Purchase & Contract
ADMINISTRATION

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SPECIFICATION
FOR
FILTERS, AIR (HVAC)

(This specification is released for procurement purposes until revised or rescinded.)

Scope

This specification covers various types and sizes of replaceable air filters for use in heating, ventilating and air conditioning systems. Types and sizes listed in this specification are intended to be standard representative filters for each category and are those most often used by state agencies and institutions. This specification is not intended to review all types and sizes commercially available or special requirements.

Reference for Purchasers: The testing that determines a filter's MERV rating simulates a filter's efficiency only when the filter is relatively new. Airborne particles encountered during use may lessen or negate enhancements to the mechanical filtration properties of the filter media, reducing the filter's efficiency and the resulting air quality. Such a drop in filtration efficiency may occur within a fairly short time, and could be as much as several MERV levels.

If maintaining a filter's initial efficiency across the filter's useful life is a significant factor in selecting a filter—due to application requirements (e.g., medical-related, data centers), conditions (e.g., high dust, proximity to certain chemicals) or maintenance schedules—it is recommended that the user choose either a microglass media filter, a synthetic media filter with the appropriate MERV-A rating, or a mechanical filtration pleated filter. Optional testing for MERV-A evaluates filtration efficiency after pre-conditioning a filter to neutralize those efficiency enhancements (such as an electrostatic charge) that may diminish during use; therefore, efficiency loss is not anticipated in a filter with a MERV-A rating.

I. Classification

Filters covered by this specification are of the following types:

A. Type I – Replaceable panel filters (disposable types)

Style 1 - Ring and link two-ply panel with internal wire frame - tackifier impingement type – minimum MERV 6

Style 2 - Ring and link three-ply panel with internal wire frame - tackifier impingement – minimum MERV 8

Discontinued Styles - Panel type (throw away); Panel type (throw away) - progressive loading - tackifier impingement; Ring and link four-ply panel with internal wire frame - tackifier impingement – minimum MERV 8

B. Type II - Pleated panel filters

Style 1 - MERV 8, MERV 8-A - Standard capacity/mechanical filtration

Style 2 - MERV 8, MERV 8-A - High capacity/mechanical filtration

Style 3 - MERV 11, MERV 11-A - Mechanical filtration

Style 4 - MERV 11, MERV 11-A - Electrostatically-enhanced filtration

Style 5 - MERV 13, MERV 13-A - Electrostatically-enhanced filtration

Discontinued Style – MERV 7

C. Type III - Extended surface non-supported filters (bag or pocket type)

Style 1 - Synthetic media

Grades 1 through 5 - MERV 15, 15-A to MERV 11, 11-A

Discontinued Style – Microglass media

D. Type IV - Extended surface filters – rigid type suitable for variable air volume (VAV) systems

Style 1 - Pleated Microglass media with corrugated aluminum separators

Grades 1 through 4 - MERV 14 to MERV 11

Style 2 – Lofted Microglass pleat media with metal or plastic separators

Grades 1 through 4 - MERV 14 to MERV 11

Style 3 – Lofted synthetic pleat media with metal or plastic separators

Grades 1 through 4 - MERV 14, 14-A to MERV 11, 11-A

Style 4 - Microglass v-bank media

Grades 1 through 5 - MERV 15 to MERV 11

Style 5 – Synthetic v-bank media

Grades 1 through 5 - MERV 15, 15-A to MERV 11, 11-A

Style 6 - Mini-pleat microglass media

Grades 1 through 4 - MERV 15 to MERV 11

Discontinued Types - Filters for window air conditioning units (washable type); HEPA filter 99.97% efficiency or greater

II. Applicable Standards

The following documents of issue in effect on the date of the Invitation for Bid (IFB) shall form a part of this specification to the extent described in requirements:

ANSI/ASHRAE 52.2-2012 - Method of Testing General Ventilation Air-cleaning Devices for Removal Efficiency by Particle Size

ASHRAE 52.2-2012 APPENDIX J – Optional Method of Conditioning a Filter Using Fine KCL Particles to Demonstrate Efficiency Loss that Might Be Realized in Field Applications

