

INCH-POUND

MIL-DTL-83298B  
29 September 2000  
SUPERSEDING  
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## DETAIL SPECIFICATION

### HOSE, POLYTETRAFLUOROETHYLENE, HIGH TEMPERATURE, HIGH PRESSURE (3000 PSI), HYDRAULIC AND PNEUMATIC

This specification is approved for use by all Departments and  
Agencies of the Department of Defense.

#### 1. SCOPE

1.1 Scope. This specification covers the requirements for polytetrafluoroethylene (PTFE) hose for high temperature, high pressure, hydraulic and pneumatic systems for aircraft and missiles (see 6.1).

#### 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

##### 2.2 Government documents.

2.2.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Defense Supply Center, Columbus, DSCC-VAI, 3990 East Broad Street, Columbus, OH 43216-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

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### SPECIFICATIONS

#### FEDERAL

TT-I-735 - Isopropyl Alcohol

#### DEPARTMENT OF DEFENSE

MIL-DTL-83296 - Fitting, Corrosion Resistant Steel, High Temperature,  
High Pressure, General Requirements for  
MIL-H-5606 - Hydraulic Fluid, Petroleum Base, Aircraft, Missile, and Ordnance  
MIL-PRF-680 - Degreasing Solvent  
MIL-PRF-7808 - Lubricating Oil, Aircraft, Turbine Engine, Synthetic Base  
MIL-PRF-83282 - Hydraulic Fluid, Fire Resistant Synthetic Hydrocarbon Base,  
Aircraft

#### STANDARDS

#### DEPARTMENT OF DEFENSE

MIL-STD-130 - Identification Marking of US Military Property

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Defense Automated Printing Service, 700 Robbins Avenue, Building 4/D, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are Department of Defense (DoD) adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

#### AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D4895 - PTFE Resin Produced from Dispersion

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor, West Conshohocken, PA 19428-2959.)

#### NATIONAL CONFERENCE OF STANDARDS LABORATORIES (NCSL)

ANSI/NCSL Z540-1 - Calibration Laboratories and Measuring and Test Equipment,  
General Requirements(DoD adopted)

(Application for copies should be addressed to the National Conference of Standards Laboratories, 1800 30th Street, Suite 305B, Boulder, CO 80301.)

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## SAE INTERNATIONAL

- |        |   |   |
|--------|---|---|
| AS2078 | - | Test Methods, Hose Assemblies, Polytetrafluoroethylene (PTFE)           |
| AS611  | - | Hose Assembly and Tubing, Polytetrafluoroethylene, Cleaning Methods for |

(Application for copies should be addressed to the SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

2.4 Order of precedence. In the event of a conflict between this document and the references cited herein (except for related associated specifications, specification sheets or MS standards), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

3.1 Qualification. The hose furnished under this specification shall be a product that is authorized by the qualifying activity for listing on the applicable qualified products list (QPL) before contract award (see 4.2 and 6.3). The hose shall be qualified with fittings from two or more manufacturers.

3.2 Materials. Materials used shall be as identified herein or as approved by the qualifying activity. However, materials not specified herein or approved by the qualifying activity, shall be of a quality that will enable the hose to meet the requirements specified herein.

3.2.1 Components. The hose shall consist of a polytetrafluoroethylene tube with corrosion-resistant steel reinforcement.

3.3 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.4 Hazardous substances. The use of hazardous substances, toxic chemicals, or Ozone Depleting Chemicals (ODCs) shall be avoided, whenever feasible.

3.5 Design and construction. The hose shall be so designed and constructed that, when assembled with approved end fittings conforming to MIL-DTL-83296, the resulting assemblies shall meet the requirements of this specification. Assemblies tested herein are for the purpose of qualifying the hose only. Fittings are qualified to MIL-DTL-83296.

3.5.1 Tube. The tube shall be a seamless extrusion of virgin polytetrafluoroethylene resin. Base resin shall conform to ASTM D4895, except for the specific gravity (SG) requirements. Additives may be included in the compound from which the tube is extruded.

