

INCH-POUND

MIL-DTL-25579F
25 September 2003
SUPERSEDING
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DETAIL SPECIFICATION

HOSE ASSEMBLY, POLYTETRAFLUOROETHYLENE,
HIGH TEMPERATURE, MEDIUM PRESSURE
GENERAL SPECIFICATION FOR

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

1. SCOPE

1.1 Scope. This specification contains the requirements for medium pressure, high temperature, polytetrafluoroethylene (PTFE) hose assemblies, reinforced with a corrosion-resistant steel (CRES) wire braid for use in fuel, lubricating oil, water-alcohol, hydraulics and pneumatic systems within the limits specified herein.

1.2 Classification. The hose assemblies are classified as follows (see 6.1):

- a. Class 1 - ALL CRES fittings for all sizes, operating temperature ranging from -65 to 450°F.
- b. Class 2 - Combination of aluminum alloy and CRES fittings for sizes 8 and larger, operating temperature ranging from -65 to 275°F.

1.3 Application limitations.

1.3.1 Size -3/-4 assembly. The size -3/-4 hose assembly shall not be used in aircraft hydraulic systems.

1.3.2 Pneumatic storage system. Pneumatic storage system application should not be used (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.

Comments, suggestions, or questions on this document should be addressed to: (Defense Supply Center, Columbus, DSCC-VAI, 3990 East Broad Street, Columbus, OH 43216-5000), or emailed to, construction@dscclia.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online at www.dodssp.daps.mil.

AMSC N/A

FSC 4720

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2.2 Government documents.

2.2.1 Specifications and standards. The following list of 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).

SPECIFICATIONS

FEDERAL

WW-T-700/4	-	Tube, Aluminum Alloy, Drawn, Seamless, 5052.
WW-T-700/6	-	Tube, Aluminum Alloy, Drawn, Seamless, 6061.

DEPARTMENT OF DEFENSE

MIL-PRF-680	-	Degreasing Solvent.
MIL-PRF-5606	-	Hydraulic Fluids, Petroleum Base, Aircraft, Missile, and Ordnance.
MIL-PRF-7808	-	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base.
MIL-A-8625	-	Anodic Coatings, for Aluminum and Aluminum Alloys.
MIL-DTL-27267	-	Hose, Polytetrafluoroethylene, High Temperature, Medium Pressure.
MIL-DTL-27272	-	Fittings, Polytetrafluoroethylene Hose, High Temperature, Medium Pressure, General Specification for.
MIL-PRF-83282	-	Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Metric, NATO Code Number H-537.
MIL-PRF-87257	-	Hydraulic Fluid, Fire Resistant; Low Temperature, Synthetic Hydrocarbon Base, Aircraft and Missile.
MIL-DTL-25579/1	-	Hose Assembly Length Measurement for NAS 1760 and MS8000 Series. Seal to Flareless Fitting End Design.

STANDARDS

DEPARTMENT OF DEFENSE

MIL-STD-130	-	Identification Marking of U.S. Military Property.
MS33786	-	Fitting Installation, Flared Tube and Hose, Swivel (ASG).

(See supplement 1 for list of associated specification sheets.)

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Defense Printing Service Detachment Office, Building 4D, Customer Service, 700 Robbins Avenue, 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 that are 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).

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ASTM INTERNATIONAL

- ASTM A262 - Steels, Detecting Susceptibility to Intergranular Attack in Austenitic Stainless.
- ASTM A580/A580M - Steel, Wire, Stainless.
- ASTM D471 - Rubber Property - Effect of Liquids.

(Application for copies should be addressed to ASTM International, PO Box C700, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

AMERICAN NATIONAL STANDARD INSTITUTE (ANSI)

- ANSI/NCSL Z540.1 - Laboratories, Calibration, and Measuring and Test Equipment.

(Application for copies should be addressed to the American National Standards Institute 25 West 43rd Street, 4th Fl. New York, NY 10036.)

SAE INTERNATIONAL

- SAE AMS-QQ-P-35 - Passivation Treatment for Corrosion-Resistant Steel.
- SAE AMS-QQ-A-200/8 - Aluminum Alloy 6061, Bar, Rod, Shapes, Tube, and Wire, Extruded.
- SAE AMS-QQ-A-225/4 - Aluminum Alloy, 2014, Bar, Rod, Wire, and Special Shapes; Rolled Drawn, or Cold Finished.
- SAE AMS-QQ-A-225/6 - Aluminum Alloy, 2024, Bar, Rod, and Wire; Rolled, Drawn or Cold Finished.
- SAE AMS-QQ-A-225/8 - Aluminum Alloy Bar, Rod, Wire, and Special Shapes; Rolled, Drawn, or Cold Finished, 6061.
- SAE AMS-QQ-S-763 - Steel Bars, Wire Shapes, and Forgings, Corrosion Resistant.
- SAE AMS-A-22771 - Aluminum Alloy Forgings, Heat Treated.
- SAE AMS 4127 - Aluminum Alloy Forgings and Rolled or Forged Rings 1.0 Mg - 0.6 Si - 0.28 Cu - 0.20 Cr (6061-T6), Solution and Precipitation Heat Treated.
- SAE AMS 5557 - Steel Tubing, Seamless and Welded, Corrosion and Heat Resistant, 18.5 Cr - 105 Ni - 0.40 Ti (SAE 30321) Hydraulic, Solution Heat Treated.
- SAE AMS 5566 - Steel Tubing, Seamless or Welded, Corrosion Resistant, 19 Cr - 10 Ni (SAE 30304) High Pressure Hydraulic, Cold Drawn.
- SAE AMS 5567 - Steel Tubing, Seamless or Welded, Corrosion Resistant 19 Cr - 10 Ni (SAE 30304) Hydraulic, Annealed.
- SAE AMS 5643 - Steel Bars, Forgings, Tubing and Rings, Corrosion Resistant 16.5 Cr - 4.0 Ni - 0.30(Cb + Ta) - 4.0 Cu.
- SAE AMS 5644 - Steel Bars and Forgings, Corrosion Resistant, 17Cr - 7Ni - 1Al.
- SAE AMS 5689 - Steel Wire, Corrosion and Heat Resistant, 18 Cr - 9.5 Ni - 0.40 Ti (SAE 30321) Solution Heat Treated.
- SAE AMS 5743 - Steel, Corrosion and Heat Resistant, Bars and Forgings 15.5 Cr - 4.5 Ni - 2.9 Mo - 0.10 Ni Solution Heat Treated, Sub-Zero Cooled, Equalized and Over-Tempered.
- SAE AMS 5639 - Steel, Corrosion Resistant, Bars, Wire, Forgings, Tubing, and Rings 19Cr - 9.5Ni, Solution Heat Treated.
- SAE AMS 5645 - Steel, Corrosion and Heat Resistant, Bars, Wire, Forgings, Tubing, and Rings 18Cr - 10Ni - 0.40Ti (SAE 30321).
- SAE AMS 5647 - Steel, Corrosion Resistant, Bars, Wire, Forgings, Tubing, and Rings 19Cr - 10Ni, Solution Heat Treated.
- SAE AMS 5697 - Steel, Corrosion Resistant, Wire 19Cr - 9.5Ni, Solution Heat Treated.
- SAE ARP908 - Torque Requirements, Installation and Qualification Test, Hose and Tube Fittings.
- SAE AS611 - Polytetrafluoroethylene Hose Assembly, Cleaning Methods.