American Society of Heating, Refrigeration & A/C Engineers, Inc. (ASHRAE)
United Engineering Center, 1791Tullie Circle, NE Atlanta, GA 30389

ANSI/AHRI 850 (I-P)-2013 - Standard for Performance Rating of Commercial and Industrial Air Filter Equipment

Air Conditioning, Heating, & Refrigeration Institute (AHRI)
2111 Wilson Blvd, Suite 500, Arlington, VA 22201

ANSI/UL-900 (2015) Standard for Air Filter Units

Underwriters' Laboratories, Inc. (UL)
Comm 2000, 151 Eastern Ave, Bensenville, IL 60106

NAFA Guide to Air Filtration, Fifth Edition, 2014

National Air Filtration Association (NAFA), 22 N. Carroll St., Suite 300
Madison, WI 53703

III. Requirements

A. Type I – Replaceable panel filters (disposable types)

Style 1 – Ring and link panel, two-ply filter with internal wire frame

1. Description

Style 1 filters shall be provided with two distinct layers of media.

All Ring and Link filters shall be disposable panel type with an internal wire frame bonded between layers of polyester or other suitable filter media. Layers shall increase in density toward the downstream side, and each layer should be marked or color-coded.

The wire frame shall have a perimeter wire with wire supports in the center of the opening attached to the perimeter frame. The wire frame shall not be less than 9-gauge steel and sized to fit industry standard filter racks.

The layers of media shall be heat sealed or otherwise securely fastened together around the outer perimeter of the wire frame and in the center area of the crosswire support. Media shall be void of thin spots and shall provide strength in all directions.

The filter shall fit all standard size holding frames. The media on the downstream side shall overlap the wire frame, extend out on all sides to hold the filter securely in place without holding devices and form a seal to prevent air bypass.

The air flow direction shall be clearly indicated by color coding or other clear marking.

The fibers are to be covered with a coating of a tackifier adhesive on the downstream side or encapsulated between layers. The tackifier shall be free of any substance that will corrode clean copper wire when tested in contact with the wire for 15 days at 95 degrees Fahrenheit and 95% R.H.

The media shall be supported in such a manner as to prevent any slumping or collapse of the media or otherwise be permanently displaced at the specified air velocity and final resistance.

The filter shall retain full specified performance, efficiency, structural configuration and strength at all atmospheric relative humidity.

Link filters shall provide continuous fanfold instead of individual filters to discourage bypass air.

The filter shall be listed or classified for compliance with Underwriters' Laboratories Standard UL 900 as to flammability.

2. Performance

When tested in accordance with ASHRAE 52.2-2012 standard (Appendix J testing and MERV-A is not mandatory), filters shall be in compliance with the following:

Style 1 filters– Ring and link panel; two-ply filter with internal wire frame

Nominal Filter Size (Inches) (W x H x D)	24x24
Air Flow Capacity (CFM)	1180
Filter Face Air Velocity (FPM)	295
Maximum Initial Resistance (Inches W.G.)	0.28
Minimum Rated Final Resistance (Inches W.G.)	1.0
Minimum MERV Rating	6

Style 2 – Ring and link, three-ply panel filter with internal wire frame

1. Description

Style 2 filters shall be identical to Style 1 filters except being provided with three distinct layers of filter media.

2. Performance

When tested in accordance with ASHRAE 52.2-2012 standard (Appendix J testing and MERV-A is not mandatory), filters shall be in compliance with the following:

Style 2 filters - Ring and link; three-ply panel filter with internal wire frame

Nominal Filter Size (Inches) (W x H x D)	24x24
Air Flow Capacity (CFM)	1968
Filter Face Air Velocity (FPM)	492
Maximum Initial Resistance (Inches W.G.)	0.40
Minimum Rated Final Resistance (Inches W.G.)	1.0
Minimum MERV Rating	8

B. Type II – Pleated panel filters

1. Description

The filter media shall be bonded to a sturdy water-resistant coated beverage board filter frame to fit industry standard size filter racks. The uniform media surface shall be bonded to the frame in such a manner as to prevent any slumping or collapse of the media or otherwise be permanently displaced at the specified air velocity and final resistance. Means shall be provided to identify air flow direction with filter installed.

