

F-P-1658  
September 14, 1973

## FEDERAL SPECIFICATION MEDIA FOR ROLL TYPE AIR FILTERS

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

### 1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers replacement media for roll type air filters which are a component of air conditioning, heating and ventilating systems. Unless otherwise clarified, the words "media", "media roll" or "roll of media" refer to an assembly consisting of a primary element (i.e., filtering medium), device on which primary element is wound (spool, tube or core), end plates and ancillary devices required to meet the requirements specified herein.

1.2 Classification. The media covered by this specification shall be furnished in the following types, as specified (see 6.2):

- Type I - Special media, for use with a specific filter.
- Type II - Standard media.

1.2.1 All type I media for a specific filter shall be furnished by the same supplier. For example, for Manufacturer A's, Model X, 7 ft. roll filter, both the 4 ft. and 3 ft. media shall be supplied from the same source.

1.2.2 Type II media frequently requires the use of adapter (conversion) kits (see 3.9.1 and 6.2). Because of differences between the various manufacturers' designs and models of the same manufacturer, a trial installation is recommended to assure suitability of media type. Type II media shall conform to Figure 1.

### 2. APPLICABLE DOCUMENTS.

2.1 The following documents, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

#### Federal Specifications:

PPP-B-636 - Boxes, Shipping Fiberboard.

#### Federal Standards:

Fed. Std. No. 123 - Marking for Domestic Shipment (Civil Agencies).

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

#### Military Specifications:

MIL-P-116 - Preservation, Methods of.

#### Military Standards:

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-130 - Identification Marking of U. S. Military Property.

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(Copies of Military Specifications and Standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

Underwriters' Laboratories (UL), Inc. Standard:

No. 900 - Air Filter Units.

(Application for copies should be addressed to the Underwriters' Laboratories, Inc., Walt Whitman Rd., Melville, L.I., N.Y. 11749; 333 Pfingsten Road, Box 247, Northbrook, Ill. 60062; 1655 Scott Blvd., Santa Clara, Calif. 95050; 2602 Tampa East Blvd., Tampa, Fla. 33619; or 207 East Ohio St., Chicago, Ill. 60611.)

American Society for Testing and Materials (ASTM) Standards:

D 1654 (Methods A and B) - Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.

B 117 - Salt Spray (Fog) Testing.

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

Technical Association of the Pulp and Paper Industry (TAPPI):

T805SU-70 - Water Resistance of Shipping Containers (Spray Method).

(Application for copies should be addressed to the Technical Association of the Pulp and Paper Industry, 360 Lexington Avenue, New York, New York 10017.)

Air Conditioning and Refrigeration Institute

Standard No. 680 - Standard for Air Filter Equipment.

(Application for copies should be addressed to the Air-Conditioning and Refrigeration Institute, 1815 North Fort Myer Driver, Arlington, Virginia 22209.)

National Motor Freight Traffic Association, Inc., Agent:

National Motor Freight Classification.

(Application for copies should be addressed to the American Trucking Association, Inc., Tariff Order Section, 1616 P Street, N.W., Washington, DC 20036.)

Uniform Classification Committee, Agent:

Uniform Freight Classification.

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

### 3. REQUIREMENTS

3.1 Description. Filter Media shall be in a continuous uniform roll, shall be useable in automatic roll (GSA-Type E) filters and shall be of the type specified (see 6.2).

3.2 Qualification. The media furnished under this specification shall be a product which has been tested and passed the qualification inspection specified in section 4, Quality Assurance Provisions and has been listed on or approved for listing on the applicable qualified products list. Qualification of a product shall terminate two years after date of certification. Each product shall be tested and inspected for qualification (QPL) every two years.

3.2.1 Qualification withdrawal. A supplier's qualified product listing may be withdrawn for reasons considered to be sufficient by the certifying agency.

**3.2.2 Regualification.** A supplier's product, once withdrawn from the qualified products list, shall not be accepted for regualification within six months from date of product listing withdrawal notice, and until satisfactory data and test results have been submitted to the certifying agency by the supplier indicating correction of the product fault(s).

