

MIL-F-16552E(SH)
 28 October 1986
 SUPERSEDING
 MIL-F-16552D(SHIPS)
 20 July 1964
 (See 6.7)

MILITARY SPECIFICATION

FILTERS, AIR ENVIRONMENTAL CONTROL SYSTEM, CLEANABLE, IMPINGEMENT (HIGH VELOCITY TYPE)

This specification is approved for use within the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers air filters of permanent and cleanable types. They are for use in filtering dust and lint from the air passing through ventilating, heating and cooling systems and for arresting volatile and suspended particles of grease and oils carried in exhaust air from frying of foods and similar applications.

1.2 Classification. Air filters shall be of the following classes and sizes as specified (see 6.2.1).

Classes:

- Class 1 - Air filters constructed of steel.
- Class 2 - Air filters constructed of aluminum.
- Class 3 - Air filters of corrosion resistant steel.

Sizes (see 3.3 and figure 1):

- 10AF - 7-1/4 by 7-1/4 inches
- 11AF - 8 by 12-1/2 inches
- 12AF - 10 by 14-1/2 inches
- 13AF - 10 by 22 inches
- 14AF - 15-1/2 by 24-1/2 inches
- 15AF - 19-1/2 by 19-1/2 inches
- 16AF - 19-1/2 by 29-1/2 inches

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, SEA 5523, Department of the Navy, Washington, DC 20362-5101 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 4130

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2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards 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 the supplement thereto, cited in the solicitation.

SPECIFICATIONS

FEDERAL

- QQ-E-450 - Electrodes, Welding, Covered: Mild Steel.
- PPP-B-566 - Boxes, Folding, Paperboard.
- PPP-B-591 - Boxes, Shipping, Fiberboard, Wood-Cleated.
- PPP-B-601 - Boxes, Wood, Cleated-Plywood.
- PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner.
- PPP-B-636 - Boxes, Shipping, Fiberboard.
- PPP-B-665 - Boxes: Paperboard, Metal Edged and Components.
- PPP-B-676 - Boxes, Shipment.

MILITARY

- MIL-P-116 - Preservation, Methods of.
- MIL-L-10547 - Liners, Case, and Sheet, Overwrap;
Water-Vaporproof or Waterproof, Flexible.
- MIL-E-15145 - Enamel, Zinc Dust Pigmented, Fresh Water Tank
Protective, Formula No. 102.
- DOD-P-15328 - Primer (Wash), Pretreatment (Formula No. 117
for Metals). (Metric)
- DOD-P-21035 - Paint, High Zinc Dust Content, Galvanizing
Repair. (Metric)

STANDARDS

MILITARY

- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-278 - Fabrication Welding and Inspection; and Casting
Inspection and Repair for Machinery, Piping and
Pressure Vessels in Ships of the United States
Navy.

(Copies of specifications and standards required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.2 Other publications. The following documents 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 nongovernment documents which is current on the date of the solicitation.

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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- A 167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip. (DoD adopted)
- A 386 - Standard Specification for Zinc Coating (Hot-Dip) on Assembled Steel Products. (DoD adopted)
- A 525 - Standard Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process. (DoD adopted)
- A 569 - Standard Specification for Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip Commercial Quality. (DoD adopted)
- B 6 - Standard Specification for Zinc (Slab Zinc). (DoD adopted)
- B 201 - Standard Practice for Testing Chromate Coatings on Zinc and Cadmium Surfaces.
- B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate. (DoD adopted)
- B 633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel. (DoD adopted)

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

THE AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR CONDITIONING ENGINEERS, INC. (ASHRAE)

- 52 - Method of Testing Air-Cleaning Devices Used in General Ventilation for Removing Particulate Matter.

(Application for copies should be addressed to the American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc., Publication Sales, 1791 Tullie Circle, NE, Atlanta, GA 30329.)

UNIFORM CLASSIFICATION COMMITTEE AGENT

Uniform Freight Classification Ratings, Rules and Regulations.

(Application for copies should be addressed to the Uniform Classification Committee Agent, Tariff Publication Officer, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

(Nongovernment 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.)

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.

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3. REQUIREMENTS

3.1 Qualification. Air filters furnished under this specification shall be products which are authorized by the qualifying activity for listing on the applicable qualified products list at the time set for opening of bids (see 4.2 and 6.3).