Pleated filter media shall be provided with integral support to assure against structural failure with resulting loss in filter effectiveness and uniform spacing of the pleats. Filter loading to the final air pressure resistance shall not reduce structural stability of the media to the frame or filter frame to the equipment rack

resulting in bypass air or blow out of the filter. Fluctuations in filter face velocity or turbulent airflow will have no effect on filter integrity or performance.

Frames shall be formed to provide positive support for the media pad and sufficient rigidity for normal use, installation and removal. Filters must be installable in owner's existing frames so as to form a tight fit and prevent bypassing of air in service.

The minimum media area per square foot of actual face size, defined by the representative filter in the table, shall apply to filters offered for that representative filter face size, depth and style.

The filter shall retain full specified performance, efficiency, structural configuration and strength at all atmospheric relative humidity.

The filter shall be listed or classified for compliance with Underwriters' Laboratories Standard UL 900 as to flammability.

2. Performance

When tested in accordance with ASHRAE 52.2-2012 standard (Appendix J testing and MERV-A is not mandatory, but MERV-A is preferred for Styles 1-3 synthetic media only), filters shall be in compliance with the following:

Style 1 – MERV 8, 8-A - Standard capacity/mechanical filtration

Nominal Filter Size (Inches) (W x H x D)	24x24x1	24x24x2	24x24x4
Minimum Gross Media Area (Ft^2)	5.9	11.55	22.0
Air Flow Capacity (CFM)	1180	1968	1968
Filter Face Air Velocity (FPM)	295	492	492
Maximum Initial Resistance (Inches W.G.)	0.26	0.28	0.23
Minimum Rated Final Resistance (Inches W.G.)	1.0	1.0	1.0

Style 2 – MERV 8, 8-A – High capacity/mechanical filtration

Nominal Filter Size (Inches) (W x H x D)	24x24x1	24x24x2	24x24x4
Minimum Gross Media Area (Ft^2)	7.5	16.5	26.5
Air Flow Capacity (CFM)	1180	1968	1968
Filter Face Air Velocity (FPM)	295	492	492
Maximum Initial Resistance (Inches W.G.)	0.23	0.31	0.27
Minimum Rated Final Resistance (Inches W.G.)	1.0	1.0	1.0

Style 3 – MERV 11, 11-A – Mechanical filtration

Nominal Filter Size (Inches) (W x H x D)	24x24x1	24x24x2	24x24x4
Minimum Gross Media Area (Ft^2)	9.2	18.1	28.0
Air Flow Capacity (CFM)	1180	1968	1968
Filter Face Air Velocity (FPM)	295	492	492
Maximum Initial Resistance (Inches W.G.)	0.20	0.28	0.27
Minimum Rated Final Resistance (Inches W.G.)	1.0	1.0	1.0

Style 4 – MERV 11, 11-A – Electrostatically-enhanced filtration

Nominal Filter Size (Inches) (W x H x D)	24x24x1	24x24x2	24x24x4
Minimum Gross Media Area (Ft^2)	7.6	17.3	27.1
Air Flow Capacity (CFM)	1180	1968	1968
Filter Face Air Velocity (FPM)	295	492	492
Maximum Initial Resistance (Inches W.G.)	0.29	0.38	0.25
Minimum Rated Final Resistance (Inches W.G.)	1.0	1.0	1.0

Style 5 – MERV 13, 13-A – Electrostatically-enhanced filtration

Nominal Filter Size (Inches) (W x H x D)	24x24x1	24x24x2	24x24x4
Minimum Gross Media Area (Ft^2)	7.7	17.0	26.6
Air Flow Capacity (CFM)	1180	1968	1968
Filter Face Air Velocity (FPM)	295	492	492
Maximum Initial Resistance (Inches W.G.)	0.35	0.41	0.35
Minimum Rated Final Resistance (Inches W.G.)	1.0	1.0	1.0

C. Type III - Extended surface non-supported filter (bag or pocket type)

1. Description

Each filter shall be supported by a rigid corrosion resistant metal header frame to which the filter media is securely attached. Pocket support frames are reinforced to eliminate flexing or buckling in the intended use.