3.5.1.1 Reinforcement. The reinforcement shall be corrosion-resistant stainless steel wire, uniform in quality and size, and of sufficient strength to insure that the hose shall meet the requirements specified herein.

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3.5.1.2 Interlayers. Interlayers, if used, shall be resistant to or suitably protected from all fluids with which the hose may come in contact. They shall be capable of withstanding temperature and pressures listed in table I. Interlayers shall not extrude through the outer braid.

3.5.2 Hose end fittings. Hose end fittings required to test hose assemblies to the requirements of this specification shall conform to MIL-DTL-83296 and the applicable detail specification sheet.

3.5.3 Dimensions. The hose dimensions shall be as specified in table II.

3.5.3.1 Length. Unless otherwise specified, hose shall be furnished in the lengths as indicated in table II.

3.6 Examination of product. The hose shall conform to the materials (see 3.5), cleaning (see 3.6.1), dimensions (see table II), hose identification (see 3.8), and workmanship (see 3.9), when examined as specified in 4.6.1.

3.6.1 Cleaning. The ends of each hose length shall be capped or plugged to prevent entrance of moisture and foreign matter. The caps or plugs shall be securely attached and shall withstand normal strains, jarring and vibrations encountered during shipping, storage, and handling. All hose shall be cleaned in accordance with SAE AS611, class O. The interior surface of the hose shall be free from oil, grease, dirt, moisture, cleaning solvents and foreign materials when examined in accordance with 4.6.1.2.

3.7 Performance. The hose shall be capable of meeting the following performance requirements within the physical requirements specified in table I.

TABLE I. Physical requirements of high pressure, high temperature hose.

Size dash no.	Maximum operating pressure (psi)	Proof pressure (psi)	Min. burst pressure at room temp (psi)	Min. burst pressure at high temp (psi)	Min. bend radius (inside of bend) (inch)	Temperature <sup>1/</sup> range (F)	Cubical expansion (cc/in.)
-4	3,000	6,000	16,000	12,000	3.00	-65° to +400°	.065
-6	3,000	6,000	14,000	10,500	5.00	-65° to +400°	.085
-8	3,000	6,000	14,000	10,500	5.75	-65° to +400°	.135
-10	3,000	6,000	12,000	9,000	6.50	-65° to +400°	.220

<sup>1/</sup> Pneumatic temperature range shall be -65 °F to +160 °F.

TABLE II. Bulk hose dimensions and lengths.

Size dash no.	Min. hose I.D. (inch)	Tubing wall thickness (inch) ±.005	Max. over braid O.D. (inch)	Length 3 ft to 14 ft (max. %)	Lengths above 14 ft (min. %)
-4	.217	.050	.470	35	65
-6	.310	.050	.575	35	65
-8	.425	.050	.742	35	65
-10	.552	.050	.882	45	55

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3.7.1 Tube.

3.7.1.1 Tube roll and tube proof pressure. The tube shall withstand the roll and proof pressure conditions of 4.6.2 without malfunction or leakage.

3.7.1.2 Elongation. The longitudinal and transverse elongation at 73 °F  $\pm$  4 °F shall be a minimum of 200% when tested in accordance with 4.6.3.1.

3.7.1.3 Tensile strength. The longitudinal tensile strength for all sizes of tube shall be 2200 psi minimum, and the transverse tensile strength (-10 size only) shall be 1800 psi minimum at 73 °F  $\pm$  4 °F. The tensile strength test shall be conducted in accordance with 4.6.3.2.

3.7.1.4 Specific gravity. The apparent specific gravity value shall be no greater than 2.155 and relative specific gravity shall be no greater than 2.210 and tests shall be in accordance with 4.6.3.3.