**3.2.3 Process change.** Qualification and certification of a supplier's product under this specification, once established, applies only to those products manufactured by the specific process in use at the time of qualification. All process changes shall be reported to the certifying agency with a statement by the supplier as to the general nature of the changes and the extent and probable effect of such changes on the delivered product. The certifying agency reserves the right to require six weeks notice, and sufficient samples of the new product from the supplier for quality assurance tests, prior to delivery of products manufactured under any such change in process. Suppliers who are not media manufacturers will provide evidence of the capability to meet these requirements. This capability will take the form of adequate test facilities, technical ability or certified results from manufacturer. The media manufacturing source; i.e., manufacturer and location, must be clearly marked on each media carton, and changes will not be accepted without requalification. The foregoing requirements do not in any way relieve the manufacturer of delivery requirements, quality control and testing necessary to insure that all products delivered under this specification are equal to or better than those products originally submitted for qualification.

**3.3 Fire and casualty hazards.** Media shall meet the fire-resistant requirements of UL Standard 900; class to be the option of the supplier.

**3.4 Performance.** The filtering medium (i.e., primary element) shall have a minimum average arrestance of 75 percent; minimum dust loading of 200 grams per square foot of effective filtering area, and shall be suitably constructed so as not to breach (i.e. be damaged) or neck (reduce in sectional dimension), when tested as described herein (see 4.4.2 thru 4.4.7). The media shall be tested (except for necking test) at an estimated net face velocity of 500 ft./min. through the filtering medium, based on the measured pressure drop across a calibrated orifice or nozzle at the entrance to the test duct. The arrestance determinations shall be made using the "NBS Dust Spot Method for Air Filters" (ASHVE Transactions, Vol. 44 p. 379, 1938). Media showing evidence of seepage or bleeding of adhesive (puddling of adhesive in or from the container including bags within container if used) shall be rejected and replaced without additional cost to the government.

**3.5 Health requirements.** The media shall be nonallergenic and nontoxic, and without any detectable odor. The media shall have no adverse effect on the health of personnel handling same or on occupants of spaces served by the media. Questions pertinent to these effects shall be referred by the procuring activity to the appropriate medical authority who will act as an advisor to the procuring agency.

**3.6 Adhesive requirements.** Adhesive, binders and similar components of media's assembly shall not flow from same when subject to a continuous operating temperature of 150°F., or stored in an ambient temperature of 150°F. Additionally, these components shall perform as specified within a temperature range of -10°F. to 150°F. No substantial amount of adhesive shall drain from the media, regardless of its position during shipment or a storage period of six months.

**3.6.1 Substantial in paragraph 3.6 means:**

- (a) Over 5 percent of the stated quantity of adhesive applied by the supplier.
- (b) The roll media carton shall not be visibly stained on the outside over more than 25 percent of the total carton area.
- (c) There will be no evidence of any adhesive dripping from the carton or media roll when the carton and any other wrapping (such as a plastic film bag or wrapper) has been opened and the media roll pulled out to expose 1/3 of the width of said media roll. The carton and media roll may be held in any position during this test and the test may continue for up to one hour.
- (d) There will not be enough adhesive remaining in the media, carton or other wrapper or after the media is removed to permit visible flow when the carton or wrapper is rotated or moved quickly to alternate positions.
- (e) Normal adhesive stains caused by direct contact (i.e., on hands, paper, floors, etc.) during media replacement operations, with exposed (unwrapped) media will not be cause for rejection under this requirement.

**3.7 Dimensional requirement.** Filter medium shall have a nominal thickness of 2 inches.

**3.7.1 Type I media** shall have dimensions for interchangeability specified in 3.9 so as to fit correctly when manufacturer's standard installation instructions for the specific roll filter specified in the purchase order (see 6.2), are followed.

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3.7.2 Type II shall be supplied in nominal widths (see 6.2); width being dimension of spool (tube core) parallel to the axis of rotation. Actual spool dimensions shall conform to Figure 1 and the following:

<u>NOMINAL (FEET)</u>	<u>W (INCHES)</u>
2	22-3/8
3	32-3/4
4	44-3/4
5	56-3/4
6	68-5/8 (vertical filters only)

## NOTE:

- (1) Tolerance of  $\pm 1/8$ -inch permitted.

Net (active) length of filtering medium in each media roll furnished shall be continuous and at least 65 feet; this length shall not include leaders, trailers or other facilities for connecting ends of the clean media to dirty media (rewind) spool. The maximum diameter of clean media roll shall not exceed 14-inches. The maximum diameter of dirty (loaded) media roll shall not exceed 18-inches, when rewound with a maximum torque of 150 inch-pounds per foot of actual filtering medium width.

