

MIL-F-52308F
8 September 1987
SUPERSEDING
MIL-F-52308E
10 January 1980

MILITARY SPECIFICATION

FILTER ELEMENT, FLUID PRESSURE

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

1. SCOPE

1.1 Scope. This specification covers a filter element for use in filter-separator vessels for handling liquid petroleum fuels.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS

FEDERAL

L-P-378	- Plastic Sheet and Strip, Thin Gauge, Polyolefin.
PPP-B-601	- Boxes, Wood, Cleated-Plywood.
PPP-B-636	- Boxes, Shipping, Fiberboard.
PPP-T-60	- Tape: Packaging, Waterproof.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: USA Belvoir Research, Development, and Engineering Center, ATTN: STRBE-TSE, Fort Belvoir, VA 22060-5606 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 4330

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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MILITARY

- MIL-P-116
 - MIL-C-5541
 - MIL-A-8625
 - MIL-F-8901
- Preservation, Method of.
 - Chemical Conversion Coating on Aluminum and Aluminum Alloys.
 - Anodic Coatings, for Aluminum and Aluminum Alloys.
 - Filter-Separators, Liquid Fuel: and Filter-Coalescer Elements, Fluid Pressure: Inspection Requirements and Test Procedures for.

STANDARDS

MILITARY

- MIL-STD-105
 - MIL-STD-129
 - MIL-STD-130
 - MIL-STD-810
 - MIL-STD-889
 - MS29513
- Sampling Procedures and Tables for Inspection by Attributes.
 - Marking for Shipment and Storage.
 - Identification Marking of US Military Property.
 - Environmental Test Method and Engineering Guidelines.
 - Dissimilar Metals.
 - Packing, Preformed, Hydrocarbon Fuel Resistant, "O" Ring.

(Copies of specifications, standards, handbooks, drawings, publications, and other Government documents required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publications. The following document(s) form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DoDISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS shall be the issue of the non-Government documents which is current on the date of the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

*ASTM D 3951 - Standard Practice for Commercial Packaging.

*DOD Adopted

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

(Non-Government standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services.)

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

3. REQUIREMENTS

3.1 Description. The filter element, hereinafter referred to as "filter", shall be as shown in figure 1 and as specified herein.

3.2 Qualification. Filters furnished under this specification shall be products which are qualified for listing on the applicable qualified products list at the time set for opening of bids (see 4.4 and 6.3).

3.3 Materials. Materials shall be as specified herein. Materials not specified shall be selected by the contractor and shall be subject to all provisions of this specification.

3.3.1 Material deterioration prevention and control. The filter shall be fabricated from compatible materials, inherently corrosion resistant or treated to provide protection against the various forms of corrosion and deterioration that may be encountered in any of the applicable operating and storage environments to which the filter may be exposed.

3.3.2 Dissimilar metals. Dissimilar metals shall not be used in intimate contact with each other unless protected against galvanic corrosion. Dissimilar metals and methods of protection are defined and detailed in MIL-STD-889.

3.3.3 Identification of materials and finishes. The contractor shall identify the specific material, material finish or treatment for use with component and subcomponent, and shall make information available upon request to the contracting officer or designated representative.

3.3.4 Recovered materials. For the purpose of this requirement, recovered materials are those materials which have been collected from solid waste and reprocessed to become a source of raw materials, as distinguished from virgin raw materials. The components, pieces and parts incorporated in the filter may be newly fabricated from recovered materials to the maximum extent practicable, provided the filter produced meets all other requirements of this specification. Used, rebuilt or remanufactured components, pieces and parts shall not be incorporated in the filter.

3.4 Construction. The filter shall be constructed with no change in design and structural features, and no change in formulation of manufacturer's brand of raw materials. The filter shall incorporate sufficient radial support to withstand a differential pressure of not less than 75 pounds per square inch (psi) without structural failure or permanent deformation. Materials used in fabrication of the filter shall be compatible with petroleum fuels containing water and inhibitors as specified in MIL-F-8901 with no evidence of deleterious effect.