Filter media consist of a synthetic fiber blend reinforced by a scrim type backing. Bags shall be assembled to provide a pocket configuration that guarantees complete pocket inflation at rated airflow and uniform loading through the depth of the pocket.

Fastening methods used to maintain shape for full pocket inflation, such as staples, stays, or stitching, shall be sealed and edge closure methods shall not cause air leakage for the life of the filter. Media shall be sealed to filter frame.

Filters shall fit or be adaptable to the existing frames.

The filter media shall be folded in such a manner as to be the approximate size of the header frame and secured with a band that will hold the media in place during the installation of the filter.

The IFB will specify header sizes as required by using agencies, either 13/16" (standard) or 1-1/8" (Cambridge style).

If adapters or clips are required, they shall be approved by the purchaser and shall be included in the bid price.

A single unique model of filter must comply with each of the specific filters identified in the specifications for that category.

Filter sizes shall be available in a variety of pockets and filtration, marked with the manufacturer name/trademark, filter model number, nominal size, filter type and MERV rating.

The entire filter, filter media and support structure, shall be listed or classified for compliance with Underwriters' Laboratories Standard UL 900 as to flammability.

2. Performance

When tested in accordance with ASHRAE 52.2-2012 standard (Appendix J testing and MERV-A is not mandatory), filters shall be in compliance with the following:

Style 1 - Synthetic media

Grade 1 – MERV 15, 15-A

Nominal Filter Size (Inches) (W x H x D)	24x24x36	24x24x29 to 30
Minimum Media Surface Area (Ft^2)	96.0	80.0
Minimum Number of Pockets	8	8
Air Flow Capacity (CFM)	1968	1968
Filter Face Air Velocity (FPM)	492	492
Maximum Initial Resistance (Inches W.G.)	0.40	0.44
Minimum Rated Final Resistance (Inches W.G.)	1.0	1.0

Grade 2 – MERV 14, 14-A

Nominal Filter Size (Inches) (W x H x D)	24x24x29 to 30
Minimum Media Surface Area (Ft^2)	80.0
Minimum Number of Pockets	8
Air Flow Capacity (CFM)	1968
Filter Face Air Velocity (FPM)	492
Maximum Initial Resistance (Inches W.G.)	0.45
Minimum Rated Final Resistance (Inches W.G.)	1.0

Grade 3 – MERV 13, 13-A

Nominal Filter Size (Inches) (W x H x D)	24x24x29 to 30
Minimum Media Surface Area (Ft^2)	80.0
Minimum Number of Pockets	8
Air Flow Capacity (CFM)	1968
Filter Face Air Velocity (FPM)	492
Maximum Initial Resistance (Inches W.G.)	0.37
Minimum Rated Final Resistance (Inches W.G.)	1.0

Grade 4 – MERV 12, 12-A

Nominal Filter Size (Inches) (W x H x D)	24x24x29 to 30
Minimum Media Surface Area (Ft^2)	64.0
Minimum Number of Pockets	6
Air Flow Capacity (CFM)	1968
Filter Face Air Velocity (FPM)	492
Maximum Initial Resistance (Inches W.G.)	0.34
Minimum Rated Final Resistance (Inches W.G.)	1.0

Grade 5 – MERV 11, 11-A

Nominal Filter Size (Inches) (W x H x D)	24x24x29 to 30
Minimum Media Surface Area (Ft^2)	63.0
Minimum Number of Pockets	6
Air Flow Capacity (CFM)	1968
Filter Face Air Velocity (FPM)	492
Maximum Initial Resistance (Inches W.G.)	0.35
Minimum Rated Final Resistance (Inches W.G.)	1.0

D. Type IV – Extended surface filters - rigid type suitable for VAV systems

Style 1 – Pleated microglass media with corrugated aluminum separators

1. Description

Filters consist of a pleated media pack of microglass fibers with a water resistant binder in a rigid box design.