3.7.1.5 Electrical conductivity of tube. Tube sizes -4 through -8 shall be capable of conducting a current equal to or greater than 6 microamperes. Tube size -10 shall be equal to or greater than 12 microamperes with a test potential of 1,000 volts dc, when tested in accordance with 4.6.3.4.

3.7.2 Hose. The hose, when assembled with end fittings conforming to MIL-DTL-83296, shall meet the following performance requirements.

3.7.2.1 Proof pressure. The hose shall withstand the proof pressure listed in table I without malfunction or leakage when tested in accordance with 4.6.4.

3.7.2.2 Leakage. The hose assembly shall not leak or rupture when subjected the minimum room temperature burst pressure specified in table I when tested in accordance with 4.6.5.

3.7.2.3 Room temperature burst pressure. The hose assembly shall not leak or rupture at any pressure below the minimum room temperature burst pressure specified in table I, when tested in accordance with 4.6.6.

3.7.2.4 Elongation and contraction. The hose assembly shall not change in length by more than  $\pm$ .20 inch in 10 inches of length when tested in accordance with 4.6.7.

3.7.2.5 Stress degradation. The average air effusion shall not exceed 2.0 cc/in/min when tested in accordance with 4.6.8.

3.7.2.6 Impulse. The hose assembly shall not burst, leak, or show evidence of malfunctioning when subjected to a minimum of 250,000 impulse cycles when tested in accordance with 4.6.9.

3.7.2.7 Thermal shock. The hose assembly shall not leak or rupture at any pressure below the minimum high temperature burst pressure specified in table I, when tested in accordance with 4.6.10.

3.7.2.8 Flexibility. The hose assembly shall not leak or show any evidence of malfunction when tested in accordance with 4.6.11.

3.7.2.9 Volumetric expansion. The volumetric expansion of the hose shall not exceed the limits specified in table I when tested in accordance with 4.6.12.

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3.7.2.10 Pneumatic effusion. The hose assembly effusion rate shall not exceed 8.0 cc/ft/30 min. when tested in accordance with 4.6.13.

3.7.2.11 Pneumatic surge. The tube of the hose assembly shall not collapse and there shall be no evidence of degradation when examining the sectioned hose and the down stream filter, when tested in accordance with 4.6.14.

3.7.2.12 Corrosion. The hose assembly shall function satisfactorily at the specified operating pressure after 172 hours of cycling when tested in accordance with 4.6.15.

3.8 Identification of product. The hose shall be permanently and legibly marked in accordance with MIL-STD-130 at each end and at 10 ft intervals with the following information: Hose specification number, size, date of manufacture (month/year), operating pressure (3000 psi), and the manufacturer's CAGE code.

3.9 Workmanship. The hose shall be uniform in quality, free from foreign inclusions and defects in materials, and shall be finished in accordance with good commercial practices.

#### 4. VERIFICATION

4.1 Test equipment and inspection facilities. Test and measuring equipment and inspection facilities of sufficient accuracy, quality, and quantity to permit performance of the required inspection shall be established and maintained or identified by the contractor. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment (i.e. Industry Standard, Military Standard, etc.) shall be in accordance with ANSI/NC SL Z540-1 or equivalent.

4.2 Classification of inspection. The inspection requirements specified herein are classified as follows:

- a. Qualification inspection (see 4.4).
- b. Qualify conformance inspection (see 4.5 and 6.5).
  - 1. Individual tests (see 4.5.2).
  - 2. Sampling tests (see 4.5.3).
  - 3. Periodic control tests (see 4.5.4).

4.3 Inspection conditions. Unless otherwise specified, all testing shall be conducted at an atmospheric pressure within the range of 28 to 31 inches of mercury, a temperature between 60° and 100 °F, and a relative humidity of not more than 90%. Tolerances of the test conditions are as follows:

<u>Test conditions</u>	<u>Tolerances</u>
Temperature	+10 °F, -5 °F
Pressure (gauge)	±5%

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4.3.1 Stabilization of test temperatures. Unless otherwise specified, the test temperature in the chamber shall be stabilized before conducting the test (see 6.5.1).