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SAE AS1055	-	Fire Testing of Flexible Hose, Tube Assemblies, Coils, Fittings, and Similar System Components.
SAE AS2078	-	Test Methods, Hose Assemblies, Polytetrafluoroethylene (PTFE).
SAE AS33514	-	Fitting End, Standard Dimensions for Flareless Tube Connection and Gasket Seal.
SAE AS4395	-	Fitting End-Flared Tube Connection, Design Standard.
SAE AS8879	-	Screw Threads - UNJ Profile, Inch.

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

AEROSPACE INDUSTRIES ASSOCIATION

NAS 1760	-	Fitting End, Flareless Acorn, Standard Dimensions for.
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(Applications for copies should be addressed to Aerospace Industries Association of America, 1250 Eye Street, N.W., Suite 1200, Washington, DC, 20005-3924).

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

3. REQUIREMENTS

3.1 Specification sheets. The individual item requirements shall be as specified herein and also in accordance with the applicable specification sheet. In the event of a conflict between the requirements of this specification and the specification sheet, the latter shall govern.

3.2 Qualification. Hose assemblies furnished under this specification shall be products that are authorized by the qualifying activity for listing on the applicable qualified products list (QPL) before contract award (see 4.2 and 6.3).

3.2.1 Extension of qualification. Qualification of hose assemblies with end fittings of one type of interface (flared, flareless, or flange) shall be extended to include hose assemblies with end fittings of another type of interface only in accordance with the requirements specified in 4.5.1. However, qualification extension shall apply only to end fittings, of the same size and class, produced by the same manufacturer using the same processes, and utilizing identical hose attachment method and design as specified herein and in the applicable specification sheet.

3.3 Materials. Materials used shall be as identified herein. Materials used that are not specifically identified herein shall be of a quality that will enable the hose assembly to meet the requirements specified herein.

3.3.1 Recycled, recovered, and 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.

3.3.2 Metals. All metals used herein shall conform to the requirements of table I. Metals used for end fittings (see 3.5.2) shall be a corrosion-resistant steel or an aluminum alloy that has been treated to resist corrosion due to fuels, salt spray, and atmospheric conditions encountered by the hose assembly during storage and normal service use.

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TABLE I. Requirements for metals.

Metal	Form	Specification	Type
Aluminum alloy	Bars	SAE AMS-QQ-A-225/4	2014-T6
		SAE AMS-QQ-A-225/6	2024-T351
			2024-T851
			2024-T6
		SAE AMS-QQ-A-225/8	6061-T6
		SAE AMS-QQ-A-200/8	6061-T651
	Forgings	SAE AMS4127	6061-T6
		SAE AMS22771	7075-T73
			2014-T6
	Seamless tubing	WW-T-700/4	5052, type I
		WW-T-700/6	6061-T6, type I
Corrosion-resistant steel	Bars & forgings	SAE AMS-QQ-S-763	Class 304, Condition A or B
			Class 304L, condition A
			Class 321, condition A
		SAE AMS5639	SAE 30304; UNS S30400
		SAE AMS5645	SAE 30321; UNS S32100
		SAE AMS5647	304L ; UNS S30403
		SAE AMS5643	17-4PH
		SAE AMS5644	17-7PH
		SAE AMS5743	AM-355
	Tubing	SAE AMS5566	Type 1 or 2
		SAE AMS5557	Type 1 or 2
		SAE AMS5567	SAE 30304
	Wire	SAE AMS5689	SAE 30321; UNS S32100
		SAE AMS5697	SAE 30304; UNS S30400
		ASTM A580	Type 302, 304, 305, or 321

3.3.3 Hazardous substances. The use of toxic chemicals, hazardous substances or ozone depleting chemicals (ODCs) shall be avoided whenever feasible.

3.4 Finish. The following requirements are applicable to permanent and field attachable fittings.

3.4.1 Aluminum parts. Unless otherwise specified, aluminum parts shall be finished in accordance with MIL-A-8625, class 2. Flareless parts shall be dyed yellow while flared parts shall be dyed blue.

3.4.2 Corrosion-resistant steel parts. Unless otherwise specified, corrosion-resistant steel parts shall be passivated in accordance with SAE AMS-QQ-P-35. Following passivation, all parts shall be thoroughly rinsed in water and dried.