3.2 Materials.

3.2.1 Materials shall be as specified herein. Materials not explicitly specified shall be the quality in commercial use for the service intended. All materials shall be free from defects and shall be new as defined in 3.2.1.1. Where aluminum is used, no aluminum part shall be placed in direct contact with any copper-bearing metal.

3.2.1.1 Recovered materials. Unless otherwise specified herein, all equipment, material, and articles incorporated in the products covered by this specification shall be new and may be fabricated using materials produced from recovered materials to the maximum extent practicable without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification unless otherwise specifically specified.

3.2.2 Galvanized steel. Class 1 air filter frame or binding channels shall be made of galvanized steel in accordance with ASTM A 525 with commercial thickness zinc coating, or of black steel in accordance with ASTM A 569.

3.2.2.1 Galvanizing. Parts made of hot rolled steel shall be galvanized by the hot-dip process in accordance with ASTM A 386 with the spelter in accordance with grade prime western of ASTM B 6, or by electroplating with zinc in accordance with ASTM B 633, type 1, class FE/ZN 8. Electroplating with zinc shall be followed by a test of chromate treatment in accordance with ASTM B 201.

3.2.3 Aluminum. Class 2 air filters shall be constructed of aluminum. Aluminum shall be an alloy conforming to the requirements of ASTM B 209. The alloy shall have mechanical properties, formability and a surface suitable for the intended application.

3.2.4 Corrosion resistant steel. Unless otherwise specified, class 3 air filters shall be made of corrosion resistant steel in accordance with ASTM A 167.

3.2.5 Dissimilar metals. Joints between dissimilar metals, including bolts, nuts, rivets and other fastenings and fittings shall be protected against galvanic corrosion by the proper selection of materials, plating isolation, insulation, area relationships or other means providing equivalent protection.

3.2.6 Filtering media. Filtering media shall be metal such as crimped wire mesh, metal stampings or plates, extruded sheets, or any combination of these elements. The media shall be arranged in a manner to ensure conformance with the performance requirements of 3.5. Unless otherwise specified (see 6.2.1),

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filtering media for class 1 air filters shall be galvanized steel in accordance with 3.2.2; class 2 air filter media shall be aluminum as specified in 3.2.3; and class 3 air filter media shall be corrosion resistant steel in accordance with 3.2.4.

3.3 Frame fabrication.

3.3.1 Media frames. Unless otherwise specified (see 6.2.1), media frames shall be fabricated of galvanized carbon steel, galvanized black steel, aluminum, or stainless steel at the option of the contractor.

3.3.1.1 Media frame material shall have a minimum thickness of not less than 0.080 inch for aluminum, 0.059 inch for steel and 0.059 inch for stainless steel.

3.3.1.2 Media frames shall withstand the shock corner drop specified in 4.5.5. The filter unit shall neither show evidence of permanent damage nor distortion greater than the following limits:

- (a) Flatness distortion of the frame in datum plane "B" of figure 1 shall not exceed 0.25 inch.
- (b) Perpendicular distortion of any corner shall not exceed 1 degree.

3.3.2 Filter media support. The media shall be attached to the frame in a way that prevents splitting, dislodging, slumping or separation from the frame under maximum air velocity and filter resistance conditions. The filter media shall be protected on both faces by expanded metal guards. The guards shall be welded to the frame or binding channel for strength and rigidity.

3.3.3 Reinforcement. Where any dimension of the filter exceeds 15 inches, the filtering media shall be provided with reinforcing strips or similar strengthening means.

3.3.4 Sizes. Sizes of air filters shall be as shown on figure 1 as specified (see 1.2 and 6.2.1).

3.3.4.1 Dimension and tolerances. The physical dimensions and tolerances of the air filters shall be as shown on figure 1.

3.4 Handles. Folding type handles shall be provided on two adjacent sides of the filter and shall not interfere with sliding the filter into a filter housing. Handles shall not project beyond the outer faces of the frame and means shall be provided to hold the handles flat against the frame.

3.5 Performance. The air filter, when tested at 500 and 625 feet per minute face velocities and in accordance with 4.5.1, 4.5.2 and 4.5.3, shall have initial efficiencies and a dust load capacity of at least 2.65 ounces per square foot of face area when loaded.