The filter frame and cell sides shall be constructed of minimum 26-gauge galvanized steel or other corrosion resistant metal. Cell sides shall provide mechanical stability and rigidity. The filter shall maintain filter integrity and media support to a maximum air flow of 1968 CFM (12” depth filters) or 984 CFM (6” depth filters). Assembled filter shall be structurally stable to prevent racking.

The media pack shall be sealed to the frame all around by adhesive or high efficiency media gasketing. Media and binders are non-shedding and water-resistant.

Pleating across face area shall be consistent across filter, maintained and supported by rolled-edge corrugated aluminum cell separators throughout the life of the filter. Media must retain its pleated shape and spacing during normal commercial service usage.

Filter shall be available in a single header, dual header or no header designs. Standard headers shall be approximately 13/16-inch deep (1-1/8 inch deep may also be offered for use with Cambridge filter frames) and mechanically attached or integral to filter cell sides. The IFB will specify header quantities and sizes as required by using agencies.

Filter sizes shall be available in 12-inch and 6-inch depth designs and variety of widths and heights. All filter frames shall be marked with the manufacturer name/trademark, filter model number, nominal size, filter type and MERV rating.

The entire filter shall be listed or classified for compliance with Underwriters' Laboratories Standard UL 900 as to flammability.

2. Performance

When tested in accordance with ASHRAE 52.2-2012 standard, filters shall be in compliance with the following:

Style 1 – Pleated microglass media with corrugated aluminum separators

Nominal Filter Size (Inches) (W x H x D)	24x24x12		
Grade	1	2	3
MERV Rating	14	13	11
Minimum Gross Media Area (Ft^2)	105.0	105.0	105.0
Air Flow Capacity (CFM)	1968	1968	1968
Filter Face Air Velocity (FPM)	492	492	492
Maximum Initial Resistance (Inches W.G.)	0.68	0.60	0.50
Minimum Rated Final Resistance (Inches W.G.)	1.5	1.5	1.5

Styles 2 and 3 – Lofted pleat media with separators and expanded support backing

1. Description

Filters consist of a pleated pack of lofted microglass (Style 2) or lofted synthetic (Style 3) media in a rigid box design, with metal or plastic separators and an expanded support backing. Media and binders are non-shedding and water-resistant. The filter frame shall be constructed of minimum 26-gauge galvanized

steel or other corrosion resistant metal. Pleat separators shall provide mechanical stability and rigidity. An expanded metal support grid is laminated to the media to form the pleats on the downstream side of the filter.

Filter media shall be supported without fluttering to a maximum air flow of 1968 CFM (12" depth filters) or 984 CFM (6" depth filters). The media shall be bonded to the frame to prevent air flow leaks. Filter frame and media shall be structurally stable to prevent racking.

Filters shall be available in box style, single and double header configurations. Standard headers shall be approximately 13/16-inch deep (1-1/8 inch deep may also be offered for use with Cambridge filter frames) and mechanically attached or integral to filter cell sides. The IFB will specify header quantities and sizes as required by using agencies.

Filter sizes shall be available in 12" and 6" depths, with a variety of widths and heights. Filters shall be marked with manufacturer name/trademark, filter model number, nominal size, filter type and MERV rating.

The entire filter shall be listed or classified for compliance with Underwriters' Laboratories Standard UL 900 as to flammability.