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3.5 Design and construction. The hose assembly shall consist of a seamless polytetrafluoroethylene inner tube, reinforced with corrosion resistant steel reinforcement wires and coupled with corrosion resistant (stainless steel) end fittings (class 1) or aluminum alloy and corrosion resistant end fittings (class 2) suitable for the intended installation. If assemblies with field-attachable fittings are used, the fittings shall comply with MIL-DTL-27272, the hose shall comply with MIL-DTL-27267 and the assemblies shall comply with the requirements of this specification and MS8000 through MS8004, (see supplement I) as applicable. Assemblies with permanent fittings shall conform to this specification and MS8005 through MS8009, as applicable. Standard hose assemblies shall have flared fittings to mate with SAE AS4395 and flareless fittings according to NAS 1760 or MS8000 series seal, to mate with SAE AS33514 in accordance with MIL-DTL-25579/1. The hose assemblies shall withstand the strain and vibrations encountered during shipment, storage, installation, and service, within the limits specified herein.

3.5.1 Inner tube. The inner tube shall be seamless extrusion of virgin polytetrafluoroethylene resin. The hose inner tube shall conform to all of the requirements in MIL-DTL-27267 for the bulk hose to be assembled with MIL-DTL-27272 hose connector fitting. For permanently attached fitting hose assemblies the hose should meet the requirements of MIL-DTL-27267.

3.5.1.2 Reinforcement. The reinforcement shall consist of corrosion resistant steel wires in accordance with the applicable specification listed in table I. Hose under -16Z shall have a single layer of braid and hose -16Z and above shall have two layers of braid. The letter "Z" following the dash size signifies that a double layer of wire braid is mandatory. The wires shall be so arranged over the inner tube as to provide sufficient strength to insure conformance with the requirements herein. Broken or missing reinforcing wires shall be cause for rejection. Crossed-over wires shall not be cause for rejection.

3.5.2 Fittings. The end fittings for the hose assembly may be either field-attachable type in accordance with MIL-DTL-27272 or the permanent type. Materials shall be selected for the specific operating conditions as specified in 3.3. For class 2 hose assemblies (size -8 and larger), the socket, and the sleeve if used, shall be stainless steel and the nipple, nut, and elbow (if applicable) shall be aluminum alloy. See table I for fitting materials. Flared fittings shall mate with SAE AS4395 and flareless fittings shall mate with SAE AS33514 in accordance with applicable MS in accordance with MIL-DTL-25579/1. Flange fittings shall mate with the mounting pad as shown on MS33786. An alternate nut, functionally equivalent, may be used for NAS 1760 or MS8000 series seal application.

3.5.2.1 Fittings embrittlement resistance. All crimped or swaged end fitting sockets (collars) that are fabricated from 304 stainless steel shall be capable of passing the embrittlement test specified in ASTM A262, practice E, prior to assembly to the nipple or the swaging operation. Sockets fabricated from stabilized austenitic steel are acceptable without being subjected to the embrittlement test.

3.5.3 Screw threads. All coupling nut threads shall be in accordance with SAE AS8879, category I. However, no more than a 10% increase in the thread tolerances specified in SAE AS8879 shall be accepted for the coupling nut thread after the first connection (see 4.5.2).

3.5.4 Dimensions and weights. Except for length (see 3.5.5), the dimensions of the hose assembly and the weight of its components shall be as specified in table II and figure 1.

3.5.5 Length. Hose assembly shall be furnished in lengths as specified in the contract or purchase order (see 6.2); however, tolerances on the length of each hose assembly shall be as follows:

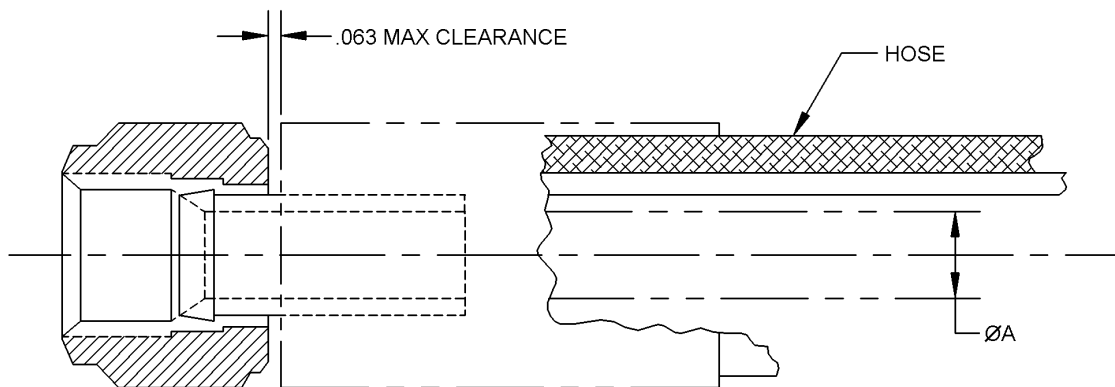
- a. ± 125 inch for lengths under 18 inches.
- b. ± 250 inch for lengths from 18 inches to 36 inches.
- c. ± 500 inch for lengths from 36 inches to 50 inches.
- d. $\pm 1\%$ for lengths over 50 inches.

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TABLE II. Dimensions and weights. 1/

Size	Reference OD tubing (in)	"A" Minimum nipple diameter <u>2/</u> (in)	Maximum hose weight (lb/ft)	Maximum class 1 fitting weight (lb) reference	Maximum class 2 fitting weight (lb) <u>3/</u> reference	Maximum hose OD (in)
3/4 <u>4/</u>	0.188	0.132	0.087	0.069	---	0.343
4	0.250	0.132	0.087	0.094	---	0.343
5	0.313	0.193	0.099	0.114	---	0.406
6	0.375	0.256	0.123	0.139	---	0.469
8	0.500	0.340	0.158	0.263	0.121	0.585
10	0.625	0.430	0.205	0.377	0.173	0.687
12	0.750	0.548	0.327	0.442	0.203	0.812
16Z <u>5/</u>	1.000	0.778	0.580	0.864	0.387	1.140
20Z <u>5/</u>	1.250	1.000	0.746	1.373	0.661	1.390
24Z <u>5/</u>	1.500	1.250	0.972	1.599	0.948	1.707

- 1/ For ball size use the individual MS sheets (they have more severe requirements).
2/ Dimension A is the minimum dimension that may be reduced after hose to fitting assembly.
3/ Maximum weight for Sizes 3/4 through size 6 does not exist (see 1.2 for class 2).
4/ Swivel nut and cone seat of nipple size 3/4 shall mate with SAE AS4395 or AS33514 size 3 fitting. The remaining portion of the fitting shall mate with size 4 hose.
5/ The letter "Z" is used to indicate that two layers of reinforcement are required for these sizes (see MIL-DTL-27267).