3.5.1 Pressure loss (resistance to air flow). At the specified face velocities, the initial resistance and the resistance when loaded with at least 2.65 ounces of test dust per square foot shall not exceed those shown in table I.

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TABLE I. Performance requirements.

Face velocity (feet per minute)	Average synthetic dust weight arrestance (percent)	- Pressure loss inches watergauge	
		Initial	Loaded
500	65	0.15	0.65
625	70	.25	.95

3.6 Cleanability. The air filter shall be capable of being cleaned by means of hot water at a temperature of 140 degrees Fahrenheit (°F). The resistance of the filter shall be increased by not more than 0.01 inch water-gauge from the initial air-flow resistance after having been loaded with dirt and cleaned.

3.6.1 Drainage. Drain holes or similar means shall be provided in all sides of the filter frame or binding channel to assure complete drainage after cleaning.

3.7 Welding. The surfaces of all parts to be welded shall be free from rust, scale, paint, grease and other foreign matter. Welding shall be in accordance with MIL-STD-278.

3.7.1 Where zinc-coated steel is used for fabricating parts, the metallic zinc shall be removed from all joints and surfaces on which welds are to be deposited and for a distance of 1/2 inch from the expected toes of the welds. In areas where the metallic zinc cannot be removed and it is necessary to weld over the zinc-coated surfaces, electrode type 6010 in accordance with QQ-E-450 shall be used.

3.8 Finish. Zinc coated surfaces damaged by shearing, punching, bending, welding or any other fabricating process shall receive 2 coats of galvanizing repair paint in accordance with DOD-P-21035 or a pretreatment coating in accordance with DOD-P-15328 and two coats of paint in accordance with MIL-E-15145.

3.9 Drawings. When specified in the contract or order, drawings shall be prepared (see 6.2.2).

3.10 Identification plate. Each air filter shall be provided with an identification plate and other designating markings as specified in 3.10.2. The data and markings shall be stamped into the frame or binding channel in such a manner that it shall not interfere with sliding the filter into a filter housing. The type of marking shall be Gothic capitals for letters and numerals, and other characters shall be of similar appearance. The size of the letters, numerals and other characters shall be as necessary for easy readability. The following data shall be shown:

- (a) Item name
- (b) Size (see 3.10.1)
- (c) National stock number
- (d) Contract number
- (e) Manufacturer's name and address

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3.10.1 The letters "NM" to designate that the unit is constructed of aluminum (a non-magnetic material) shall be added after the size designation on class 2 air filters.

3.10.2 Air filters requiring air flow in a single direction shall be provided with an arrow and the words "air flow" or similar means indicating the direction of air flow.

3.11 Workmanship. The workmanship shall be first class in every respect and shall be such that the size and geometric tolerances shown on figure 1 are not exceeded. Geometric tolerances include perpendicularity of frame corners, parallelism of frame edges, and flatness of frame. The frame shall be as smooth as practicable with no projections or irregularities that may interfere with sliding the filter into a filter housing.

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.

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 Certification data/report. When specified in the contract or order, a certification data/report shall be prepared for each lot of material offered for acceptance (see 6.2.2). The certificate shall include actual data of specified performance tests. Qualitative results of nondestructive tests and other inspections or tests shall be recorded on the certificate. The certificate shall also state that each lot has been sampled, tested, and inspected in accordance with the specification and meets all specification requirements. The certificate shall be signed by a responsible representative of the contractor.

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

- (a) Qualification inspection (see 4.2).
- (b) Quality conformance inspection (see 4.3).

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4.2 Qualification tests. Qualification tests shall be conducted at a laboratory satisfactory to Naval Sea Systems Command. Application for qualification tests shall be made in accordance with "Provisions Governing Qualification" (see 6.3 and 6.3.1).

4.2.1 Qualification tests shall be conducted on one size 15AF (19-1/2 by 19-1/2 inches) air filter of each class and shall consist of the tests specified in 4.5.

4.2.2 Qualification of the filter prepared in accordance with 4.2.1 shall include qualification of all sizes of a filter for the class tested.

4.3 Sampling for quality conformance.

4.3.1 Lot. Air filters of the same size and class offered for delivery at one time shall be considered a lot.

4.3.2 Sampling for examination. Sample air filters shall be selected at random from each lot in accordance with table II for the examination specified in 4.4. The acceptable quality level (AQL) shall be 1.5 percent.

