm) and over		0.020 pounds/cubic inch (0.55 g/cm³)	
3.3.3	Compression Set:			100 °C ± 1 (212 °F ± 2)
3.3.3.1	Percent of Original Deflection, max		60%	22 hours ± 0.2
3.3.4	Brittleness Temperature, max		-103°F (-75°C)	ASTM D 746

3.4 Quality

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

3.5 Tolerances

Shall be as shown in Table 2 and Table 3; measurements shall be made in accordance with ASTM D 1056:

3.5.1 Sheet and Strip

3.5.1.1 Thickness

Shall be as shown in Table 2.

TABLE 2A - TOLERANCES, INCH/POUND UNITS

Nominal Thickness Inch	Tolerance Inch Plus	Tolerance Inch Minus
Up to 0.063, inclusive	0.030	0.016
Over 0.063 to 0.188, inclusive	0.030	0.030
Over 0.188 to 0.313, inclusive	0.050	0.030
Over 0.313 to 0.500, inclusive	0.060	0.060
Over 0.500 to 0.750, inclusive	0.090	0.090
Over 0.750	0.120	0.120

TABLE 2B - TOLERANCES, SI UNITS

Nominal Thickness Millimeters	Tolerance Millimeters Plus	Tolerance Millimeters Minus
Up to 1.60, inclusive	0.76	0.41
Over 1.60 to 4.78, inclusive	0.76	0.76
Over 4.78 to 7.95, inclusive	1.27	0.76
Over 7.95 to 12.70, inclusive	1.52	1.52
Over 12.70 to 19.05, inclusive	2.29	2.29
Over 19.05	3.05	3.05

3.5.1.2 Length and Width

Shall be as shown in Table 3.

TABLE 3A - TOLERANCES, INCH/POUND UNITS

Nominal Length and Width Inches	Tolerance Inch Plus and Minus
Up to 6, inclusive	0.125
Over 6 to 18, inclusive	0.250
Over 18	0.375

TABLE 3B - TOLERANCES, SI UNITS

Nominal Length and Width Millimeters	Tolerance Millimeters Plus and Minus
Up to 152, inclusive	3.18
Over 152 to 457, inclusive	6.35
Over 457	9.52

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The manufacturer of sponge shall supply all samples and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that sponge conforms to specified requirements.

4.2 Classification of Tests

All technical requirements are acceptance tests and preproduction tests and shall be performed prior to or on the initial shipment of sponge to a purchaser, on each lot, when a change in ingredients and/or processing requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.3 Sampling and Testing

Shall be as follows:

4.3.1 For Acceptance Tests

Sufficient sponge 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 sponge from the same batch of compound, processed in one continuous production run, and presented for manufacturer's inspection at one time.

4.3.1.2 A batch shall be the quantity of compound run through a mill or mixer at one time.

4.3.1.3 A statistical sampling plan, acceptable to purchaser, may be used in lieu of sampling as in 4.3.1 and the report of 4.5 shall state that such plan was used.

4.3.2 For Preproduction Tests

Shall be acceptable to purchaser.

4.4 Approval

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

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

4.5 Reports

The supplier of sponge shall furnish with each shipment a report showing the results of tests to determine conformance to the technical requirements. This report shall include the purchase order number, lot number, AMS3193E, manufacturer's identification, form or part number, and quantity.

4.6 Resampling and Retesting

If any specimen used in the above tests fails to meet the specified requirements, disposition of the sponge may be based on the results of testing three additional specimens from the same lot for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the sponge represented. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY

5.1 Identification and Packaging

Shall be in accordance with AMS2810.