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3.4.1 Rigid components. Nonferrous, corrosion-resistant materials shall be used in fabrication of the filter. Aluminum, when used, shall be anodized in accordance with MIL-A-8625, type II, class I, to a thickness of 0.0007 inch for wrought aluminum or 0.0004 inch for aluminum castings or coated in accordance with MIL-C-5541, class 1A. Zinc coating, or cadmium plating, or use of brass, bronze, and other copper bearing alloys shall not be permitted.

3.4.2 End caps. The filter end caps shall be either aluminum or molded plastic. The molded plastic end caps may contain an aluminum metal insert grooved to hold the O-ring seal. The end caps shall be mounted perpendicular within 3 degrees to the longitudinal axis of the filter. The O-ring packing and its retaining groove must retain the O-ring seal during installation.

3.5 Performance. The filter shall remove solids and coalesce water in clear drops. When installed in a filter separator vessel the filter, in combination with the canisters, shall remove coalesced water droplets from the fuel at a rate of 20 gpm per element. The filter shall conform to the applicable requirements and tests specified in MIL-F-8901.

3.5.1 Transit drop. Each filter packaged as specified in 5.2 shall withstand the shocks induced by loading and unloading during transit. Filters shall perform as specified herein when tested as specified in 4.5.2.2.

3.6 Dimensions. The dimensions of the filter shall be as shown in figure 1.

3.7 Identification marking. The filter shall be identified in accordance with MIL-STD-130. The following information shall be permanently marked or stamped on the filter.

NSN: 4330-00-983-0998
Contract or Order No.: (Specify)
Lot: (Specify)
MANUFACTURER'S IDENTIFICATION: (Specify)
DATE OF MFG: (Specify)

3.8 Workmanship. The filter shall be free from burrs, tears, smudges, or any other defect that will impair serviceability of the filter.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

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4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.1.2 Component and material inspection. The contractor is responsible for insuring that components and materials are manufactured, examined, and tested in accordance with referenced specifications and standards, as applicable.

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

- a. Qualification inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).
- c. Inspection of packaging (see 4.6).

4.3 Qualification inspection. The contractor shall furnish 32 filter for examination and test to determine conformance to this specification. Qualification inspection shall be performed by the Government using Government test facilities at a site selected by the Government (see 6.4).

4.3.1 Examination. The filters shall be examined as specified in 4.5.1. Presence of one or more defects shall be cause for rejection.

4.3.2 Tests. The filters shall be tested as specified in 4.5.2. Failure of any test shall be cause for rejection.

4.4 Quality conformance inspection.

4.4.1 Lot. Unless otherwise specified (see 6.2), a lot shall consist of not more than 1,000 filters, identically produced by one shift during a single day.

4.4.2 Sampling.

4.4.2.1 Examination. Sampling for examination shall be in accordance with MIL-STD-105.

4.4.2.2 Tests. Sampling for tests shall consist of 16 filters selected at random from the first day's production, two filters selected at random from each lot after the first day's production and four additional samples selected at random for each resubmitted lot. Sample filters tested as specified in 4.4.4 and 4.5.2 shall be discarded and not be delivered as production items.

4.4.3 Examination. Samples selected in accordance with 4.4.2.1 shall be examined as specified in 4.5.1. AQL shall be 1.0 percent defective.

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4.4.4 Tests. Samples selected in accordance with 4.4.2.2 shall be tested as specified in 4.5.2. Failure of any sample to pass the tests shall be cause for rejection of the lot represented by the sample.