4.3.2 Test fluids. Unless otherwise specified, the pressure test fluid shall be hydraulic fluids conforming to MIL-H-5606, MIL-PRF-83282, or water (leakage test only). When a high temperature test fluid is specified the test fluid shall be MIL-PRF-7808 lubricating oil.

4.3.3 Oil aging. In all of the tests using oil-aged samples, the assembly shall be filled with a high temperature test fluid and soaked in an air oven at a temperature of 400 °F for 7 days. All air shall be excluded from the bore of the assembly during the test.

4.3.4 Air aging. In all of the tests using air aged samples the hose assemblies shall be kept at a temperature of 400 °F for 7 days.

4.4 Qualification inspection (see 6.3). Qualification inspection shall be performed at a laboratory acceptable to the government on sample units produced with equipment and procedures used in production.

4.4.1 Samples for qualification. Samples for qualification shall be representative of the products proposed to be furnished to this specification. Test samples shall consist of 16 assemblies of each size and length, as well as two 6-inch and two 14-inch lengths of tubing (reinforcement removed) of each size, as specified in table III. Hose assemblies shall be made up from hose specified herein and end fittings conforming to MIL-DTL-83296. Hose shall be qualified with fittings from a minimum of two specific qualified manufacturers. Test samples shall be examined and tested by the qualifying activity in accordance with this specification.

TABLE III. Tube and hose assembly lengths for testing.

Size dash no.	Length (inch)						
	Hose assemblies (16) <sup>1/</sup>					Tubes (4)	
	Category 1	Category 2	Category 3	Category 4	Category 5		
-4	16 (4)	20 (4)	18 (4)	14 (2)	6 (2)	14 (2)	6 (2)
-6	21 (4)	27 (4)	18 (4)	14 (2)	6 (2)	14 (2)	6 (2)
-8	24 (4)	30 (4)	18 (4)	14 (2)	6 (2)	14 (2)	6 (2)
-10	30 (4)	33 (4)	18 (4)	14 (2)	6 (2)	14 (2)	6 (2)

<sup>1/</sup> Hose assemblies vary in length among sizes. Category numbers shall be used to decide appropriate length of hose for testing.

4.4.2 Qualification inspection routine. All samples shall be subjected to qualification testing in accordance with table IV and in the sequence specified in table V.

4.4.3 Acceptance of qualification data. For identical requirements and test procedures, using identical fittings, qualification test data from the manufacturer of MIL-DTL-83298 hose may be accepted as qualification test data for MIL-DTL-83296 provided that documented approval has been obtained from the qualifying activity. Unless otherwise approved by the qualifying activity, qualification test data from one manufacturer shall not be accepted for another.

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4.4.4 Failures. One or more failures shall be cause for refusal to grant qualification approval.

TABLE IV. Inspection requirements.

Inspection or test	Requirement paragraph	Test method paragraph	Conformance inspection		
			Individual tests <u>1/</u>	Sampling tests (Lot acceptance)	Periodic control tests
Examination of product	3.6, 3.8, & 3.9	4.6.1	X		
Tube roll & tube proof pressure	3.7.1.1	4.6.2	X		
Hose proof pressure	3.7.2.1	4.6.4	X		
Leakage <u>2/</u>	3.7.2.2	4.6.5		X	
Room temperature burst pressure <u>2/</u>	3.7.2.3	4.6.6		X	
Elongation & contraction <u>2/</u>	3.7.2.4	4.6.7		X	
Elongation <u>2/</u>	3.7.1.2	4.6.3.1			X <u>3/</u>
Tensile strength <u>2/</u>	3.7.1.3	4.6.3.2			X <u>3/</u>
Specific gravity <u>2/</u>	3.7.1.4	4.6.3.3			X <u>3/</u>
Electrical conductivity test (of tube) <u>2/</u>	3.7.1.5	4.6.3.4			X <u>3/</u>
Stress degradation <u>2/</u>	3.7.2.5	4.6.8			X
Impulse <u>2/</u>	3.7.2.6	4.6.9			X

1/ 100% inspection required on all hose supplied to this specification.