TABLE II. Sampling for quality conformance.

Number of filters in inspection lot	Number of filters in sample	Acceptance number (defectives)	Rejection number (defectives)
1 to 8	All	0	1
9 to 15	5	0	1
16 to 25	7	0	1
26 to 40	10	0	1
41 to 65	15	0	1
66 to 110	15	0	1
111 to 180	25	1	2
181 to 300	25	1	2
301 and over	35	2	3

4.4 Examination. Each of the sample air filters selected in accordance with 4.3.2 shall be examined and measured to verify conformance with the requirements of this specification not involving tests. Examination shall be conducted as specified in table III. Any air filter in the sample containing one or more defects shall not be offered for delivery and if the number of defective air filters in any sample exceeds the acceptance number for that sample, the lot represented by the sample shall not be offered for delivery.

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TABLE III. Classification of defects.

Categories	Defects
Critical:	None defined
Major:	
101	Materials defective, not as specified.
102	Frame or binding channel damaged or not as specified.
103	Filtering media damaged, not galvanized, or not as specified.
104	Filtering media protection guards missing, damaged, not secure, or not as specified.
105	Construction not as required to prevent bypassing air when mounted in housing.
106	Handles missing, damaged, or not as specified.
107	Frame faces not smooth; not free of projections, burrs, fins, or other irregularities.
108	Size not within specified tolerances.
109	Drain holes missing or not as specified.
110	Clearance between filter surface and surface on which it is resting exceeds the specified maximum limit.
Minor:	
201	Zinc coating damaged, incomplete, or not as specified.
202	Marking, manufacturer's name or trademark missing, not permanent, illegible, or not as specified.

4.5 Test procedures.

4.5.1 Resistance. Resistance shall be determined in accordance with ASHRAE 52, resistance versus air flow measurements.

4.5.2 Arrestance. Arrestance shall be tested in accordance with ASHRAE 52, determination of synthetic dust weight arrestance.

4.5.3 Dust loading. Dust loading effects shall be tested in accordance with ASHRAE 52, for disposable and non-renewable filters.

4.5.4 Cleanability. Cleanability shall be determined after the filter is loaded with dust in accordance with 4.5.3. Cleaning shall be by means of a stream of hot water at a pressure of from 60 to 80 pounds per square inch (lb/in²). If cleaning by this means reduces the resistance to air flow to within 0.01 inch watergauge of its initial value, with the filter unsoiled both before and after the test, the specimen shall be considered acceptable in point of cleanability.

4.5.5 Shock corner drop test. The filter unit shall be subjected to one free fall drop on each of two adjacent corners. The filter unit shall be held by one corner and allowed to drop on the opposite corner. The impacting corner shall fall 36 inches onto an unyielding concrete surface. The filter unit shall not exceed the distortion limits specified in 3.3.1.2.

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5.0 Inspection of packaging. Sample packages and packs, and the inspection of the preservation-packaging, packing and marking for shipment and storage shall be in accordance with the requirements of section 5 and the documents specified therein.

5. PACKAGING

(The packaging requirements specified herein apply only for direct Government acquisition).

5.1 Cleaning. Air filters shall be cleaned as specified in 5.1.1 or cleaned by washing in hot water and a detergent. The detergent and acid solution specified in 5.1.1 shall be removed by thoroughly rinsing in clear hot water. Air filters shall be thoroughly dried before packaging.

5.1.1 Aluminum filters shall be cleaned by the use of a dilute aqueous solution of phosphoric acid containing an organic grease solvent.

5.2 Domestic shipment and early equipment installation.

5.2.1 Air filters.

5.2.1.1 Preservation and packaging. Preservation and packaging shall be sufficient to afford adequate protection against corrosion, deterioration and physical damage during shipment from the supply source to the using activity and until early installation. Preservation and packaging may conform to the contractor's commercial practice when such meets the requirements specified herein.

5.2.1.2 Packing. Packing shall be accomplished in a manner which will ensure acceptance by common carrier, at the lowest rate, and will afford protection against physical or mechanical damage during direct shipment from the supply source to the using activity for early installation. The shipping containers or method of packing shall conform to the Uniform Freight Classification Rules and Regulations or other carrier regulations as applicable to the mode of transportation and may conform to the contractor's commercial practice when such meets these requirements.