3.8 Instructions. Instructions shall be reproduced on the leader either by printing or by firmly attaching a preprinted label, to be furnished as part of each media roll, showing how to remove the used (dirty) media and install the new (clean) media. A diagram showing rotation of media rolls and medium path shall be included. Instructions shall conform to requirements of interchangeability herein.

3.9 Interchangeability. Type I media shall be interchangeable with that specified (see 6.2). This includes relationship of rotation (i.e. air flow); dimensions and shape of all parts (except filtering medium composition); and other factors pertinent to installation and operation. Adapters, tools, or similar devices shall not be required, or provided, to achieve the performance specified in 3.4.

3.9.1 Type II media, shall be so designed that outside of roll becomes the entering air surface, and dust-laden (entering air) surface is on inside of roll, (i.e. leaving surface is exposed when rewound on the spool (tube, core)). No tools of any kind or other facilities except adapter kits (see 1.2.2) when ordered (see 6.2), shall be required to install the media in a manner to operate and perform as specified herein. Adapter (conversion) kits shall comprise all facilities (e.g., pins, bearings, and gears) required for a complete installation of type II media. Figure 1, in the roll (GSA Type E) air filter specified (see 6.2), so as to perform as specified. Complete information (drawings, instruction, etc.), required to achieve the necessary conversion, shall be submitted with proposals to permit evaluation of workability of supplier's offer. This, however, shall in no way relieve the supplier from rejection at a latter date if media cannot be installed to perform as specified herein.

3.10 Marking. Each roll of media shall be marked with the following:

- (a) The name or trade name of the manufacturer or vendor.
- (b) A distinctive model number, size, catalog designation or equivalent marking.
- (c) QPL identification, and filtering medium characteristics: Weight per square foot of (1) medium assembly (fibers, binder, backing, and (2) adhesive).

If a manufacturer produces products of the same model at more than one manufacturing facility, each product shall have a distinctive marking to identify the product of a particular facility. Each roll shall be plainly marked to show the direction of airflow.

3.11 Accessories. Each roll of media shall be comprised of a suitable disposable spool (tube, core), and other accessories necessary for installation. Type II media shall conform to Figure 1 and shall include means for securing the leader without slippage. End plates shall be furnished on type I media to suit standard of manufacturer specified (number, material, shape, etc.) (see 3.9 and 6.2). Sheet metal parts shall have a corrosion rating of not less than 6, ASTM test D 1654 (Method A or B) when subject to a 100 hr. salt spray test, ASTM B-117. Nuts, bolts, and similar small parts shall be zinc or cadmium plated. Parts and assemblies fabricated of materials other than metal (except for filtering medium) shall withstand a water-resistance test, TAPPI T805SU-70, without delamination or disintegration.

- (1) Method of attaching leader retainer may be changed provided method used does not impair function as shown or interchangeability.
- (2) Flat may be provided on end plates to prevent rolling of media.