2/ These are destructive tests.

3/ Testing is not required if data is available from samples taken from the same continuous production run.

TABLE V. Qualification test schedule.

Sample no.	Sample type	Length(s) <u>2/</u>	Test sequence - paragraph numbers					
1, 2	Tube <u>1/</u>	6 (2)	4.6.1	4.6.2	4.6.3	4.6.3.1	4.6.3.2	4.6.3.3
3, 4	Tube <u>1/</u>	14 (2)	4.6.1	4.6.2	4.6.3.4	—	—	—
5, 6	Hose assembly	Category 4 (2)	4.6.1	4.6.4	4.6.7	4.6.11	—	—
7, 8	Hose assembly	Category 3 (2)	4.6.1	4.6.4	4.6.12	4.6.13	4.6.6	—
9, 10	Hose assembly	Category 5 (2)	4.6.1	4.6.4	4.6.5	4.6.10	—	—
11, 12	Hose assembly	Category 1 (2)	4.6.1	4.6.4	4.6.8	4.6.14	—	—
13, 14	Hose assembly	Category 2 (2)	4.6.1	4.6.4	4.6.15	—	—	—
15 thru 20	Hose assembly	Category 1 (2), 2 (2), 3 (2)	4.6.1	4.6.4	4.6.9	—	—	—

1/ Reinforcement removed.

2/ Where applicable, categories shall be specified in table III.

4.4.5 Retention of qualification. To retain qualification, the contractor shall forward a report at 12-month intervals to the qualifying activity. The qualifying activity shall establish the initial reporting date. Each report shall contain a summary of the results obtained from both the sampling tests and the periodic control tests performed during the 12-month interval. The number of lots and quantities of hose that have passed and failed shall be included. All reworked sampling lots shall be accounted for and identified.

If the summary of test results indicates nonconformance with the requirements specified herein but the corrective measures acceptable to the qualifying activity has not been taken, action may be taken to remove the failing product from the QPL.

Failure to submit the report within 30 days after the end of the 12-month period may result in loss of qualification for the product. In addition to the periodic submission of inspection data, the manufacturer shall immediately notify the qualifying activity at any time during the 12-month period that the inspection



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data indicates failure of the qualified product to meet the requirements specified herein. If there has been no production during the reporting period, a report shall be submitted certifying that the manufacturer still has the capabilities and the facilities necessary to produce the qualified product. If there has been no production during two consecutive reporting periods, the manufacturer may be required, at the discretion of the qualifying activity, to submit his qualified product for testing in accordance with the qualification inspection requirements.

#### 4.5 Quality conformance inspection.

4.5.1 Samples for conformance. Samples for conformance shall be made up of tube or hose, as specified herein and qualified fittings from MIL-DTL-83296. Fittings may be from any one or multiple producers.

4.5.2 Individual tests. Inspection of the product for delivery shall consist of subjecting each length of tube and hose of each size to the individual tests specified in table IV. Any item failing to meet the requirements of the individual tests shall be immediately removed from the lot.

4.5.3 Sampling tests. Hose lengths, randomly selected from a production lot (see 4.5.3.1) to form an inspection sample (see 4.5.3.2), shall be subjected to the sampling tests specified in table IV.

4.5.3.1 Production lot. A production lot shall consist of bulk hose of one size manufactured on the same production line(s) by means of the same production techniques, materials, controls, and design during the same continuous production run.

4.5.3.2 Inspection sample. An inspection sample shall consist of hose lengths randomly selected from the production lot without regard to quality. For each full or partial increment of 750 feet of bulk hose produced in the continuous run, one sample shall be subjected to the sampling tests.