FIGURE 1. Hose assembly.

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3.6 Performance.

3.6.1 Operating temperature and pressure. Class 1 shall operate in temperature ranging from -65 to 450°F. Class 2 shall operate in temperature ranging from -65 to 275°F. The operating pressure of the hose assembly shall not be greater than the applicable value specified in table III.

TABLE III. Performance requirements and hose assembly sample lengths.

Size	Length of samples for impulse test (in) <u>1/</u>	Length of samples for all other tests (in) <u>1/</u>	Maximum operating pressure per square inch (psi)	Proof pressure <u>2/</u> (psi)	Minimum room temperature burst pressure (psi)	Minimum high temperature burst pressure (psi)	Minimum inside bend radius (in)
-3/-4	14.0	18.0	1500	3000	12000	7000	2.00
-4	14.0	18.0	1500	3000	12000	7000	2.00
-5	16.0	18.0	1500	3000	10000	6500	2.00
-6	18.0	18.0	1500	3000	9000	6500	4.00
-8	21.0	18.0	1500	3000	8000	6000	4.63
-10	23.5	18.0	1500	3000	7000	5500	5.50
-12	27.5	18.0	1000	2000	5000	3500	6.50
-16Z	18.0	18.0 <u>3/</u>	1250	2500	5000	3500	7.38
-20Z	18.0	18.0 <u>3/</u>	1000	2000	4000	3000	11.00
-24Z	18.0	18.0 <u>3/</u>	1000	2000	4000	3000	14.00

1/ The number of samples required for qualification testing as specified in 4.2.1.

2/ Assemblies with aluminum flange fittings shall be proof-pressure tested to the values listed under the "operating pressure" column.

3/ Samples for the low temperature flexibility and the vacuum tests shall be 30 inches long for these sizes.

3.6.2 Proof pressure. When subjected to the applicable proof pressure specified in table III and tested in accordance with 4.5.2, the hose assembly shall not leak through the wall of the hose or around the end fittings. The fittings shall not exhibit any visual evidence of damage or permanent deformation.

3.6.3 Leakage. There shall be no leakage through the wall of the hose or around the fittings when the hose assembly is subjected to testing in accordance with 4.5.3.

3.6.4 Room temperature burst pressure. When subjected to testing in accordance with 4.5.4, the hose assembly shall not leak or burst below the applicable room temperature burst pressure specified in table III. There shall be no leakage around the end fittings, and the end fittings shall not loosen or separate from the hose.

3.6.5 High temperature burst pressure. When subjected to testing in accordance with 4.5.5, the hose assembly shall not leak or burst below the applicable high temperature burst pressure specified in table III. There shall be no leakage around the end fittings, and the end fittings shall not loosen or separate from the hose.

3.6.6 Hose conductivity. When subjected to testing in accordance with 4.5.6, using a test potential of 1,000 V dc, hose assembly sizes 3/4 through 8 shall conduct a direct current of not less than 6 μ A. Assembly sizes 10 through 24Z shall conduct a direct current of not less than 12 μ A.

3.6.7 Impulse. The hose assembly shall not leak, burst, or loosen from the test apparatus and there shall be no evidence of malfunctioning when subjected to 100,000 cycles in accordance with 4.5.7.

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3.6.8 Fuel resistance. When subjected to testing in accordance with 4.5.8, the hose assembly shall not leak or show any evidence of deterioration during and at the completion of the test.

3.6.9 Pneumatic effusion. When subjected to testing in accordance with 4.5.9, the measured effusion rate of the hose assembly shall not be greater than the values listed in table IV.

TABLE IV. Pneumatic effusion requirement.

Size	3/4	4	5	6	8	10	12	16Z	20Z	24Z
Effusion rate $\frac{1}{\text{cc/ft of hose}}$	4.0	4.0	5.0	5.0	5.0	5.0	6.0	8.0	8.0	8.0

$\frac{1}{\text{cc/ft of hose}}$ Collected during the last 30 minutes of the test.

3.6.10 Pneumatic surge. When subjected to testing in accordance with 4.5.10, the hose assembly shall not leak through the hose wall or around the end fittings. The inner tube of the hose shall not exhibit any evidence of degradation when the filter is examined at the completion of the test.

3.6.11 Stress degradation. The effusion rate of the hose assembly shall not be greater than the values listed in table V when tested in accordance with 4.5.11. Following the introduction of hot oil, the hose assembly shall not leak when subjected to the applicable proof pressure test specified in 4.5.2.

TABLE V. Effusion requirement after stress degradation test.

Size	3/4	4	5	6	8	10	12	16Z	20Z	24Z
Effusion rate (cc/in/min)	8	8	8	8	4	2	2	2	2	2

3.6.12 Corrosion. When subjected to testing in accordance with 4.5.12, the hose assembly shall not leak or malfunction below the applicable room and high temperature pressures specified in table III.

3.6.13 Over-tightening torque. There shall not be any leakage when the fitting (flared or flareless only) is subjected to testing in accordance with 4.5.13. After each disassembly, the nut shall swivel freely by hand.

3.6.14 Elongation and contraction. When subjected to the applicable operating pressure specified in table III and tested in accordance with 4.5.14, the hose assembly shall not change length by more than +0.20 or -0.03 inch in 10 inches of length.