2. Performance

When tested in accordance with ASHRAE 52.2-2012 standard (Appendix J testing and MERV-A is not mandatory), filters shall be in compliance with the following:

Style 2 – Lofted microglass paper pleat media

Nominal Filter Size (Inches) (W x H x D)	24x24x12			
Grade	1	2	3	4
MERV Rating	14	13	12	11
Minimum Gross Media Area (Ft^2)	58.0	58.0	58.0	58.0
Air Flow Capacity (CFM)	1968	1968	1968	1968
Filter Face Air Velocity (FPM)	492	492	492	492
Maximum Initial Resistance (Inches W.G.)	0.80	0.7	0.6	0.5
Minimum Rated Final Resistance (Inches W.G.)	1.5	1.5	1.5	1.5

Style 3 – Lofted synthetic pleat media

Nominal Filter Size (Inches) (W x H x D)	24x24x12			
Grade	1	2	3	4
MERV Rating	14, 14-A	13, 13-A	12, 12-A	11, 11-A
Minimum Gross Media Area (Ft^2)	58.0	58.0	58.0	58.0
Air Flow Capacity (CFM)	1968	1968	1968	1968
Filter Face Air Velocity (FPM)	492	492	492	492
Maximum Initial Resistance (Inches W.G.)	0.60	0.5	0.43	0.36
Minimum Rated Final Resistance (Inches W.G.)	1.5	1.5	1.5	1.5

Styles 4 and 5 – V-bank media with plastic housing

1. Description

Filters consist of a pleated pack of microglass paper coated with water-repellent binder (Style 4) or synthetic (Style 5) media assembled in a minimum eight (8) banks forming four (4) v-shaped openings within a lightweight plastic frame. Pleat openings across face area shall be consistent across filter media, with alignment maintained for maximum exposure by beads of low profile self-supporting adhesive or thermoplastic material. Beads on neighboring sides bond together for integrity of the media. Media and binders are non-shedding and water-resistant.

Filter shall maintain structural integrity and media support to a maximum air flow of 2520 CFM. Filter frame and media shall be structurally stable to prevent racking and shall be available in single header configuration (double header and box style may be available). Standard headers shall be approximately 13/16-inch deep (1-1/8 inch deep may also be offered for use with Cambridge filter frames) and mechanically attached or integral to filter cell sides. The IFB will specify header quantities and sizes as required by using agencies. The media shall be continuously bonded to the filter bank or enclosure frame to prevent air flow leaks.

Filters shall be available in 12” depths. Filters shall be marked with manufacturer name/trademark, filter model number, nominal size, filter type and MERV rating.

The entire filter shall be listed or classified for compliance with Underwriters’ Laboratories Standard UL 900 as to flammability.

2. Performance

When tested in accordance with ASHRAE 52.2-2012 standard (Appendix J testing and MERV-A is not mandatory), filters shall be in compliance with the following:

Style 4 – Microglass paper v-bank media

Nominal Filter Size (Inches) (W x H x D)	24x24x12				
Grade	1	2	3	4	5
MERV Rating	15	14	13	12	11
Minimum Gross Media Area (Ft^2)	189.0	189.0	189.0	189.0	189.0
Air Flow Capacity (CFM)	1968	1968	1968	1968	1968
Filter Face Air Velocity (FPM)	492	492	492	492	492
Maximum Initial Resistance (Inches W.G.)	0.40	0.38	0.34	0.32	0.29
Minimum Rated Final Resistance (Inches W.G.)	1.5	1.5	1.5	1.5	1.5

Style 5 – Synthetic v-bank media

Nominal Filter Size (Inches) (W x H x D)	24x24x12				
Grade	1	2	3	4	5
MERV Rating	15, 15-A	14, 14-A	13, 13-A	12, 12-A	11, 11-A
Minimum Gross Media Area (Ft^2)	189.0	189.0	189.0	189.0	189.0
Air Flow Capacity (CFM)	1968	1968	1968	1968	1968
Filter Face Air Velocity (FPM)	492	492	492	492	492
Maximum Initial Resistance (Inches W.G.)	0.28	0.27	0.26	0.24	0.20
Minimum Rated Final Resistance (Inches W.G.)	1.5	1.5	1.5	1.5	1.5

Style 6 – Mini-pleat microglass media

1. Description

Filters consist of a pleated pack of microglass paper coated with water-repellent binder within a plastic or corrosion-resistant metal frame. Pleat openings across face area shall be consistent across filter media, with alignment maintained for maximum exposure by beads of low profile self-supporting adhesive or thermoplastic material. Beads on neighboring sides bond together for integrity of the media. Media and binders are non-shedding and water-resistant.

