

SILICONE RUBBER SPONGE  
Closed Cell, Medium, Extreme Low Temperature

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: Primarily for general applications requiring closed-cell, medium sponge rubber that will be flexible from  $-110^{\circ}$  to  $+205^{\circ}\text{C}$  ( $-170^{\circ}$  to  $+400^{\circ}\text{F}$ ). Compression set may be high at the higher temperature.

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 2810 - Identification and Packaging, Elastomeric Products

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

ASTM D1056 - 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.

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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, unless otherwise specified.

3.3 Properties: The product shall conform to the following requirements; tests shall be performed on the product supplied and in accordance with ASTM D1056, insofar as practicable:

3.3.1 As Received: Temperature:  $25^{\circ}\text{C} \pm 5$   
 $(77^{\circ}\text{F} \pm 9)$

3.3.1.1 Compression-Deflection 6 - 14 psi  
(41.5 - 96.5 kPa)

3.3.1.2 Density, max 0.020 lb per cu in.  
(0.554 Mg/m<sup>3</sup>)

3.3.2 Compression Set: Temperature:  $100^{\circ}\text{C} \pm 1$   
 $(212^{\circ}\text{F} \pm 2)$

3.3.2.1 Percent of Original Deflection, max 60 Time: 22 hr  $\pm 0.2$

3.3.3 Compression Deflection at  
 $\emptyset$  Low Temperature: Preproduction Temperature:  $-90^{\circ}\text{C} \pm 3$   
Value  $\pm 20\%$   $(-130^{\circ}\text{F} \pm 5)$   
Time: 5 hr  $\pm 0.2$

3.3.4 Weathering: When specified, the product shall have weather resistance acceptable to purchaser, determined by a procedure agreed upon by purchaser and vendor.

3.3.5 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. Standards for acceptance shall be as agreed upon by purchaser and vendor.

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: Unless otherwise specified, the following tolerances shall apply; measurements shall be made in accordance with ASTM D1056:

3.5.1 Sheet and Strip:

3.5.1.1 Thickness:

TABLE I

Nominal Thickness Inch	Tolerance, Inch	
	plus	minus
0.063	0.016	0.016
0.125, 0.188	0.031	0.031
0.250, 0.312	0.047	0.031
0.375, 0.500	0.047	0.047

TABLE I (SI)

Nominal Thickness Millimetres	Tolerance, Millimetres	
	plus	minus
1.60	0.40	0.40
3.12, 4.75	0.80	0.80
6.25, 7.90	1.20	0.80
9.50, 12.50	1.20	1.20

3.5.1.2 Length and Width:

TABLE II

Nominal Length and Width Inches	Tolerance, Inch
	plus and minus
Up to 6, incl	0.125
Over 6 to 18, incl	0.250
Over 18	0.375

TABLE II (SI)

Nominal Length and Width Millimetres	Tolerance, Millimetres
	plus and minus
Up to 150, incl	3.12
Over 150 to 450, incl	6.25
Over 450	9.50

4. QUALITY ASSURANCE PROVISIONS:

- 4.1 Responsibility for Inspection: The vendor of sponge 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 sponge 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  
Ø 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 material or processing, or both, requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.
- 4.2.1 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 sponge shall be taken at random from  
Ø 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  
Ø one continuous run and presented for vendor's inspection at one time. An inspection lot shall not exceed 500 lb (225 kg) and may be packaged in small quantities under the basic lot approval provided lot identification is maintained.
- 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 When a statistical sampling plan and acceptance quality level (AQL) have  
Ø 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.  
Ø
- 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 Vendor 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 sponge. 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 or processing, or both, and, when requested, sample sponge. Production sponge made by the revised procedure shall not be shipped prior to receipt of reapproval.