

## SECTION 23 40 00

### HVAC AIR CLEANING DEVICES

#### **PART 1 GENERAL**

##### **1.01 QUALITY ASSURANCE**

- A. Filter media shall be ANSI/UL 900 listed, Class 1 or Class 2, as approved by local authorities.
- B. Provide all filters as product of one manufacturer.
- C. Assemble filter components to form filter banks from products of one manufacturer.
- D. All air supplied by a forced air-type unit, or system shall be filtered.
- E. Single filter installation or a pre-filter/intermediate filter combination shall be upstream from the coils.

#### **PART 2 PRODUCTS**

##### **2.01 REUSABLE PANEL FILTER MEDIA FRAMES**

- A. Manufacturers: same as the air handling unit provided by the mechanical contractor.
- B. Holding Frames: PVC extruded, channel frame with 2"x2" welded wire fabric on outlet side and inlet side., hinged with pull and retaining handles.
  - 1. Shall be permanent-style designed for replaceable media. Metal filter frames shall be provided by the manufacturer of the air handling equipment.
  - 2. Frames shall be vinyl channel design that pressure locks the filter media in place. The wire mesh shall be 1"x1", 16 gauge welded wire.
  - 3. Frame construction shall provide a competent seal of the filter media in order to minimize air flow bypass. Frames shall have mitered corners secured by spring steel corner clips, one at each corner for the 1 1/2" frames. Wire mesh shall be continuously supported on all sides and held in place by metal rivets or retainer clips. Frame size shall be clearly marked on one side of each frame.

##### **2.02 EXTENDED SURFACE RETAINED MEDIA FILTERS**

- A. Manufacturers:
  - 1. Fiberbond:
    - a) Standard Efficiency: FP100
    - b) High Efficiency: Dustlok
- B. Media:
  - 1. Media shall be at least UL-Class II.
  - 2. Minimum media performance and particle efficiency shall be:
    - a) Weight: 11.0 oz. per sq. yd.
  - 3. Minimum performance (24" x 24" x 1-1/2" media):
    - a) 0.21" w.c. resistance at 300 fpm.
    - b) 30 percent ASHRAE efficiency
    - c) 92 percent average weight resistance
    - d) 221 gm. dust-holding capacity at 1.0" w.c.
  - 4. Minimum particle efficiency:
    - a) 46.1 percent at 1 to 5 microns
    - b) 86.1 percent at 5 to 10 microns
    - c) 89.3 percent over 10 microns

## 2.03 HIGH-EFFICIENCY PARTICULATE AIR (HEPA) FILTERS

- A. Manufacturers:
  - 1. American Air Filter.
  - 2. Farr.
  - 3. Flanders.
  - 4. MSA.
  - 5. Weber.
- B. Media: Pleated, water-resistant glass fiber with aluminum separators; ANSI/UL 586; in 16-gage zinc-coated steel holding frame; nominal size 24" x 24" x 12" deep.
- C. Rating: 0.3 micron dioctyl phthalate smoke (DOP) to 99.97 percent efficiency, in accordance with MIL-STD-282 thermal (DOP) penetration test method; 250 fpm face velocity, 1.0" w.g. initial resistance, 3.0" w.g. recommended final resistance.
- D. FILTER FRAMES
  - 1. General: Fabricate filter frames and supporting structures of extruded PVC, channel material with necessary gasketing between frames and walls.
- E. Side Servicing Housings:
  - 1. Flanged for insertion into ductwork, or reinforced 16-gauge galvanized steel; access doors with continuous gasketing and positive locking devices on both sides; extruded aluminum tracks or channels for primary <and secondary>, <secondary and tertiary> filters with positive sealing gaskets.
- F. After-filter, where required, shall be on the discharge side of the fan and downstream from all coils.
- G. FILTER GAUGES
  - 1. Acceptable Manufacturer:
    - a) Dwyer
  - 2. Direct Reading Dial: 4-3/4" O.D. diaphragm-actuated dial in metal case, vent valves, black figures on white background, front recalibration adjustment, appropriate ranges of 0.05, 0-1.0, 0-2.0, 0-3.0 or 0-4.0" w.g., two (2) percent of full scale accuracy; Magnehelic Series 2000, manufactured by Dwyer.
- H. Accessories: Static pressure tips with integral compression fittings, 1/4" aluminum tubing, two-way or three-way vent valves.
- I. Inclined manometer: Not acceptable.

## 2.04 Electric Ionization Filtration

- A. Acceptable ManufacturerL
  - 1. Costatron 3000 Room Vent.
- B. Description: Integral centrifugal fan unit with Cosatron ionization filtration unit, pre-filter, SCR speed controller, dirty filter switch and indicator light.

## PART 3 EXECUTION

### 3.01 INSTALLATION

- A. All air supplied by a forced air-type unit, or system shall be filtered.
- B. Adequate clearances must be allowed for cleaning or changing filters.
- C. Single filter installation or a pre-filter/intermediate filter combination shall be upstream from the coils.
- D. The initial set of filter media is to be used for testing and trial use, and may not necessarily be replaced at project completion.
- E. Pre-filters shall be included during the construction phase and shall be considered for permanent installation where necessary.

- F. Each filter bank shall be equipped with a Magnehelic (or similar) gauge that indicates static pressure drop across the filters.
- G. The design change-out pressure drop, in inches water gauge, shall be indicated on the gauge.
- H. Provide extra stock to insure that a completely clean set of filter media is available at project completion.
- I. Provide filters upstream of all coils, including heat recovery units.
- J. Construction filters shall be replaced with permanent filters and filter frames after construction clean up is complete.

**END OF SECTION 23 40 00**