5.2.1.3 Marking. Shipment marking information shall be provided on interior packages and exterior shipping containers in accordance with the contractor's commercial practice. The information shall include nomenclature, National stock number or manufacturer's part number, size, contract or order number, manufacturer's name and destination.

5.3 Domestic shipment and storage or overseas shipment. The requirements and levels of preservation, packaging, packing and marking for shipment shall be specified by the contracting activity (see 6.2.1).

5.3.1 Levels of protection. The following levels of protection shall be required for domestic shipment and storage or overseas shipment.

5.3.1.1 Preservation and packaging. Preservation and packaging shall be level A or C as specified.

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5.3.1.1.1 Level A. Each filter shall be packaged in accordance with method III of MIL-P-116.

5.3.1.1.1.1 Unit containers. Unit containers, except those specified in MIL-P-116 for the applicable method of preservation, shall conform to any of the following containers at the option of the contractor.

Specification

PPP-B-566
 PPP-B-636
 PPP-B-665
 PPP-B-676

Container closure and sealing shall be in accordance with the applicable container specification or appendix thereto.

5.3.1.1.1.2 Intermediate containers. Unit quantities in an intermediate container shall be as specified. Intermediate containers shall conform to any of the following specifications at the option of the contractor.

Specification

PPP-B-566
 PPP-B-636
 PPP-B-665
 PPP-B-676

Container closure and sealing shall be in accordance with the applicable container specification or appendix thereto. The gross weight of paperboard boxes shall not exceed 10 pounds; fiberboard containers shall not exceed 20 pounds.

5.3.1.1.2 Level C. Preservation and packaging shall be sufficient to afford adequate protection against corrosion, deterioration and physical damage during shipment from the supply source to the first receiving activity for immediate use. This level may conform to the contractor's commercial practice when such meets the requirements of this level.

5.3.1.2 Packing. Packing shall be level A, B or C as specified.

5.3.1.2.1 Level A. Each filter, packaged as specified in the contract or order, shall be packed in containers conforming to any one of the following specifications at the option of the contractor.

SpecificationType or class

PPP-B-591	Class II
PPP-B-601	Overseas type
PPP-B-621	Class 2
PPP-B-636	Class weather resistant

MIL-L-10547

When required, shipping containers shall have caseliners conforming to MIL-L-10547. Caseliners shall be closed and sealed in accordance with the appendix to MIL-L-10547. Caseliners for fiberboard boxes, PPP-B-636, may be omitted provided all center and edge seams and manufacturer's joints are sealed and waterproofed with pressure sensitive tape in accordance with the applicable fiberboard box specification. Shipping containers shall be closed, strapped or banded in accordance with the applicable box specification or appendix thereto. The gross weight of wood or wood-cleated boxes shall not exceed 200 pounds; fiberboard boxes shall not exceed the weight limitations of the applicable fiberboard box specification. Intermediate fiberboard boxes conforming to class 2 of PPP-B-636 closed, sealed and banded as specified herein may be used as the shipping container.

5.3.1.2.2 Level B. Each filter packaged as specified in the contract or order shall be packed in containers conforming to any one of the following specifications at the option of the contractor.

<u>Specification</u>	<u>Type or class</u>
PPP-B-591	Class I
PPP-B-601	Domestic
PPP-B-621	Class 1
PPP-B-636	Domestic

Shipping containers shall be closed in accordance with the applicable box specification or appendix thereto. The gross weight of wood or wood-cleated boxes shall not exceed 200 pounds; fiberboard boxes shall not exceed the weight limitations of the applicable fiberboard box specification. Intermediate fiberboard boxes conforming to class 1 of PPP-B-636 closed, as specified therein, may be used as the shipping container.

5.3.1.2.3 Level C. Each filter packaged as specified in the contract or order shall be packed in containers, at the lowest rates, in a manner which will ensure acceptance by common carrier and will afford protection against physical or mechanical damage during direct shipment from the supply source to the first receiving activity for immediate use. This level shall conform to the Uniform Freight Classification Ratings, Rules and Regulations or other carrier regulations as applicable to the mode of transportation and may be the contractor's commercial practice when such meets the requirements of this level.