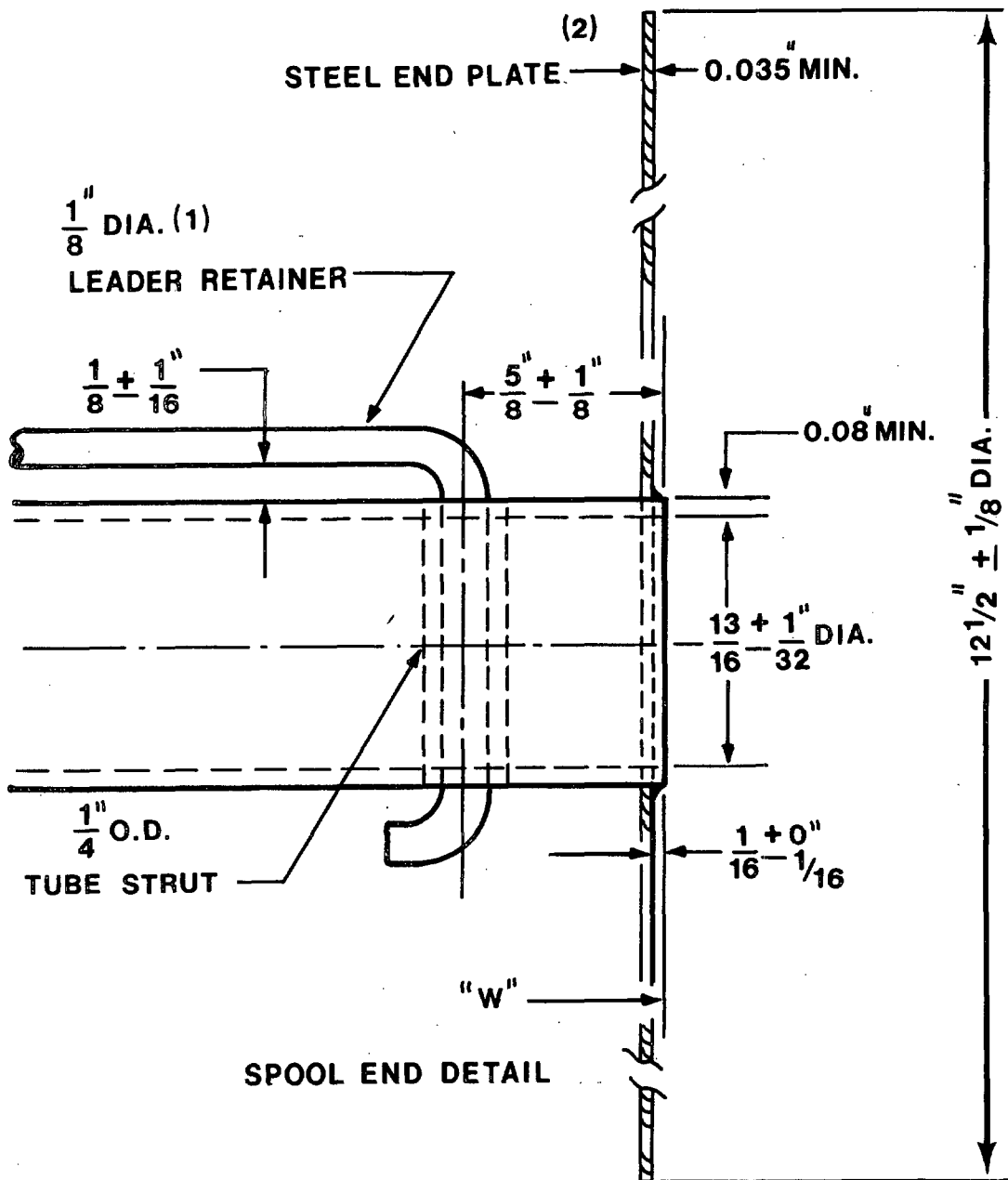


Figure 1.

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#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to 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 that supplies and services conform to prescribed requirements.

4.2 Inspection classification. Inspection shall be classified as follows:

- (a) Qualification (4.2.1).
- (b) Quality conformance (4.5).

4.2.1 Qualification inspection. Qualification inspection shall be conducted at a laboratory designed by the Federal Supply Service, General Services Administration. The inspection shall consist of the examination 4.4.1, and the tests of 4.4.2 through 4.4.7).

4.2.2 Quality conformance inspection. Quality conformance inspection shall conform to 4.5 and be performed on samples selected in accordance with 4.3.2.

4.2.3 Test failure and costs. Should tests of a sample fail to meet any performance or other requirements of this specification, the Government reserves the right to refuse to accept additional samples for qualification testing from each prospective supplier within any eight month period. All costs associated with testing shall be paid by the Supplier.

#### 4.3 Sampling.

4.3.1 Sampling for qualification tests. For each type and size media to be submitted for qualification one sample of each shall be provided. All samples shall be random selections from open stock by the Government, and to the maximum degree possible independent of and without knowledge of the products manufacturer. Failure of a sample to meet the requirements of one or more of the individual tests, will be deemed as sufficient criteria for discontinuance of further testing and for not listing the particular product on the qualified products list.

4.3.2 Sampling for quality conformance inspection. Sampling for quality conformance inspection shall be in accordance with the provisions of MIL-STD-105, with inspection levels and acceptable quality levels (AQL) to be as specified herein. Samples for inspection shall be selected from each lot being furnished.

4.3.2.1 Lot. A lot consists of all media of the same type and size offered for acceptance at one time under a specific contract or order. Each lot is further limited to media produced in the same manufacturing facility.

4.3.2.2 Sampling for examination. For physical examination (4.4.1), a random sample shall be selected based on inspection level 1 and an AQL of 2.5 defective.

4.3.2.3 Sampling for tests. For the tests a random sample shall be selected based on inspection level S-2 and an AQL of 1.5 percent defective.