Filter shall maintain structural integrity and media support to a maximum air flow of 2520 CFM. Filter frame and media shall be structurally stable to prevent racking, and shall be available in box and single header configurations. The media shall be continuously bonded to the enclosure frame to prevent air flow bypass.

Filters shall be marked with manufacturer name/trademark, filter model number, nominal size, filter type and MERV rating.

The entire filter shall be listed or classified for compliance with Underwriters' Laboratories Standard UL 900 as to flammability.

2. Performance

When tested in accordance with ASHRAE 52.2-2012 standard, filters shall be in compliance with the following:

Style 6 – Mini-pleat microglass media

Nominal Filter Size (Inches) (W x H x D)	24x24x4			
Grade	1	2	3	4
MERV Rating	15	14	13	11
Minimum Gross Media Area (Ft^2)	93.0	93.0	93.0	93.0
Air Flow Capacity (CFM)	1968	1968	1968	1968
Filter Face Air Velocity (FPM)	492	492	492	492
Maximum Initial Resistance (Inches W.G.)	0.80	0.75	0.7	0.6
Minimum Rated Final Resistance (Inches W.G.)	1.5	1.5	1.5	1.5

G. Sizes

Actual filter face (length and width) dimensions shall not be undersized by more than five-eighths of an inch from the nominal size. Actual filter depths shall not be less than 7/8 inch for 1 inch nominal filters, 1-3/4 inch for 2 inch nominal filters, 3-3/4 inch for 4 inch nominal filters, 5-7/8 inch for 6 inch nominal filters and 11-1/2 inch for 12 inch nominal filters. Filter nominal sizes shall be the industry standard sizes of the holding frame.

Filters constructed to custom sizes are required to provide identical construction and performance to the standard size filters as manufactured at the factory in compliance to the published product literature and the standard specifications.

H. Markings

Each filter shall bear a label or marking indicating manufacturer's name or product trade name, filter series designation, nominal filter size, MERV rating, MERV-A rating (if tested) and UL flammability mark. Ring, link and bag filters without frames require markings on filter packaging. All filters are required to have unique part designations for ordering and pricing.

IV. Warranty

Bidder shall be responsible for the administration of all warranty claims, including serving as the point of contact for all matters concerning the same. Warranty shall start on date of acceptance of the delivered products by the end user.

Construction and Use Guarantee: Filters furnished under this specification shall be new and of good material and workmanship. Any filter or component that fails under normal conditions during its useful life from date put into use, free of negligence or accident,

shall be promptly replaced. Guarantee shall include air bypass or leakage through the filter, blow-outs, and other deficiencies or defects. Such replacement shall be free of any charge to the owner.

Performance Guarantee: Filters supplied shall maintain or increase the requested minimum particle size efficiency and performance specifications indicated herein and in accordance with the ASHRAE Standard 52.2-2012 (and Appendix J, if tested) methods of evaluation throughout the life of the filter. Filter service life or useful life shall include operation not to exceed the recommended final air pressure for a filter.

Filters constructed to custom face sizes are required to provide identical construction and performance to the standard face size filters as manufactured at the factory in compliance with the manufacturer's product literature and the specifications covered herein.

All filters failing to meet the Construction, Use and Performance Guarantees shall be returned with full refund to the owner for all monies paid for the filters, cost of installation, cost of freight and any cost of testing.

The state reserves the right to require a filter be tested by an independent third party test laboratory identified by the state, to determine if filters are meeting the construction and performance guarantees, including the ASHRAE MERV (and MERV-A, if tested) filtration efficiencies as described in Section VI, for Acceptance Evaluation and Quality Assurance as indicated herein, at any time during the life of the contract. All cost associated with the filter purchase, freight and testing shall be borne by the bidder.

V. Service, parts, and manuals

The contractor shall contact the major using agencies to assure that filters are performing satisfactorily every quarter. If requested by the state or a particular using agency, the contractor shall make site visits and offer advice on specific filtration problems related to this contract. Unsatisfactory user comments are to be provided in writing to the Purchase and Contract division's contract administrator within 30 days.