3.6.15 Volumetric expansion. The volumetric expansion, measured in cc/in of free length, shall not be greater than 0.028 for size 4 and 0.040 for size 5 when tested in accordance with 4.5.15.

3.6.16 Low temperature flexibility. When tested in accordance with 4.5.16 and subjected to the applicable bend radius specified in table III, the hose assembly shall not leak or exhibit any visible evidence of permanent deformation or damage.

3.6.17 Vacuum. The hose shall not collapse or show any evidence of defects when subjected to testing in accordance with 4.5.17. The ball shall roll freely through the entire length of the hose, unaided, to indicate that the inside diameter of the hose has not been distorted or reduced.

3.6.18 Pneumatic leakage. When subjected to testing in accordance with 4.5.18, a steady stream of bubbles shall not be seen from any area of the hose assembly.

3.6.19 Fire resistance. When fire resistance or fireproofing is required (see 6.2), the hose assembly shall not rupture or leak when subjected to testing in accordance with 4.5.19.

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3.6.20 Cleanliness. Prior to shipping, the end fittings of the hose assembly 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, vibrations encountered during shipping, storage and handling. The interior surface of the hose assembly shall be free from oil, grease, dirt, moisture, cleaning solvents and foreign materials. All hose assemblies shall be cleaned in accordance with SAE AS611, class O. During conformance inspection, hose assemblies with uncovered ends shall be rejected and considered as a failure. The interior of the assembly shall not contain any debris or foreign materials when examined in accordance with 4.5.20.

3.7 Identification of product.

3.7.1 Fittings. The fittings manufacturer's name or trademark shall be permanently marked on all end fittings.

3.7.2 Hose assemblies. All hose assemblies shall be marked in accordance with MIL-STD-130 with the manufacturer's name or Commercial and Government Entity (CAGE) code, Part Identification Number (PIN) as specified in the applicable specification sheet, operating pressure in psi, assembly date, and source of qualified MIL-DTL-27267 hose which shall be identified with the CAGE code. And for assemblies with field attachable end fittings, the source of qualified MIL-DTL-26267 hose, if different ownership than the assembly manufacturer, shall be identified with the CAGE code. A permanent identification band, wrapped around the circumference of the hose, may be used. If used, the band shall not be wider than 1 inch and shall remain tight on the hose to prevent relative movement and resultant chafing.

3.8 Interchangeability. All hose assemblies having the same manufacturer's part number shall be functionally and dimensionally interchangeable.

3.9 Workmanship. All surfaces shall be free from burrs. All sealing surfaces shall be smooth, except that annular tool marks shall not be greater than 100 microinches.

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4. VERIFICATION

4.1 Classification of inspection. The inspection requirements specified herein shall be classified as follows:

- a. Qualification inspection (see 4.2)
- b. Conformance inspection (see 4.3)

4.1.1 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 used. The establishment and the maintenance of a calibration system to control the accuracy of all test and measuring equipment shall be in accordance with ANSI/NCSL Z540.1 or equivalent.

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

4.2.1 Samples for qualification. Test samples shall consist of the number of samples and lengths specified in table VII. If field-attachable fittings are used, the fittings shall comply with MIL-DTL-27272 and be used with MIL-DTL-27267 hose. Where permanent end fittings are used and more than one source of hose or hose liner are used, qualification tests shall be conducted on test samples constructed using hose liner from each source. Where permanent fittings using hose other than MIL-DTL-27267 hose, then hose liners and fittings from each source are used. The requirements of 4.5.18 (specific gravity in accordance with SAE AS2078) shall be demonstrated by the tests. The test sequence used shall be as specified in table VII. See paragraph 3.5.1 for inner tube requirements. Qualification samples shall be representative of the product proposed to be furnished to this specification. Samples consisting of 16 hose assemblies of the same size and class, with lengths as specified in table VII or in the applicable test method, shall be subjected to qualification testing. Each sample shall consist of a PTFE lined, wire reinforced hose, qualified to MIL-DTL-27267, coupled with reusable fittings as specified 3.5.2. All assemblies with reusable fittings shall be assembled in accordance with the instructions specified in MIL-DTL-27272. When permanent fittings are used in the hose assemblies, two separate end fittings of the same type of interface, size, and class shall also be submitted for qualification testing (see table VII). Hose assemblies with permanent fittings shall be qualified with fittings from a specific manufacturer(s) and bulk hose from a specific manufacturer(s). For assemblies with either permanent or reusable fittings, the assemblies shall be qualified with fittings from a specific manufacturer and hose from a specific manufacturer. If multiple hose sources and/or multiple fitting sources are involved, each combination must be qualified. Any subsequent changes of a hose or fitting manufacturer in a qualified assembly must be approved by the qualifying activity.

4.2.2 Additional samples for extension of qualification.

4.2.2.1 Hose assemblies reusable. Qualification of hose assemblies with reusable end fittings may be extended, to include hose assemblies of the same size and class but with reusable end fittings of another type of interface (see applicable specification sheet), provided that the following additional samples are submitted for testing and approval:

- a. Two hose assemblies, of the same size and class as those submitted in 4.2.1, with reusable end fittings for each additional type of interface are desired.

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4.2.2.2 Hose assemblies permanent. Qualification of hose assemblies with permanent end fittings may be extended, to include hose assemblies of the same size and class but with permanent end fittings of another type of interface (see applicable specification sheet), provided that the following additional samples are submitted for testing and approval:

- a. Two hose assemblies, of the same size and class as those submitted in 4.2.1, with permanent end fittings for each additional type of interface are desired.
- b. Two separate permanent end fittings of the same type of interface, size, and class as submitted in item "a".

4.2.3 Qualification inspection routine. All hose assembly samples shall be subjected to qualification testing in accordance with table VI and in the sequence specified in table VII. However, the additional hose assembly samples specified in 4.2.2 and the separate permanent end fittings specified in 4.2.1 and in 4.2.2.2 shall be subjected to only the tests and sequences specified in table VII.