#### 4.4 Qualification inspection and tests.

4.4.1 Examination. Samples submitted for qualification inspection (4.2.1) shall be examined to verify compliance with the material and dimensional requirements of this specification. Also, the manufacturer shall furnish certification data required to evaluate the Health Requirements (3.5). The certifying agency shall receive this data to determine the acceptability of the samples for qualification testing. The testing agency shall submit a separate certified report covering the test of each product.

#### 4.4.2 Test procedures.



4.4.2.1 Specimen preparation and selection. The roll of media shall be stored vertically on end for at least one week prior to test. Storage and test conditions shall conform to ARI Standard 680, (7.1.3), except storage temperature shall be  $160^{\circ} \pm 10^{\circ}\text{F}$ . Filtering medium used for tests shall be taken from the center, 50 percent of the roll's length and at least 15 feet from either end. The performance of both samples (representative medium) shall be at least equal to the minimum specified. One test shall be made on medium representative of that at the top of media (as stored) including edge, and a second test shall be made on media representative of the center of media's width.

4.4.2.2 Apparatus. The media shall be installed in a roll type air filter frame which is enclosed in an airtight enclosure with adapters to fit the upstream and downstream sections of the NBS test apparatus. The enclosure shall have two 2-ft. x 2-ft. openings, one upstream and the other downstream from the filter frame. The filter frame shall be installed in the enclosure so the filtering medium (clean) passes immediately upstream of the downstream opening as it unrolls. Simultaneously, the loaded (dirty) medium shall be rewound onto a similar spool at the bottom of the filter frame. Vertical bars shall be provided to prevent appreciable deflection of the media under the influence of the air pressure difference. The edges of the filtering medium shall be enclosed to prevent by-pass of air between the media and frame. All apparatus shall be installed and carefully sealed, to prevent by-pass of air or inward flow into the test apparatus except through the measuring orifice.

4.4.2.3 Aerosols. Aerosols required for following tests are Cottrell precipitate and lint. Cottrell precipitate shall be that fraction sifted through a 100 mesh-screen. The lint shall be prepared by grinding No. 7 cotton linters through a large Wiley Mill with a 4-millimeter screen.

4.4.3 Arrestance test. Determinations of arrestance (efficiency) shall be made by the dust spot method (see 3.4). Arrestance determination shall be made with Cottrell precipitate injected into the airstream at a rate of approximately one gram of dust per 1,000 cu. ft. of air after the correct airflow rate through the medium has been established. Samples of air shall be drawn from the center points of the test dust, 3-1/2 feet upstream and eight feet downstream of the filtering medium being tested at equal rates and passed through known areas of Whitman No. 41 filter papers. The two sampling papers used for any one arrestance determination shall be selected having the same light transmission when clean. The amount of light passing through the sampling papers shall be measured before and after the test on the same area of each paper. For determining the arrestance, different size areas of sampling paper shall be exposed upstream and downstream of the filtering medium in order to obtain equal increases of opacity on the two sampling papers. The arrestance shall be determined using the formula:

$$A = \left(1 - \frac{S_D}{S_U}\right) \times \frac{D}{U} \times 100$$

where the symbols  $S_U$  and  $S_D$  are the upstream and downstream sampling areas and U and D are the observed changes in the amount of light passing through the upstream and downstream sampling papers respectively. Arrestance determination shall be made at the beginning of the test when the filtering medium is clean, and at selected intervals during dust loading test as the intermittent advance of the medium becomes representative of a steady-state operation.

4.4.4 Dust loading test. Dust loading determinations shall be made with Cottrell precipitate and lint, fed during the loading process in a ratio of 4 parts lint to every 96 parts of Cottrell precipitate, (see 3.4). Each loading increment shall consist of 20 grams of Cottrell precipitate and 0.83 grams of lint. The filtering medium shall be advanced by a manually operated switch whenever the pressure drop across the medium (rated final resistance) reaches 0.50 in. plus or minus 1 percent W.G. and stopped when the drop is 0.45 in. plus or minus 1 percent W. G. The advance of the filter medium shall be observed through a window in the test apparatus by determining the position of a mark on the filter, relative to a scale mounted in the filter housing. The position of the filtering medium and the corresponding cumulative dust load at the beginning of each advance cycle shall be simultaneously recorded. A plot shall be maintained of the medium advance vs. dust fed after the relation between these two quantities becomes very nearly linear. Additional "medium advance vs. dust load" determinations shall be made to develop the best fitted straight line through the plotted data. The nominal dust loading capacity, in gram/sq. ft., shall be determined using the plotted data and the formula:

$$\text{Nominal dust loading capacity} = \frac{12}{SW}$$

where S is the slope of the line in inches of advance per gram of dust load, and W is the width of the test dust where it meets the downstream side of the filter. The pressure drop across the medium shall be recorded at the beginning of the test at selected intervals during the dust loading process, and at the beginning and end of each advance cycle.