VI. Acceptance evaluation and quality assurance

A. Acceptance evaluation

The bidder shall provide the completed product questionnaires and supporting manufacturer's published product literature with specifications for all types of filters evaluated to this specification. A completed product questionnaire consists of two individual sections; part A for construction and part B for performance details to be accompanied by a certification signed by an officer (such as a Vice President) of the manufacturer (submitted brand name), not a distributor nor vendor. Failure to submit the completed questionnaires and published literature may disqualify a filter series offered.

The state reserves the right to request independent third party test reports for the filters submitted. The full ASHRAE 52.2 test reports are required to be on hand and furnished upon request.

The manufacturer's published literature should indicate the product designation or series, MERV rating, MERV-A rating (if tested), filter media area, the initial air flow resistance, and the recommended final air flow resistance for the representative filter face size, depth and airflow as specified. The manufacturer's published specifications for the representative filter should apply to all the filters within that series. The filter information provided shall be representative of a complete filter of the manufacturer's current production including integral frame and integral media support, not media only.

B. Quality assurance

The state reserves the right to have the bidder submit filters to an independent third party laboratory selected by the state to provide a full ASHRAE 52.2 (and 52.2 Appendix J, if marked with MERV-A) test report for a sample filter for which there is a concern that a filter’s construction or performance not meeting the guarantees and specifications indicated herein. The sample filter to be tested may be sourced from the customer’s inventory of delivered filters or sourced from a distributor or vendor from current supply. All cost associated with the filter purchase, freight and testing shall be borne by the bidder.

The full ASHRAE 52.2 test report shall include the complete twelve (12) particle loading applications over the standard six (6) sets of particle size removal efficiency (PSE) curves for a complete filter. The accurate filtration efficiency curves shall not indicate a reduction in performance by a single MERV number for the initial or any of the supplemental PSE curves. Failure of a filter to provide the specified minimum MERV (and MERV-A, if tested) particle size efficiency number on the initial or any supplemental loading curves will indicate non-compliance with the filter specifications stated herein.

The ASHRAE 52.2 test reports obtained from the independent third party test laboratory shall include, but are not limited to, the following data:

1. Identification and description of the complete air filter tested
2. Manufacturer's operating data
3. Test air flow rate and the manufacturer's rated air flow
4. Initial resistance or pressure drop at 100% rated air flow
5. Final resistance or pressure drop at 100% rated air flow
6. MERV (and MERV-A, if tested) ratings based upon a mandatory full ASHRAE 52.2 test report
7. How the test laboratory acquired sample filter for testing
8. Identification of test laboratory
9. Date(s) of testing and certification by the appropriate signatures

10. Performance curves including filtration efficiency versus particle sizes
11. Measurement of the gross effective filter media area.

Any contractor failing to provide filters that meet the Construction, Use and Performance Guarantees shall take back all filters, and refund the owner all monies paid for the filters, cost of installation, cost of freight and any cost of testing.

C. Samples

Sample filters shall be furnished by the manufacturer as required or requested at the cost of the bidder. The sample filter to be tested may be sourced from the customer's inventory of delivered filters or sourced from a distributor or vendor from current supply, as determined by the state.

VII. Delivery and payment

Delivery of and payment for air filters under this specification shall be in accordance with the terms and conditions of the IFB. The contractor shall be responsible for any packing, packaging, or protection required to insure delivery in an undamaged condition.

VIII. Ordering data (for Purchase & Contract use only)

Purchasers should exercise any desired option offered herein and should specify the following in the requisition and IFB.

1. Title, number and date of this specification.
2. Types, styles and MERV (or MERV-A, only if ordered) ratings of filters (See I. Classification).
3. Filter face size and depth of media.
4. For type III bag or pocket filters: number of pockets and specific header size required (See III.C.1 Description).
5. For type IV, Styles 1-5 extended surface filters: Specific header quantity and size required (See III.D. Styles 1-5 Description).

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