4.5.3.3 Nonconformance of sampling tests. If one or more defects are found in the inspection sample, both the qualifying and inspection activities shall be immediately notified and the production lot shall be rejected and not be supplied to this specification. Acceptance and shipment of the product shall be discontinued until corrective action, acceptable to the qualifying activity, has been taken. The corrective measures shall be performed on the materials or processes, or both, as warranted, and on all products considered subjected to the same failure. Once the corrective action has been completed, either the specific sampling test in which the original sample failed or all sampling tests may be required to be repeated on additional samples, at the option of the qualifying activity. However, final acceptance shall be withheld until testing have shown that the corrective action was successful. In the event of a failure after re-inspection, information concerning the failure and the corrective action taken shall be furnished to both the qualifying and inspection activities.

4.5.4 Periodic control tests (see table IV). For each size manufactured under essentially the same conditions, periodic control testing shall be performed on either eight samples from every 20,000 feet of bulk hose produced or two samples from every 5000 feet. If there has been some production but the total number of footage produced has not reached 5000 feet for a specific size within three years, the manufacturer shall perform periodic control tests on two samples of that size unless documented approval has been obtained from the qualifying activity.

4.5.4.1 Periodic control test plan. Testing shall be in accordance with table IV. Half of the samples shall be subjected to the impulse test while the remaining half shall be subjected to the stress degradation test.

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4.5.4.1 Tests. The hose shall be individually selected from a periodic control test lot and subjected to the tests below.

<u>Tests</u>	<u>Samples</u>
Elongation (see 4.6.3.1)	Consisting of two 6-inch tubes (reinforcement removed)
Tensile strength (see 4.6.3.2)	
Specific gravity (see 4.6.3.3)	
Stress degradation test (see 4.6.8)	Consisting of two hose assemblies from category 2 (See table III).
Impulse test (unaged samples) (see 4.6.9)	
Conductivity test (of tube) (see 4.6.3.4)	Consisting of two 14-inch tubes (reinforcement removed)

4.5.4.2 Periodic control test plan. Testing shall be in accordance with table IV.

4.5.4.3 Nonconformance of periodic control tests. If a sample fails a periodic control test, both the qualifying and inspection activities shall be immediately notified of such failure. Acceptance and shipment of the product shall be discontinued until corrective action, acceptable to the qualifying activity, has been taken. The corrective measures shall be performed on the materials or processes, or both, as warranted, and on all products considered subjected to the same failure. Once the corrective action has been completed, either the specific periodic control test in which the original sample failed or all periodic control tests may be required to be repeated on additional samples, at the option of the qualifying activity. Furthermore, the sampling tests may be reinstituted in addition to the periodic control tests if deemed applicable by the qualifying activity. However, final acceptance shall be withheld until testing has shown that the corrective action was successful. In the event of a failure after re-inspection, information concerning the failure and the corrective action taken shall be furnished to both the qualifying and inspection activities.

4.5.4.4 Disposition of test specimens. Samples that have been subjected to sampling or periodic control tests are considered damaged and shall not be delivered as part of a contract or purchase order.

4.5.5 Discontinuation and resumption of production. If there has been no production of a specific size for a period of three years or more, 16 samples shall be randomly selected from the first lot produced when production of that size has been resumed. Eight of the samples shall be subjected to the sampling tests and the remaining eight shall be subjected to the periodic control tests (see table IV).

4.5.6 Acceptance of conformance inspection data. For identical requirements and test procedures, using an identical fitting, conformance inspection data from MIL-DTL-83296 may be accepted as conformance inspection data for MIL-DTL-83298, providing that documented approval has been obtained from the qualifying activity. When conformance inspection data from MIL-DTL-83296 is to be accepted as conformance inspection data for MIL-DTL-83298, one hose assembly shall be considered to be the equivalent of two feet of bulk hose.

#### 4.6 Inspection method.

##### 4.6.1 Examination of product.

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4.6.1.1 Physical. The tube and hose shall be examined to determine compliance with this specification with respect to the following:

- a. Hose identification (see 3.8).
- b. Tube dimensions (see table II).
- c. Hose dimensions (see table II).