4.5 Examination procedure.

4.5.1 Examination. The filters shall be examined as specified herein for the following defects:

Number	Defects	Requirement Paragraph
<u>Major</u>		
101.	Material not as specified.	3.3
102.	Material not resistant to corrosion and deterioration or treated to be made resistant to corrosion and deterioration.	3.3.1
103.	Dissimilar metals not in accordance with MIL-STD-889.	3.3.2
104.	Material and material finish or treatment information not available.	3.3.3
105.	Used parts are incorporated in the filter.	3.3.4
106.	The design of the filter not as specified.	3.4.
107.	Rigid components materials not as specified.	3.4.1
108.	O-Rings in ends of filter missing or damaged.	3.4.2
109.	End caps mounting not as specified.	3.4.2
110.	The filter does not remove solids and coalesce water in clear drops as specified.	3.5
111.	The filter will not withstand the transit drop as specified.	3.5.1
112.	Dimension not as shown in figure 1.	3.6
113.	Identification marking incorrect, missing or illegible.	3.7
114.	The filter is not free from burrs, tears, and smudges as specified.	3.8
115.	Filter design or materials not the same as qualified filters (quality conformance only)	3.4

4.5.2 Test.

4.5.2.1 Conditions. The fuel flow rate shall be 20 gpm per filter. Test system arrangement and test fuel shall be as specified in MIL-F-8901.

4.5.2.2 Transit drop. Prior to testing as specified in 4.5.2.3 and 4.5.2.4 each filter contained in its unit package shall be drop tested as specified in MIL-STD-810, method 516.3, procedure IV. Cracks in plastic end caps, deformation of aluminum end caps, damage to filter media, or nonconformance to 3.5.1 shall constitute failure of this test. NOTE: At the discretion of the Government test activity, this test may be omitted from quality and qualification conformance testing or modified for qualification testing to include only those filters being subject to qualification testing.

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4.5.2.3 Qualification. The following tests specified in MIL-F-8901 shall be performed:

- a. Filter-coalescer element.
- b. Differential pressure and media migration.
- c. Red iron oxide (dry).
- d. Water removal.
- e. Red iron oxide and water.
- f. Inhibited fuel with ECA, water and AC dust.
- g. Life.
- h. Environmental.

NOTE: At the discretion of the Government test activity, the electrical conductivity additive (ECA) may be omitted from the inhibited fuel test.

Nonconformance to the applicable requirements of MIL-F8901 or this specification shall constitute failure of any of the above qualification tests.

4.5.2.4 Quality conformance. The following tests, specified in MIL-F-8901, shall be performed by the Government using Government test facilities at a site selected by the Government (see 6.4):

- a. Filter-coalescer element.
- b. Water removal, 10.0 percent water run. 1/
- c. Red iron oxide and water. 1/
- d. Red iron oxide (dry). 1/

Nonconformance to the applicable requirements of MIL-F-8901 or this specification shall constitute failure of any of the above quality conformance tests.

4.6 Inspection of packaging.

4.6.1 Quality conformance inspection of pack.

4.6.1.1 Unit of product. For the purpose of inspection, a completed pack prepared for shipment shall be considered a unit of product.

4.6.1.2 Sampling. Sampling for examination shall be in accordance with MIL-STD-105.

4.6.1.3 Examination. Samples selected in accordance with 4.6.1.2 shall be examined for the following defects. AQL shall be 1.0 percent defective.

<u>No.</u>	<u>Defect</u>	<u>Packing Level</u>		
		<u>A</u>	<u>B</u>	<u>Comm.</u>
116.	Filter elements not preserved as specified.	5.1.1		5.1.2

1/ Tests b, c, and d: Any or all of these tests shall be made at the discretion of the testing agency.

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<u>No.</u>	<u>Defect</u>	<u>Packing Level</u>		
		<u>A</u>	<u>B</u>	<u>Comm.</u>
117.	Quantity of filter elements per exterior container not as specified.	5.2	5.2	5.2
118.	Exterior container not as specified.	5.2.1	5.2.2	5.2.3
119.	Strapping not as specified.	5.2.1		
120.	Marking not as specified.	5.3.1	5.3.1	5.3.2

5. PACKAGING

5.1 Preservation. Preservation shall be level A or Commercial as specified (see 6.2).

5.1.1 Level A. Each filter element shall be preserved by one of the following methods:

- a. Each filter shall be preserved in accordance with MIL-P-116, method IA-13 or ,
- b. Each filter element shall be inserted in a polyethylene bag fabricated from material conforming to L-P-378, type I, class 1, thickness .0040, and closed by heat sealing. The bag containing the element shall be placed in a close-fitting box conforming to PPP-B-636, W6c, style optional. Closure shall be in accordance with method V of the appendix to the box specification. The box shall be sealed with tape conforming to PPP-T-60, type IV.