4.2.4 Acceptance of qualification data. For identical requirements and test procedures, using an identical fitting, qualification test data from MIL-DTL-27267 hose and from MIL-DTL-27272 fittings shall be accepted as qualification test data for MIL-DTL-25579 providing 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.

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

4.2.6 Retention of qualification. To retain qualification, the manufacturer shall submit verification at 12-month intervals to the qualifying activity. The qualifying activity shall establish the initial verification 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 the quantities of assemblies that have passed and failed shall be included. All reworked lots shall also be accounted for and identified.

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

4.2.6.2 Retention of qualification report. Failure to submit the verification within 30 days after the end of each 12-month period may result in loss of qualification for the product. In addition to the periodic submission of verification, the manufacturer shall immediately notify the qualifying activity at any time during the 12-month period that the verification indicates failure of the qualified product to meet the requirement specified herein. Testing shall be in accordance with the procurement specification. No sampling or periodic testing is required for a specific size if there has been no production for that size in the reporting period. If there has been no production for a period of three years or longer at any location, sampling tests (two items for each sampling test) shall be completed with items from the first production lot when production is resumed for the applicable size at the applicable location.

4.2.6.2.1 Sampling and periodic tests-limited production: In the case where there has been limited production, and the specification limit for the applicable sampling or periodic control tests has not been reached within a three year period since the last sampling or periodic test, the required sampling or periodic control tests shall be performed using the small lot test sample quantities as specified in the procurement specification within 30 calendar days of the end of the three year period.

4.3 Conformance inspection.

4.3.1 Individual tests. Inspection of the product for delivery; shall consist of subjecting each hose assembly to the individual tests specified in table VI. Any item failing to meet the requirements of the individual tests shall be immediately removed from the lot.

4.3.2 Sampling tests. Hose assemblies, selected to form an inspection sample (see 4.3.2.1), shall be subjected to the sampling tests specified in table VI.

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4.3.2.1 Inspection sample. An inspection sample shall consist of hose assemblies, of one inner diameter size, randomly selected from the production lot without regard to quality. Eight samples from a lot size of 3,000 hose assemblies or one sample from each smaller lot size of 375 hose assemblies or smaller shall be subjected to the sampling tests.

4.3.2.2 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 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.

TABLE VI. Inspection requirements.

Requirement	Requirement paragraph	Test method paragraph	Qualification inspection	Conformance inspection		
				Individual	Sampling	Periodic
Examination of product		4.5.1	X	X		
Proof pressure	3.6.2	4.5.2	X	X		
Leakage	3.6.3	4.5.3	X		X	
Room temperature burst pressure	3.6.4	4.5.4	X		X	
High temperature burst pressure	3.6.5	4.5.5	X			
Hose assembly conductivity	3.6.6	4.5.6	X			X
Impulse	3.6.7	4.5.7	X			X <u>1/</u>
Fuel resistance	3.6.8	4.5.8	X			
Pneumatic effusion	3.6.9	4.5.9	X			
Pneumatic surge	3.6.10	4.5.10	X			
Stress degradation	3.6.11	4.5.11	X			X <u>2/</u>
Corrosion	3.6.12	4.5.12	X			
Over-tightening torque	3.6.13	4.5.13	X			
Elongation & contraction	3.6.14	4.5.14	X		X	
Volumetric expansion	3.6.15	4.5.15	X			
Low temperature flexibility	3.6.16	4.5.16	X			
Vacuum	3.6.17	4.5.17	X			
Pneumatic leakage	3.6.18	4.5.18	X			
Fire resistance or fire proof	3.6.19	4.5.19	X			

1/ Only unaged samples shall be subjected to testing.

2/ Exposure to -65°F and subsequent testing may be omitted.

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4.3.3 Periodic control tests. For each size manufactured under essentially the same conditions, periodic control testing shall be performed on either eight samples from every 10,000 hose assemblies produced or two samples from every 2,500 hose assemblies. If there has been some production but the number of hose assemblies produced has not reached 2,500 for a specific size within three years, the manufacturer shall perform periodic control tests on two hose assemblies of that size unless documented approval has been obtained from the qualifying activity.

4.3.3.1 Periodic control test plan. Testing shall be in accordance with table VI. Half of the samples shall be subjected to the stress degradation test followed by the hose conductivity test. The remaining half of the samples shall be subjected to the impulse test.

4.3.3.2 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 re-instituted 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 corrective action taken shall be furnished to both the qualifying and inspection activities.

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TABLE VII. Qualification inspection sequence.

Required qualification test	Required test paragraph	Sample number													
		Fittings <u>1/</u> (permanent)	Assemblies												
			1 <u>2/</u>	2	3	4	5	6 <u>3/</u>	7	8 <u>2/</u>	9	10 <u>2/</u>	11-16 <u>3/</u>	17-18 <u>4/</u>	
Examination of product	4.5.1	X	X	X	X	X	X	X	X	X	X	X	X	X	
Proof pressure	4.5.2		X	X	X	X	X	X	X	X	X	X	X	X	
Stress degradation	4.5.11								X	X					
Corrosion	4.5.12				X	X									
Over-tightening torque <u>5/</u>	4.5.13	X													
Elongation & contraction	4.5.14			X								X			
Volumetric expansion	4.5.15			X							X	X			
Pneumatic leakage	4.5.18						X	X							
Hose conductivity	4.5.6										X				
Impulse	4.5.7												X		
Fuel resistance	4.5.8		X	X											
Pneumatic effusion	4.5.9						X	X							
Pneumatic surge	4.5.10						X	X							
Low temp flexibility	4.5.16		X							X		X			
Vacuum	4.5.17		X							X		X			
Proof pressure	4.5.2						X	X							
Leakage	4.5.3						X	X						X	
Room temp burst pressure	4.5.4				X		X							X	
High temp burst pressure	4.5.5					X		X							

1/ Two fittings of each type of interface are required only when qualification of assemblies using permanent fittings is desired (see 4.2.1 and 4.2.2.1).