4.6.1.2 Visual. The tube shall be visually inspected for workmanship before reinforcing. Scratches and projections shall be cause for rejection. The hose shall be visually inspected for broken or missing reinforcing wires which shall be cause for rejection. Crossed over reinforcing wires shall not be cause for rejection. The hose shall be visually inspected for cleanliness. Moisture or any particulate matter on the inner surface of the hose shall be cause for rejection.

4.6.2 Tube roll and tube proof pressure test.

4.6.2.1 Tube roll. Prior to reinforcing, the tube shall be tested as specified in SAE AS2078.

4.6.2.2 Tube proof pressure test. Prior to reinforcing, the tubing shall be tested as specified in SAE AS2078.

4.6.3 Tube tests.

4.6.3.1 Elongation. Two 6-inch tubes shall be tested as specified in SAE AS2078, except the separation speed shall be 2 inches per minute.

4.6.3.2 Tensile strength. Two 6-inch tubes shall be tested as specified in SAE AS2078, except that the separation speed shall be 2 inches per minute.

4.6.3.3 Specific gravity of tube.

4.6.3.3.1 Apparent specific gravity. Apparent specific gravity shall be determined as specified in SAE AS2078. Two drops of wetting agent shall be added to the water.

4.6.3.3.2 Relative specific gravity. Relative specific gravity shall be determined as specified in SAE AS2078.

4.6.3.4 Electrical conductivity test of tube. Two tubes shall be tested as specified in SAE AS2078.

4.6.4 Proof pressure test. The hose shall be tested as specified in SAE AS2078 when subjected to the rated proof pressure specified in table I.

4.6.5 Leakage test. The assembly shall be tested as specified in SAE AS2078 when subjected to the minimum room temperature burst pressure shown in table I.

4.6.6 Room temperature burst pressure test. The assembly shall be tested as specified in SAE AS2078 when subjected to a room temperature burst pressure. The assembly shall be observed throughout the test and the type of failure and the pressure at which failure occurred shall be recorded.

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4.6.7 Elongation and contraction test. The unpressurized assembly shall be tested as specified in SAE AS2078. After 5 minutes, while still pressurized, the gauge length shall be remeasured and the change in length recorded.

4.6.8 Stress degradation test. The assembly shall be tested as specified in SAE AS2078. When necessary, the assembly shall be drained and flushed with fluid conforming to MIL-PRF-680.

4.6.9 Impulse test. Prior to impulsing, two assemblies shall be oil-aged, two shall be air-aged, and two shall be unaged. The assemblies shall then be subjected at room temperature to the rated proof pressure specified in table I for a minimum of 5 minutes. The assemblies shall be tested as specified in SAE AS2078. Electronic measuring devices shall be used to determine and control the impulse pressures in the inlet manifold to the magnitude as specified in SAE ARP603. The impulse shall occur at  $70 \pm 10$  cycles per minute (cpm). The rate of pressure rise shall not be less than 100,000 psi/sec or more than 200,000 psi/sec. The test fluid shall be one of the high temperature test fluids specified in 4.3.2.

4.6.10 Thermal shock test. One assembly shall be air-aged and one assembly shall be unaged. The assemblies shall then be subjected to the rated proof pressure specified in table I for a minimum of 5 minutes. The thermal shock test shall be as specified in SAE AS2078. High temperature test fluid shall be as specified in 4.3.2.

4.6.11 Flexibility test. The assembly shall be tested as specified in SAE AS2078. The distance between fitting ends shall be as specified in table VI. The uncapped assembly shall be filled with oil conforming to one of the high temperature test fluids specified in 4.3.2.

TABLE VI. Flexibility dimension.