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4.4.5 Breaching test. Breaching test shall be performed in accordance with ARI Standard 680 except:

- (a) Only the filter medium as installed for dust loading test shall be tested.
- (b) Media shall be tested at a resistance of 1.0 inch W. G. in lieu of 50 percent above maximum rated final resistance.
- (c) Pressure differential (resistance) may be achieved by raising velocity through, or blanking of media.

4.4.6 Necking test. The filtering medium shall be tested hung in a vertical position. Clamps at both ends shall produce a uniform tension across the medium width when the upper clamp is rigidly supported and a weight is suspended from the lower clamp. The distance between clamps, (i.e., active length of medium tested), shall be 8 feet + 2-inches. The weight shall produce a tension of at least 30 pounds per foot of medium's width. The reduction in medium's width at any point in the length of media shall not exceed 1/2-inch.

4.4.7 Compression test. A 20 inch by 20 inch sample of each of the representative medium (see 4.4.2.1) shall be subjected to this test. Immediately after being cut from the medium roll, the sample shall be placed on a flat, rigid, horizontal surface. One hour later, the uncompressed height (thickness) of the sample shall be measured. Next, a flat, rigid compression plate, 20 inch by 20 inch and weighing 600 grams, (uniformly loaded) shall be placed flat and directly on top of the sample. The compressed height of the sample shall be measured one hour after the plate has been in place. The ratio of the compressed height (thickness) to uncompressed height of both samples shall be at least 0.75.

4.4.8 Reports. The results of tests shall be summarized in a report. A table shall list the initial, at least three values prior to the initial steady-state condition, and the average arrestance after steady-state conditions were reached. A second table shall list each advance of filtering medium required to keep the pressure drop within the specified range as dust was fed to the filter. The total advance of the filtering medium shall be plotted as a function of total dust fed, and a line shall be drawn through the points representing steady-state conditions. The performance of the filter medium tested shall be compared with the minimums specified herein (see 3.4). Results of breaching and necking tests shall be reported. The report shall evaluate all physical characteristics of the filtering medium deemed necessary by the certifying agency and shall include, but not necessarily be limited to, the following:

- (a) The weight of adhesive used per unit area.
- (b) The weight of binder used per unit area.
- (c) The total weight fiber, (binder, backing and adhesive) per unit area.
- (d) The average fiber diameter(s) for a given number of randomly selected fibers.
- (e) Materials used in fabricating the media, including end plates and spools.

Record any visible discrepancies from requirements specified herein (e.g., adhesive seepage, roll dimensions and uniformity of media).

#### 4.5 Quality conformance inspection.

4.5.1 In-process inspection. In-process inspection shall be performed on all media furnished under this specification and shall be in accordance with the manufacturer's established quality control program. The quality control program shall be subject to the surveillance of the procuring agency or authorized representatives thereof. The program shall assure that control of quality is maintained throughout all areas of contract performance including receipt and identification of material, the manufacturing processes, and final assembly of the media. Failure of the manufacturer to furnish satisfactory evidence that quality control measures necessary to insure compliance with the requirements of specification have been exercised during contract performance may be cause for rejection of the products furnished.

4.5.2 Physical tests. Sample selected in accordance with 4.3.2 shall be examined and tested as required to verify that they are equal to the product tested and approved by the certifying agency as meeting Qualification inspection and test requirements (see 4.4) herein.



5.5.3 Sampling for examination. Sample media shall be examined for conformance with the material, dimensional, and marking requirements of this specification. Samples shall be selected at random, based on inspection level 1 and an AQL of 2.5 percent defective in accordance with provisions of MIL-STD-105.

4.5.4 Field selected product test. If any shipment of media appears to be suspect for any reason the Government shall have the right to select and test a sample from the shipment, and if the sample does not meet the certified test report (4.4.8), then a second sample from the same shipment shall be tested. If the second sample also fails, the entire lot can be rejected by the Government. The costs of the tests shall be borne by the Government if the product meets the performance requirements, and shall be borne by the manufacturer if the shipment is rejected by the Government. Tests and inspection and reports shall be as specified in Qualification requirements. Rejection of shipment shall automatically remove the products from the Qualified Products Lists.

