SAE Aerospace
An SAE International Group

AEROSPACE MATERIAL SPECIFICATION

SAE AMS3387 | REV. E

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Superseding AMS3387D

Hose, Aircraft Fueling, Acrylonitrile Butadiene (NBR) Rubber Textile Reinforced, Chloroprene Covered Noncollapsing

RATIONALE

AMS3387E has been reaffirmed to comply with the SAE five-year review policy.

1. SCOPE:

1.1 Form:

This specification covers a synthetic rubber in the form of a non-rigid, smooth bore, noncollapsing hose with textile reinforcement.

1.2 Application:

This hose has been used typically for fueling aircraft, but usage is not limited to such applications. Not intended for flexible connection between tractor and trailer or to be collapsed for drainage. Not recommended for operating pressures higher than 160 psi (1103 kPa).

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.

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/AMS3387E

2.1 ASTM Publications:

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

ASTM D 380	Testing Rubber Hose
ASTM D 471	Rubber Property - Effect of Liquids
ASTM D 518	Rubber Deterioration - Surface Cracking
ASTM D 1149	Rubber Deterioration - Surface Ozone Cracking in a Chamber (Flat Specimens)

2.2 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

MIL-H-775	Hose, Hose Assemblies; Rubber, Plastic, Fabric, or Metal (Including Tubing); and Fittings, Nozzles, and Strainers, Packaging of

3. TECHNICAL REQUIREMENTS:

3.1 Material and Fabrication:

3.1.1 Hose: Shall consist of an acrylonitrile-butadiene (NBR) rubber inner tube; braided, spiralled, loomed, or plied textile reinforcement; and a chloroprene (CR) rubber cover.

3.1.1.1 Tube: Shall be fabricated from a compound based on a copolymer of butadiene and acrylonitrile. Thickness of the tube shall be not less than 0.078 inch (1.98 mm). The bore shall be smooth, free from pits, and of uniform thickness.

3.1.1.2 Reinforcement: Shall be well, evenly, and firmly braided, spiralled, loomed, or plied and shall be free from dirt, lumps, and irregularities of twist.

3.1.1.3 Cover: Shall be chloroprene (CR) rubber or other types or blends having equivalent resistance to weathering and petroleum products, and shall be free from pitting. Thickness of cover shall be not less than 0.078 inch (1.98 mm).

3.2 Properties:

Hose shall conform to requirements shown in Table 1, 3.2.4, 3.2.5, 3.2.6, and 3.2.7; tests shall be performed on the hose supplied and, except as otherwise specified herein, in accordance with ASTM D 380, insofar as practicable.

TABLE 1 - Properties

Paragraph	Property	Requirement	Test Method
3.2.1	Aromatic Fuel Resistance: (Immediate Deteriorated Properties)		ASTM Ref. Fuel B (See ASTM D 471) 20 to 30 °C (68 to 86 °F)
3.2.1.1	Volume Change:		22 hours ± 0.2
3.2.1.1.1	Tube	0 to +50%	
3.2.1.1.2	Cover	0 to +100%	
3.2.2	Adhesion:		
3.2.2.1	Tube to Reinforcement, minimum	10 pounds force/ inch (1751 N/m) of width	
3.2.2.2	Cover to Reinforcement, minimum	12 pounds force/ inch (2102 N/m) of width	
3.2.3	Weather Resistance: Tapered strip specimens as defined in ASTM D 518, Procedure C, mounted with 20% elongation	No cracks	ASTM D 1149 Ozone, 50 pphm 40 °C ± 1 (104 °F ± 2) 72 hours ± 0.5

3.2.4 Burst Pressure: Hose shall withstand the minimum pressure specified in Table 2 without bursting, leaking, or developing blisters in the cover.

TABLE 2 - Burst Pressure

Nominal ID Inches	Nominal ID mm	Pressure min psi	Pressure min kPa
1-1/2	38.1	800	5516
2	51	750	5171
2-1/2	63.5	700	4826
3	76	650	4482

3.2.5 Change in Length Under Pressure: Hose shall not change in length by more than 7% when subjected to a pressure of 250 psi (1724 kPa).

3.2.6 Corrosion: The hose 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 supplier. Discoloration of metal shall not be considered objectionable. Standards for acceptance shall be as agreed upon by purchaser and supplier.

3.2.7 Weather Resistance: When specified, hose shall have weather resistance acceptable to purchaser, determined by a procedure agreed upon by purchaser and supplier.

3.3 Quality:

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

3.4 Standard Sizes, Weights, and Tolerances:

Hose shall be furnished in lengths of 50 feet ± 0.5 (15 m ± 0.15) and to the dimensions and weights shown in Table 3. Hose 1-1/2 inches (38.1 mm) in nominal ID may be furnished in lengths up to 125 feet (38 m). Lengths from which samples have been cut may be accepted as full lengths if all other technical requirements are met.

TABLE 3A - ID and Weight Tolerances, Inch/Pound Units

Nominal ID Inches	ID Tolerance Inch Plus and Minus	Weight (Without Couplings) Pounds Per Foot max
1-1/2	1/16	1.1
2	1/16	1.5
2-1/2	1/16	1.8
3	1/16	2.5

TABLE 3B - ID and Weight Tolerances, SI Units

Nominal ID mm	ID Tolerance mm Plus and Minus	Weight (Without Couplings) kg/m, max
38.1	1.6	1.6
50.8	1.6	2.2
63.5	1.6	2.7
76.2	1.6	3.7

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The manufacturer of hose shall supply all samples for required 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 hose conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests for aromatic fuel resistance (3.2.1), adhesion (3.2.2), burst pressure (3.2.4), and change in length under pressure (3.2.5) are acceptance tests and shall be performed on each lot.

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 hose by the manufacturer, 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 hose 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 hose of the same size produced in a single production run from the same batches of raw materials under the same fixed conditions and presented for manufacturer's inspection at one time.

4.3.1.2 When a statistical sampling plan has been agreed upon by purchaser and manufacturer, sampling shall be in accordance with such plan 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: As agreed upon by purchaser and manufacturer.

4.4 Approval:

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