5.1.2 Commercial. Commercial preservation shall be in accordance with ASTM D 3951.

5.2 Packing. Packing shall be level A, B, or Commercial as specified (see 6.2). The quantity of elements per exterior container shall be as specified (see 6.2), provided the gross weight of the exterior container does not exceed 200 pounds.

5.2.1 Level A. The filter elements, preserved as specified in 5.1, shall be packed together in the quantity specified (see 5.2), in close-fitting boxes conforming to PPP-B-601, overseas type, style optional. Box closure and strapping shall be as specified in the box specification except that strapping shall be flat and the finish "B".

5.2.2 Level B. The filter elements, preserved as specified in 5.1, shall be packed together as specified for level A in 5.2.1 except the boxes shall be domestic type and the strapping may be finish "A".

5.2.3 Commercial. The filter elements, preserved as specified in 5.1 and in the quantities specified (see 6.2), shall be packed together in accordance with ASTM D 3951.

5.3 Marking.

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5.3.1 Levels A and B. In addition to any special or identification marking specified in the contract or purchase order, marking for levels A and B shall be in accordance with MIL-STD-129.

5.3.2 Commercial. Commercial marking shall be in accordance with ASTM D 3951. Additionally, each exterior container shall be marked with the cube and gross weight.

6. NOTES

6.1 Intended use. The filter are intended for use in filter-separator vessels to remove contaminants and to coalesce water from gasolines, diesel, jet, and rocket fuels.

6.2 Ordering data.

6.2.1 Acquisition data. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. When lot size other than as specified (see 4.4.1).
- c. Degree of preservation required (see 5.1).
- d. Quantity of preserved filter elements per exterior container (see 5.2).
- e. Degree of packing required (see 5.2).
- f. Any special marking (see 5.3.1).

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time set for opening of bids, qualified for inclusion in Qualified Products Lists (QPL-52308) 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. The activity responsible for the Qualified Products Lists is USA Belvoir Research, Development and Engineering Center, ATTN: STRBE-TSE, Fort Belvoir, VA 22060-5606 and information pertaining to qualification of products may be obtained from that activity.

6.4 Government test facilities. The contracting officer should arrange to conduct the test at the USA Belvoir Research, Development and Engineering Center, ATTN: STRBE-TSE. Fort Belvoir, VA 22060-5606.

6.5 Subject term (key word) listing.

Filter element
Filter-separator
Fuel

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6. Changes from previous issue. Asterisks (or vertical lines) are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:

Army - ME

Navy - YD

Air Force - 11

Preparing activity:

Army - ME

Project 4330-0042

Review Activities:

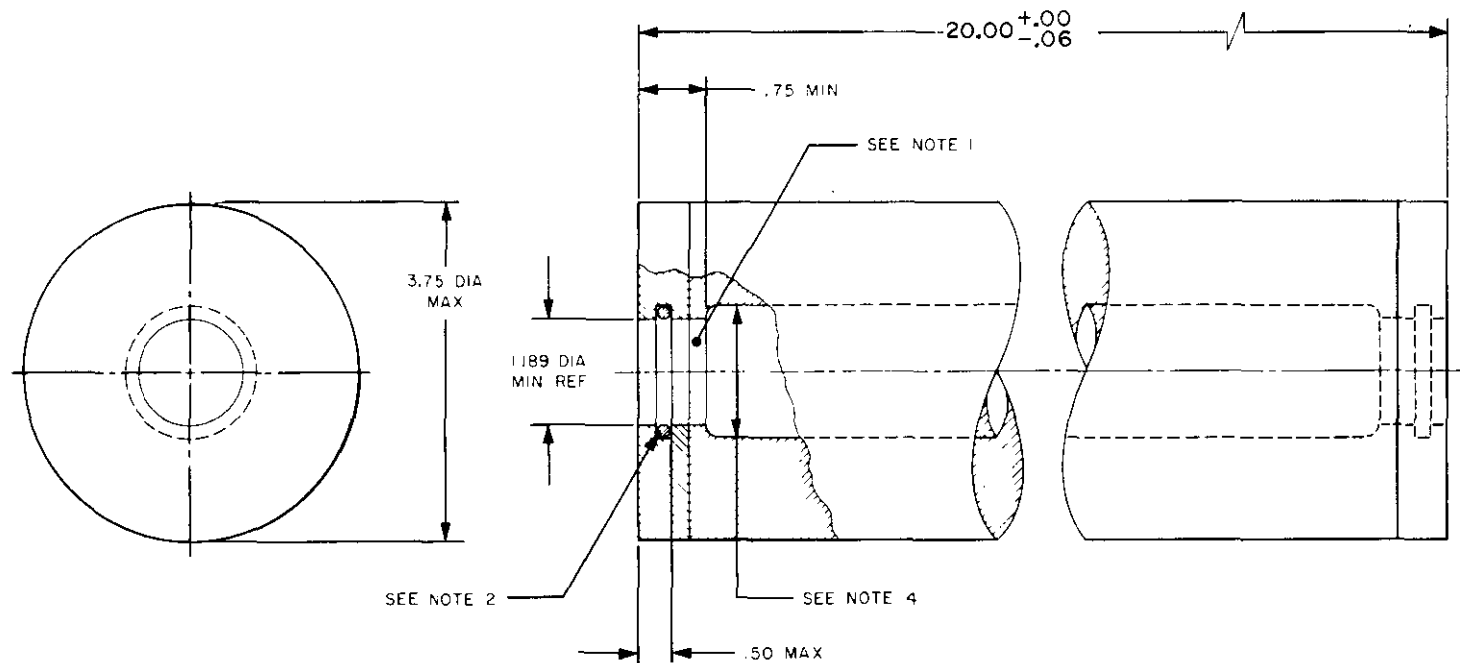
Navy - AS

Air Force - 99

DLA - CS

User activity:

Navy - MC



NOTES.

- 1 THIS AREA TO BE LEFT FREE FROM FILTER ELEMENT MATERIAL, BOTH ENDS.
- 2 PROVIDE "O" RING (MS29513-123) SEALS FOR 1.182-1.187 DIA AT 100 PSI MAX BOTH ENDS.
- 3 FLOW SHALL BE FROM INSIDE TO OUTSIDE
- 4 INSIDE DIAMETER AND CONFIGURATION ARE OPTIONAL
- 5 DIMENSIONS ARE IN INCHES.

FIGURE 1. Filter element.

X-1020 B

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL*(See Instructions - Reverse Side)*

1. DOCUMENT NUMBER MIL-F-52308F		2. DOCUMENT TITLE Filter Element, Fluid Pressure	
3a. NAME OF SUBMITTING ORGANIZATION		4. TYPE OF ORGANIZATION (Mark one)	
b. ADDRESS (Street, City, State, ZIP Code)		<input type="checkbox"/> VENDOR	
		<input type="checkbox"/> USER	
		<input type="checkbox"/> MANUFACTURER	
		<input type="checkbox"/> OTHER (Specify): _____	
5. PROBLEM AREAS			
a. Paragraph Number and Wording:			
b. Recommended Wording:			
c. Reason/Rationale for Recommendation:			
6. REMARKS			
7a. NAME OF SUBMITTER (Last, First, MI) - Optional		b. WORK TELEPHONE NUMBER (Include Area Code) - Optional	
c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional		8. DATE OF SUBMISSION (YYMMDD)	

(TO DETACH THIS FORM, CUT ALONG THIS LINE.)