4.6 Inspection of preparation for delivery. An inspection shall be made to determine that the packaging, packing and marking comply with the requirements in section five of this specification. Defects shall be scored in accordance with table 1. For examination of interior packaging the sample unit shall be one shipping container fully prepared for delivery, selected at random just prior to the closing operations. Sampling shall be in accordance with MIL-STD-105. Defects of closure listed shall be examined on shipping containers fully prepared for delivery. The lot size shall be the number of shipping containers in the end item inspection lot. The inspection level shall be S-2 with an AQL of 4.0 defects per hundred units.

TABLE 1. Classification of preparation for delivery defects

Examine	Defects
Markings	Omitted; incorrect; illegible; improper size, location, sequence, or method of application.
Material	Any component missing or damaged.
Workmanship	Inadequate application of components such as incomplete closure of container flaps, loose strapping, inadequate stapling, or distortion of container.
Contents (exterior container)	Net weight exceeds box specification requirements.

## 5. PREPARATION FOR DELIVERY

5.1 Packaging. Packaging shall be level A, B, or C, as specified (see 6.2).

5.1.1 Level A. Each roll of media shall be packaged in accordance with method IC-1 of MIL-P-116.

5.1.2 Level B. Each roll of media shall be packaged in accordance with method III of MIL-P-116.

5.1.3 Level C. Each roll of media shall be packaged in accordance with the manufacturer's standard practice, providing that this insures protection for the media during shipment and provides for safe delivery to its destination.

5.2 Packing. Packing shall be level A, B, or C, as specified (see 6.2).

5.2.1 Level A. Each roll of media packaged, as specified in 5.1, shall be packed in a close-fitting box conforming to FPP-B-636, class weather resistant, style optional. Close, seal and strap the boxes in accordance with appendix to FPP-B-636.

5.2.2 Level B. Each roll of media packaged, as specified in 5.1, shall be packed in a close-fitting box conforming to FPP-B-636, class domestic, style optional. Closure of boxes shall be in accordance with method II of the appendix to FPP-B-636.

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5.2.3 Level C. Each roll of media packaged, as specified in 5.1, shall be packed in a container that will assure carrier acceptance and safe arrival at destination in compliance with the Uniform Freight Classification rules and the National Motor Freight Classification rules.

5.3 Marking. Marking shall be in accordance with 5.3.1 or 5.3.2, as specified (see 6.2).

5.3.1 Civil agencies. In addition to any special markings required by the contract or order, all marking shall be in accordance with Fed. Std. No. 123.

5.3.2 Military agencies. In addition to any special markings required by the contract or order, all markings shall be in accordance with MIL-STD-129.

## 6. NOTES.

6.1 Intended use. Filters covered by this specification are intended for use in ventilation, air conditioning, and heating systems to remove particulate matter.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents.

- (a) Title, number, and date of this specification.
- (b) Specific manufacturer's model, type, size, catalog designation, and part number; i.e., name plate data for type I media (see 1.2.1 and 3.9).
- (c) Special marking, if required (see 5.3).
- (d) Omission of end plates shown in Fig. 1, if not required.
- (e) Military marking, if required and the information to be included (see 5.3.2).
- (f) Level of packaging and packing required (see 5.1 and 5.2).

6.3 With respect to products requiring qualification, awards will be made only for such products as have, prior to the time set for opening of bids, been tested and approved for inclusion in qualified products list (QPL) P-F-1658, whether or not such products have actually been so listed by that date. The attention of suppliers is called to this requirement 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 orders for the products covered by this specification. The activity responsible for the qualified products list is the Federal Supply Service, General Services Administration, Washington, D. C. 20406, 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 (see 6.4).

6.4 Copies of Provisions Governing Qualification may be obtained upon application to Director, Standardization Division, Federal Supply Service, General Services Administration, Washington, D. C.

### MILITARY CUSTODIANS:

Army - MI  
Navy - YD  
Air Force - 79

### Review Activities:

Army - MIL  
Navy - YD  
Air Force - None

### User Activities:

Army - MO  
Navy - CG, SH  
Air Force - No

### PREPARING ACTIVITY: GSA-FSS

### CIVIL AGENCY COORDINATING ACTIVITIES:

COM-FBS  
GSA-FSS

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein. Price 15 each.