Size dash no.	Distance between fitting ends (inch)
-4	6.50
-6	10.63
-8	12.25
-10	14.00

4.6.12 Volumetric expansion test. The assembly shall be tested as specified in SAE AS2078. The change in fluid level shall be recorded and the volume change shall be converted to cc/in.

4.6.13 Pneumatic effusion test. The assembly shall be tested as specified in SAE AS2078 when subjected to the rated operating pressure specified in table I.

4.6.14 Pneumatic surge test. The assembly shall be tested as specified in SAE AS2078 when subjected at room temperature, to the rated operating pressure specified in table I. At the end of this period, the hose shall be sectioned for inspection.

4.6.15 Corrosion test. The assembly shall be mounted in a vertical position and immersed in a 2.5% solution of sodium chloride for 5 minutes. The assembly shall then be air dried at 140 °F for 25 minutes. This cycling shall be continued for 172 hours with the assembly pressurized to the rated operating pressure specified in table I.

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## 5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

## 6. NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory).

6.1 Intended use. This is military unique hose covered by this specification is for use in military aircraft and missile high pressure (3,000 psi), and high temperature (-65 °F to 160 °F) pneumatic and (-65 °F to +400 °F) hydraulic systems. High pressure pneumatic storage system applications are not recommended. This hose is capable of withstanding the severe environment encountered in military applications. Installations in which the limits specified herein are exceeded, or in which the application is not covered specifically by this specification will be subjected to the approval of the acquiring activity.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2 and 2.3).
- c. Size and length of hose to be furnished.
- d. Packaging requirements (see 5.1).

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Products List QPL 83298 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from the Commander, Defense Supply Center, Columbus, DSCC-VQP, 3990 East Broad Street, Columbus, OH 43216-5000.

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6.3.1 Prequalification. An assessment of each manufacturer intending to qualify product to this specification shall be conducted by the qualifying activity prior to initial qualification and periodically thereafter to assure compliance with specification requirements. This assessment will review the manufacturer's quality system, including production and testing, to ensure that adequate controls are in place to provide compliant product on a recurring basis. This assessment may include a facility survey as determined necessary by the qualifying activity.

6.4 Subject term (key words) listing.

Corrosion-resistant steel  
Wire braid

6.5 Hose assemblies. When hose assemblies are produced, they shall conform to quality conformance inspection as specified in 4.5.

6.6 Definitions. For the purpose of this specification, the following definition applies.

6.6.1 Stabilization temperature. Temperature which, within 6 inches of an object, does not change more than +10 °F, -5 °F per hour.

6.7 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodians:  
Air Force - 99  
Army - AV  
Navy - AS  
DLA - CC

Preparing activity:  
DLA - CC  
  
(Project 4720-0210)

Review activities:  
Air Force - 82  
Navy - MC, SA

# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

## INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

### I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER

MIL-DTL-83298B

2. DOCUMENT DATE (YYYYMMDD)

2000/09/29

3. DOCUMENT TITLE

HOSE, POLYTETRAFLUOROETHYLENE, HIGH TEMPERATURE, HIGH PRESSURE (3000 PSI),  
HYDRAULIC AND PNEUMATIC

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

d. TELEPHONE  
(Include Area Code)

(1) Commercial:

(2) DSN:  
(If Applicable)7. DATE SUBMITTED  
(YYYYMMDD)

8. PREPARING ACTIVITY DLA-CC

a. NAME  
COMMANDER  
DEFENSE SUPPLY CENTER  
COLUMBUS

b. TELEPHONE NUMBER (Include Area Code)

(1) Commercial  
(614) 692-0538(2) DSN  
850-0538

Fax: (614) 692-6939

c. ADDRESS (Include Zip Code)  
CODE DSCC-VAI  
3990 EAST BROAD STREET  
COLUMBUS, OH 43216-5000

IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:

Defense Standardization Program Office DLSC-LM  
8725 John J. Kingman Road, Suite 2533 Fort Belvoir, VA 22060-6221  
Telephone (703) 767-6888 DSN 427-6888