2/ These samples shall be 30 inches in length for sizes 16Z, 20Z and 24Z.

3/ These samples shall have a 90°elbow fitting on one end and a straight fitting on the other end. If qualification is desired for both bent tube and forged elbow, then half of the samples shall use the other type. In this case, sample 6 may have either a bent tube or a forged configuration.

4/ These samples are required only when extension of qualification is desired for another type of interface (see 4.2.2.1).

5/ Not applicable to flange fittings.

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

4.3.5 Acceptance of conformance inspection data. For identical requirements and test procedures, using an identical fitting, conformance inspection data from MIL-DTL-27267 or MIL-DTL-27272 shall be accepted as conformance inspection data for MIL-DTL-25579, providing that documented approval has been obtained from the qualifying activity. When conformance inspection data from MIL-DTL-27267 is to be accepted as conformance inspection data for MIL-DTL-25579, two feet of bulk hose shall be considered to be the equivalent of one hose assembly.

4.4 Inspection conditions. Unless otherwise specified, all required inspections shall be performed in accordance with the test conditions specified in 4.5.

4.5 Test methods. Test methods used shall be as specified in table VI. For qualification testing, the sequence of tests performed shall be in accordance with table VII. Room temperature shall be defined as 60 to 100°F unless otherwise specified. Class 2 hose assemblies shall be tested at 275°F whenever a higher temperature is specified.

4.5.1 Examination of product. Each hose assembly shall be visually and physically examined for conformance to the configuration specified in the applicable specification sheet and the following requirements:

- a. Materials (see 3.3).
- b. Design and construction (see 3.5).
- c. Dimensions and weights (see 3.5.4).
- d. Cleanliness (see 3.6.20).
- e. Product identification (see 3.7).
- f. Interchangeability (see 3.8).
- g. Workmanship (see 3.9).

4.5.2 Proof pressure. Prior to testing, each hose assembly shall be examined to ensure that it is properly assembled. Samples shall then be subjected to testing in accordance with SAE AS2078 using the applicable proof pressure as specified in table III. However, hose assemblies with aluminum flange fittings (class 2) shall be proof tested using the applicable operating pressure listed in table III. Test fluid shall be water; however, fluid in accordance with MIL-PRF-5606, MIL-PRF-83282, or MIL-PRF-87257 may be used during qualification testing. Conformance shall be as specified in 3.6.2.

4.5.3 Leakage. Prior to testing, the exterior of the samples shall be cleaned free of oil and of any residues. Samples shall be subjected to testing in accordance with SAE AS2078. Test fluid shall be water or fluid in accordance with MIL-PRF-5606, MIL-PRF-83282, or MIL-PRF-87257. A white paper towel, wrapped tightly around the entire length of the sample, shall be used to check for leakage. Conformance shall be as specified in 3.6.3.

4.5.4 Room temperature burst pressure. Samples shall be subjected to testing in accordance with SAE AS2078 using the applicable room temperature burst pressure specified in table III. Test fluid shall be water or fluid in accordance with MIL-PRF-5606, MIL-PRF-83282, or MIL-PRF-87257. Samples shall be continuously observed throughout the duration of the test. The type of failure and the pressure at which failure occurred shall be recorded. Conformance shall be as specified in 3.6.4.

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4.5.5 High temperature burst pressure. Samples shall be subjected to testing in accordance with SAE AS2078 using the applicable high temperature pressure specified in table III. Test fluid shall conform to MIL-PRF-7808, MIL-PRF-83282, or MIL-PRF-87257. Samples shall be continuously observed for the duration of the test. The type of failure and the pressure at which failure occurred shall be recorded. Conformance shall be as specified in 3.6.5.

4.5.6 Hose conductivity. The test sample shall be a 13-inch length of hose with a fitting attached at only one end. Testing shall be in accordance with the conductivity test for hose assembly specified in SAE AS2078. Conformance shall be as specified in 3.6.6.

4.5.7 Impulse. All test specimens, of length as specified in table III, shall be subjected to the proof pressure test (see 4.5.2) prior to impulse testing in accordance with SAE AS2078. For qualification testing, 2 of the 6 samples shall be unaged while 2 samples shall be aged in air at $400 \pm 10^\circ\text{F}$ for 168 hours. The remaining 2 samples shall be aged by immersion in fluid in accordance with MIL-PRF-7808 at $400 \pm 10^\circ\text{F}$ for 168 hours. Samples sizes 12 and smaller shall be connected to the rigid supports of the test apparatus and bent to the applicable radius specified in table III. Samples sizes 16Z and larger shall be installed straight; one end may be left free. The peak pressure used for samples sizes 16Z and smaller shall be 125 % of the operating pressure specified in table III. For sizes 20Z and 24Z, the peak pressure shall be equal to but not greater than the applicable operating pressure specified in table III. Conformance shall be as specified in 3.6.7.

4.5.8 Fuel resistance. Samples shall be subjected to the fuel resistance test in accordance with SAE AS2078. Conformance shall be as specified in 3.6.8.

4.5.9 Pneumatic effusion. Samples shall be subjected to the pneumatic effusion test in accordance with SAE AS2078. Conformance shall be in accordance with 3.6.9.

4.5.10 Pneumatic surge. Samples shall be subjected to the pneumatic surge test in accordance with SAE AS2078. Conformance shall be in accordance with 3.6.10.

4.5.11 Stress degradation. Samples shall be subjected to testing in accordance with SAE AS2078 except that the assembly shall be flushed with fluid in accordance with MIL-PRF-680 or ASTM D471, reference fuel B, after the third cycle and prior to the drying process. At the completion of the effusion test, the hose assemblies shall be placed in a cold chamber for 8 hours with the temperature maintained at $-65 \pm 2^\circ\text{F}$. After 8 hours, fluid in accordance with MIL-PRF-7808 and at a temperature of $450 \pm 10^\circ\text{F}$ shall be circulated through the samples. Within 15 seconds after the introduction of hot fluid, pressure shall be increased to the applicable proof pressure specified in table III and held for at least 2 minutes. Conformance shall be as specified in 3.6.11.

