Society of Automotive Engineers, Inc.
TWO PENNSYLVANIA PLAZA, NEW YORK, N.Y. 10001

AEROSPACE MATERIAL SPECIFICATION

AMS 3197H
Superseding AMS 3197G
Issued 12-1-42
Revised 12-1-73

SPONGE, CHLOROPRENE-RUBBER
Soft

1. SCOPE:

1.1 Form: This specification covers soft, chloroprene-rubber sponge in the form of sheet, strip, molded shapes, or other forms, as ordered.

1.2 Application: Primarily for general applications requiring the use of open-cell, soft sponge rubber pads and seals operating at temperatures from -40° to +80° C (-40° to +176° F).

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

2.1 SAE Publications: Available from Society of Automotive Engineers, Two Pennsylvania Plaza, New York, New York 10001.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods
AMS 2810 - Identification, Natural and Synthetic Rubber Materials

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

ASTM D1056 - Sponge and Expanded Cellular Rubber Products

3. TECHNICAL REQUIREMENTS:

3.1 Material: Shall be a compound based on a chloroprene elastomer with agents to form an open-cell sponge, suitably cured to produce a product meeting all technical requirements of this specification.

3.1.1 Color: Shall be black.

3.1.2 Finish: The top and bottom surfaces of sheet and strip and the exterior surfaces of molded parts shall have a natural skin finish. Unless otherwise specified, fabric or wire mesh type of surface impressions are not objectionable.

3.1.3 Vulcanized Joints: Vulcanized joints are permissible in molded products where the finished product is larger than is usual industry practice to mold in one section. If a vulcanized joint is necessary, the joint shall have the same strength, size, and color as the parent material.

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

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

3.2.2 Corrosion: The product shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service. Surface discoloration of metal shall not be considered objectionable.

3.2.3 Low Temperature Flexibility: When specified, the product shall have low temperature flexibility acceptable to the purchaser, determined by a procedure agreed upon by purchaser and vendor.

3.2.4 As Received:

3.2.4.1 Compression Deflection: Shall be 1 - 4 psi (6.9 - 27.6 kPa) at 20° - 30° C (68° - 86° F).

3.2.4.2 Specific Volume: Shall be as follows for each nominal thickness; a tolerance of ± 10% will be allowed:

Nominal Thickness		Specific Volume	
Inches	(Millimeters)	Cu In. per Lb	(cm^3/g)
1/16	(1.6)	36	(1.30)
3/32	(2.4)	42	(1.51)
1/8	(3.2)	48	(1.73)
3/16	(4.8)	55	(1.98)
1/4	(6.4)	58	(2.09)
5/16	(7.9)	61	(2.20)
3/8	(9.5)	63	(2.27)
1/2	(12.7)	66	(2.38)
5/8	(15.9)	70	(2.52)
3/4	(19.0)	73	(2.63)
7/8	(22.2)	77	(2.77)
1	(25.4)	80	(2.88)
1-1/2	(38.1)	87	(3.13)

3.2.4.3 Hydrogen Ion Concentration (pH):	7.0 ± 1.0	4.5.1
3.2.5 Dry Heat Resistance:		4.5.2
3.2.5.1 Compression Deflection Change:	-5% to +30%	
3.2.5.2 Specific Volume Change:	-10% to +10%	
3.2.5.3 Bend (Flat):	No cracking or checking	

3.2.6 Compression Set:		Temperature:	70° C ± 1 (158° F ± 1.8)
3.2.6.1 Percent of Original Deflection	40 max	Time:	22 hr
3.2.6.2 Percent of Original Thickness	20 max		

3.3 Quality: The product shall be uniform in quality and condition, clean, smooth, and free from foreign materials and from imperfections detrimental to fabrication, appearance, or performance of parts.

3.4 Tolerances: Unless otherwise specified, the following tolerances shall apply:

3.4.1 Sheet and Strip:

3.4.1.1 Thickness: Shall be as specified in Table I:

TABLE I

Nominal Thickness Inches	Tolerance, Inch plus and minus
Up to 1/8, incl	1/64
Over 1/8 to 1/2, incl	1/32
Over 1/2	3/64

TABLE I (SI)

Nominal Thickness Millimeters	Tolerance, Millimeters plus and minus
Up to 3.2, incl	0.4
Over 3.2 to 12.7, incl	0.8
Over 12.7	1.2

3.4.1.2 Width: Shall be as specified in Table II:

TABLE II

Nominal Width Inches	Tolerance, Inch plus and minus
Up to 6, incl	1/16
Over 6 to 18, incl	1/8
Over 18	1/4

TABLE II (SI)

Nominal Width Millimeters	Tolerance, Millimeters plus and minus
Up to 152, incl	1.6
Over 152 to 457, incl	3.2
Over 457	6.4

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of the product shall supply all samples 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 perform such confirmatory tests as he deems necessary to assure that the product 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 or routine control tests.

4.3 Sampling: Sufficient material shall be taken at random from each lot to perform all required tests in triplicate.

4.3.1 A lot shall consist of not more than 2500 lb (1135 kg) of material of the same form and dimensions, produced in one plant under essentially the same conditions and offered for acceptance at one time.

4.4 Approval:

4.4.1 Compound shall be approved by purchaser before material for production use is supplied, unless such approval be waived. Results of tests on production material 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 material which are essentially the same as those used on the approved sample material. If any change is necessary in ingredients, in type of equipment for processing, or in manufacturing procedures, vendor shall submit samples for reapproval unless purchaser grants written approval after review of a detailed statement of materials and processing used on the approved sample and those proposed. No production material made by the revised procedure shall be shipped prior to receipt of approval of such procedure.

4.5 Test Methods:

4.5.1 Hydrogen Ion Concentration (pH): Dice approximately 1 cu in. (16.4 cm^3) of sponge to approximately 1/8 in. (3.2 mm) or smaller cubes and extract with continuous agitation for 1 hr with 100 cm^3 of freshly distilled water. Determine pH of the extract by chemical means or pH meter.

4.5.2 Dry Heat Aging: A sample of material 4 in. (102 mm) square shall be suspended for 22 hr by a wire attached to one corner of the sample in a circulating air convection oven operating at 100° C ± 1 (212° F ± 1.8). The sample shall be removed from the oven and trimmed to 2 in. (51 mm) square by removing 1 in. (25 mm) from each side prior to testing. Standard specimens shall be cut from the sample and tested by the procedure used for the product as received. Bend test specimens shall be the 1-in. (25-mm) strips produced in trimming the 4-in. (102-mm) square sample to 2 in. (51 mm) square.

4.6 Reports:

4.6.1 The vendor of the product shall furnish with each shipment three copies of a report showing the results of tests to determine conformance to the technical requirements of this specification. This report shall include the purchase order number, material specification number and its revision letter, vendor's compound number, form or part number, and quantity.

4.6.2 The vendor of finished or semifinished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number and its revision letter, contractor or other direct supplier of material, supplier's compound number, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.

4.7 Resampling and Retesting: If any specimen used in the above tests fails to meet the specified requirements, disposition of the product may be based on the results of testing three additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the product represented and no additional testing shall be permitted. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Identification: Shall be in accordance with AMS 2810.

5.2 Packaging:

5.2.1 Packaging shall be accomplished in such a manner as to ensure that the product, during shipment and storage, will not be permanently distorted and will be protected against damage from exposure to weather or any normal hazard.