5.3.1.3 Marking. In addition to any special marking specified, shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The filters covered by this specification are for use in filtering dust and lint from air passing through ventilating, heating and cooling systems and for arresting particles of grease and oils carried in exhaust air from frying of foods and similar applications.

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6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Class and size required (see 1.2 and 3.3.4).
- (c) If filtering media are to be other than as specified (see 3.2.6).
- (d) If media frames are to be other than contractor's option (see 3.3.1).
- (e) Preservation, packaging, packing and marking requirements, if other than specified in 5.2 (see 5.3).

6.2.2 Data requirements. When this specification is used in an acquisition and data are required to be delivered, the data requirements identified below shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (CDRL), incorporated into the contract. When the provisions of DoD FAR Supplement, Part 27, Sub-Part 27.410-6 (DD Form 1423) are invoked and the DD Form 1423 is not used, the data specified below shall be delivered by the contractor in accordance with the contract or purchase order requirements. Deliverable data required by this specification are cited in the following paragraphs.

<u>Paragraph no.</u>	<u>Data requirement title</u>	<u>Applicable DID no.</u>	<u>Option</u>
3.9	Drawings, engineering and associated lists	DI-E-7031	Level 3
4.1.2	Certification data/report	UDI-A-23264	---

(Data item descriptions related to this specification, and identified in section 6 will be approved and listed as such in DoD 5010.12-L., AMSDL. Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the Naval Publications and Forms Center or as directed by the contracting officer.)

6.2.2.1 The data requirements of 6.2.2 and any task in sections 3, 4, or 5 of this specification required to be performed to meet a data requirement may be waived by the contracting/acquisition activity upon certification by the offeror that identical data were submitted by the offeror and accepted by the Government under a previous contract for identical item acquired to this specification. This does not apply to specific data which may be required for each contract regardless of whether an identical item has been supplied previously (for example, test reports).

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 List QPL-16552 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

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contracts or purchase orders for the products covered by this specification. The activity responsible for the Qualified Products List is the Naval Sea Systems Command, SEA 5523, Department of the Navy, Washington, DC 20362-5101 and information pertaining to qualification of products may be obtained from that activity. Application for Qualification tests shall be made in accordance with "Provisions Governing Qualification SD-6" (see 6.3.1).

6.3.1 Copies of "Provisions Governing Qualification SD-6" may be obtained upon application to Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

6.4 Assembly drawing. An assembly drawing should be prepared and indicate overall dimensions and dimension tolerances plus supplemental data as necessary to permit shipyard installation without the contractor's assistance. The drawing should indicate design, construction, identity of each part and its location and the total weight of the assembled filter. Where necessary to show conformance with this specification, detail drawings should be added to the assembly drawing.

6.5 Definitions.

6.5.1 Air filter. The air filter consists of a filtering media enclosed in a frame or binding channel, expanded metal guards, and handles.

6.5.2 Face area. The face area of a filter is the area obtained by multiplying the inside dimensions of the face of the filter frame or binding channel.

6.5.3 Face velocity. The face velocity of a stream of air passing through a filter, expressed in feet per minute is the rate of flow of air measured in cubic feet per minute, divided by the face area of the filter.

6.5.4 Dust load. Dust holding capacity is the amount of synthetic dust fed to the test filter times its average arrestance when the test filter reaches the rated final resistance.

6.5.5 Arrestance. Arrestance is an efficiency value that is often abbreviated as arrestance. A standardized dust consisting of various particle sizes is fed into an air cleaner and the weight fraction of dust removed is determined. Under ASHRAE 52, this type of efficiency measurement is named synthetic dust weight arrestance to distinguish it from other efficiency values.

6.5.6 Resistance (to air flow). Resistance is the static pressure drop across the filter at a given air flow rate. The term "pressure drop" is used interchangeably with resistance.