4.5.12 Corrosion. Samples, mounted in a vertical position and subjected to the applicable operating pressure (see table III), shall be immersed in a 2.5% solution of sodium chloride for five minutes. They shall then be air-dried at $140 \pm 10^\circ\text{F}$ for 25 minutes. This cycling shall continue for at least 172 hours with the specified pressure maintained on the hose. Following the cycling, half of the samples shall be subjected to the room temperature burst pressure test (see 4.5.4) and the other half shall be subjected to the high temperature burst pressure test (see 4.5.5). Conformance shall be as specified in 3.6.12.

4.5.13 Over-tightening torque. Samples shall be subjected to testing in accordance with SAE ARP908 except that the number of cycles used shall be 15. Conformance shall be as specified in 3.6.13.

4.5.14 Elongation and contraction. Samples shall be subjected to testing in accordance with SAE AS2078. The test fluid used shall be water or fluid in accordance with MIL-PRF-5606, MIL-PRF-83282, or MIL-PRF-87257. Conformance shall be as specified in 3.6.14.

4.5.15 Volumetric expansion. Testing (sizes 4 and 5 only) shall be in accordance with SAE AS2078 except that the operating pressure used shall be 1000 psi. Conformance shall be as specified in 3.6.15.

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4.5.16 Low temperature flexibility. Samples, of length as specified in table III, shall be subjected to testing in accordance with SAE AS2078. Conformance shall be as specified in 3.6.16.

4.5.17 Vacuum. Samples that were tested for low temperature flexibility (see 4.5.16) shall then be subjected to vacuum testing in accordance with SAE AS2078. The applicable ball diameter and negative pressure used shall be as specified in table VIII. Conformance shall be as specified in 3.6.17.

TABLE VIII. Vacuum test conditions.

Size	Nominal inside diameter (in)	Ball diameter (in)	Negative pressure (in Hg)
3/4	0.188	0.125 - 0.132	28
4	0.188	0.125 - 0.132	28
5	0.250	0.187 - 0.193	28
6	0.313	0.250 - 0.255	28
8	0.406	0.332 - 0.337	28
10	0.500	0.421 - 0.426	28
12	0.625	0.531 - 0.538	20
16Z	0.875	0.770 - 0.778	14
20Z	1.125	0.996 - 1.004	10
24Z	1.375	1.246 - 1.252	8

4.5.18 Pneumatic leakage. Samples shall be subjected to testing in accordance with SAE AS2078. Conformance shall be as specified in 3.6.18.

4.5.19 Fire resistance. Samples shall be subjected to testing in accordance with SAE AS1055, type IIa, class A. Conformance shall be as specified in 3.6.19.

4.5.20 Cleanliness. Both ends of the hose assembly shall be visually inspected to determine if caps or plugs are installed at the fittings. For hose assembly with straight fittings at both ends, remove the caps or plugs and place a light source at one end of the hose assembly. The interior of the hose shall be visually examined, without magnification, from the opposite end of the light source. Conformance shall be as specified in 3.6.20.

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.

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6. NOTES

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

6.1 Intended use. The hose assembly covered by this specification is military unique to meet the requirements specified herein and in the applicable specification sheets. The hose qualified in accordance with MIL-DTL-27267 for field attachable fitting assemblies should be mated with either reusable fittings qualified in accordance with MIL-DTL-27272 or with permanent fittings to meet the requirements specified herein and in the applicable specification sheet. This hose assembly is a hydraulic or pneumatic conductor for a fluid at the operating pressure, specified in table III, even under extreme temperature conditions ranging from -65°F to 450°F (275°F for class 2). The hose assembly is intended for use in high-temperature fuel, lubricating oil, water-alcohol, chemical-fluid, hydraulic and pneumatic systems that allow some gaseous effusion through the hose wall. However, hose assembly used in hydraulic and pneumatic systems should not exceed the temperature limit of 400°F. Furthermore, it is recommended that this hose assembly should not be used in pneumatic storage system applications and in any applications that exceed the operating temperature range and pressure specified herein. Hose assembly sizes 20Z and 24Z should not be used in systems where the peak pressures are greater than 1000 psi. Hose assembly size -3/4 is not intended for use in aircraft hydraulic systems.

6.1.1 Fire resistance. When fire proofing or fire resistance is desired, it is critical that the hose assembly meets the requirements specified in 3.6.19 when tested in accordance with 4.5.19.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification, including amendments.
- 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. PIN that includes the length required (see 3.5.5 and the applicable specification sheet).
- d. Whether fire resistance or fireproofing is required (see 3.6.19 and 4.5.19).
- e. 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 on the Qualified Products List QPL-25579, whether or not such products have actually been so listed by that date.

6.4 Subject term (key word) listing.

Fire resistance
 Fuel Resistance
 Hydraulic systems
 Low temperature
 Pneumatic systems

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

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6.6 Environmentally preferable material. Environmentally preferable materials should be used to the maximum extent possible to meet the requirements of this specification. Table IX lists the Environmental Protection Agency (EPA) top seventeen hazardous materials targeted for major usage reduction. Use of these materials should be minimized or eliminated unless needed to meet the requirements specified herein (see section 3).

TABLE IX. EPA top seventeen hazardous materials.

Benzene	Dichloromethane	Tetrachloroethylene
Cadmium and Compounds	Lead and Compounds	Toluene
Carbon Tetrachloride	Mercury and Compounds	1,1,1 - Trichloroethane
Chloroform	Methyl Ethyl Ketone	Trichloroethylene
Chromium and Compounds	Methyl Isobutyl Ketone	Xylenes
Cyanide and Compounds	Nickel and Compounds	

CONCLUDING MATERIAL

Custodians:

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

Preparing activity:

DLA - CC

(Project 4720-0198-000)

Review activities:

Army - AR, AT, EA, MI
Navy - MC, SA, SH
Air Force - 71