

## HVAC Air Filtration

The air filter in your heating and air conditioning system is extremely important, but often neglected. In order to help ensure proper filtration, you need to think about several things: correct filter size, MERV ratings, filter material, filter type, and individual environmental conditions. Generally these specifications will be determined by your central heating or air conditioner, walls, ceilings or return vents.

**Filter size** is important for the proper operation of your system. A filter that is too large may not fit properly, while a filter too small may allow for airborne particles to pass around. Either can cause too much restriction on your system, making it work too hard. Determining your filter size is easy- most of the time the size is printed on the existing filter (as an example- 16 x 25 x 1), and commonly referred to as the "nominal size". If your filter is not marked, measure the size top to bottom, size to side, as well as the thickness. This is usually an even measurement and considered the "actual measurement", but could be slightly smaller than the marked or nominal size (as an example- 15-1/2 x 24-3/4 x 7/8). The most important thing is that the filter fits in your system, with all 4 sides touching the frame.

**What is MERV?** In this case, MERV is not the famous TV host. It stands for *Minimum Efficiency Rating Value*, and is an industry standard rating system that allows you to compare a filter's efficiency. It ranges from 1 to 20, with 20 being the highest rating, indicating it works best at filtering fine particles. Please consult your owner's manual for maximum MERV recommendations, in order to avoid system malfunction or damage.

MERV	Particle Size	Typical Controlled Contaminant	Typical Application
1-4	> 10.0 µm	Pollen, dust mites, cockroach debris, sanding dust, spray paint dust, textile fibers, carpet fibers	Residential window AC units
5-8	3.0-10.0 µm	Mold, spores, dust mite debris, cat and dog dander, hair spray, fabric protector, dusting aids, pudding mix	Better residential, general commercial, industrial workspaces
9-12	1.0-3.0 µm	Legionella, Humidifier dust, Lead dust, Milled flour, Auto emission particulates, Nebulizer droplets	Superior residential, better commercial, hospital laboratories
13-16	0.3-1.0 µm	Bacteria, droplet nuclei (sneeze), cooking oil, most smoke and insecticide dust, most face powder, most paint pigments	hospital & general surgery
17-20	< 0.3 µm	Virus, carbon dust, sea salt, smoke	Electronics & pharmaceutical manufacturing clean room

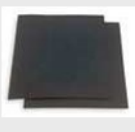
**Filter Material-** There are several different types of filters available today- standard, pleated, carbon, electrostatic, HEPA, and electronic. Of these, standard, pleated and electrostatic are most common.

- **Standard Air Filters** have the capacity of removing roughly 10% of the airborne pollutants, and are made of spun fiberglass with cardboard frames. These are the most inexpensive type of filter, and should be changed every 30 days.



- **Pleated Air Filters** will capture roughly 35-40% of the contaminants, due to the increase in filter surface area, because the filter material is shaped like an accordion. Due to the larger filtration surface, these filters last 3-4 times longer than standard filters, and should be changed every 3-4 months. Generally these cost slightly more than the standard filters.

- **Electrostatic Filters** use an electronically charged media, which attracts particles, as air passes through. They may be pre-charged or be activated by air flowing through layers creating the charge. These generally are much more expensive than the standard or pleated filters, but only require replacement one a year.



- **Carbon Air Filters** contain an absorbent carbon particle, impregnated in a polyester fiber for filtering fumes and odors. Generally these are disposable, and should be changed every 3-4 months. Pricing is slightly more than a pleated type filter.

- **Electronic Air Cleaners** are a more permanent solution, and provide one of the highest levels of filtration. These are generally recommended for those suffering from allergies, and work on a principle similar to an electrostatic filter, but do not restrict air flow. Particles are "zapped" as they pass over electronically charged plates. These are more expensive than the other types of filters, and usually require professional installation and cleaning.



Information sources include ASHRAE, AirHandler Filters.com

If you are still having difficulty choosing Air Filters,  
 please contact us at [askzoro@zoro.com](mailto:askzoro@zoro.com) or 855-289-9676

**Product Compliance and Suitability.**

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