6.6 Subject term (key word) listing.

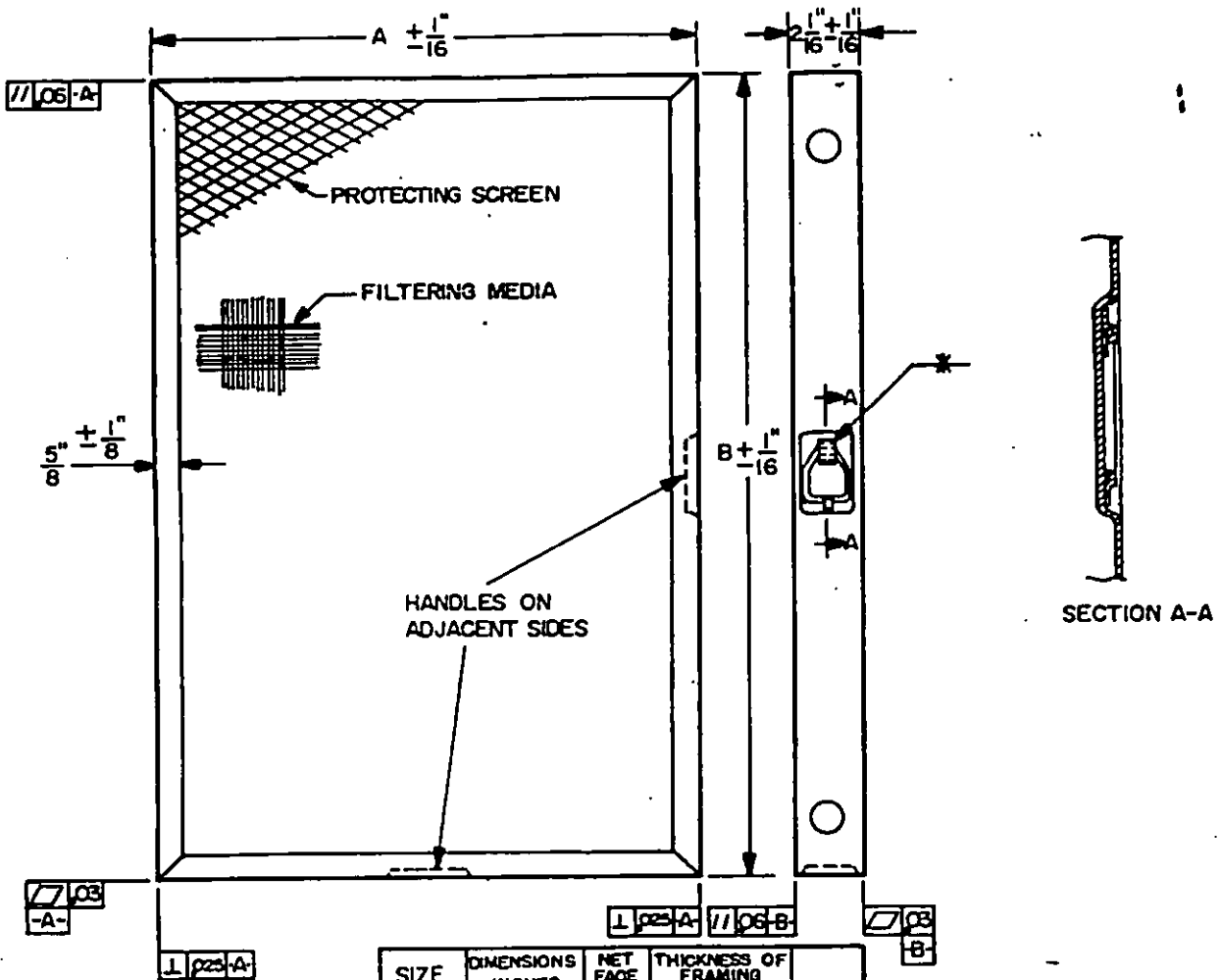
Air filters, aluminum
Air filters, corrosion resistant steel
Air filters, steel

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

Preparing activity:
Navy - SH
(Project 4130-N283)

MIL-F-16534E(SH)



SIZE NUMBER	DIMENSIONS INCHES		NET FACE SQ. FT. AREA	THICKNESS OF FRAMING MINIMUM - INS		
	A	B		ALUM.	STEEL	ORES
10AF	7 1/4	7 1/4	0.25	.060	.069	.069
11AF	8	12 1/2	0.55			
12AF	10	14 1/2	0.81			
13AF	10	22	1.26			
14AF	15 1/2	24 1/2	2.30			
15AF	19 1/2	19 1/2	2.30			
16AF	19 1/2	29 1/2	3.56	.060	.069	.069

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FIGURE 1. Sizes and physical dimensions of air filters.