



American Lung Association® Health House®

furnace filters: tips about your furnace filter

The dust in your home is made up of pollen, plant and mold spores, pet dander, lint, bacteria and other contaminants. Regular daily activities within the home such as dusting, vacuuming and cooking can increase particulate concentrations.

These particles, measured in microns, range in size from fairly large to microscopic. To better understand the size of a micron, note that a human hair is about 70 microns in diameter. The tiniest particles make up 99% of debris in the air circulating within your home. These can bypass the respiratory system's defense mechanisms—such as the nose, sinuses and windpipe—that are designed to filter out particles 3-5 microns in size and keep them from becoming lodged in our lungs.

Health effects from breathing these particles can range from irritation of the eyes and/or respiratory tissues to more serious effects, such as decreased lung function and cancer. They can also cause allergic reactions and infectious diseases.

One way to help lower the particle count in your home is to use better air filters and change or clean them regularly. Follow the manufacturer's instructions on the filter to see how often the filter needs to be replaced or cleaned.

Types of filters

Filters are disposable, reusable or refillable and are made from materials such as fiberglass, metal, manmade or natural fibers. Factors that affect filter efficiency include fiber size, fiber density, airflow rate, and particle diameter.

- **Panel filters**, usually 1" fiberglass filters, are the typical furnace filters installed in the ductwork of most home heating and/or air conditioning systems. These filters do little to remove contaminants from the air. The primary function of these filters is to protect the fan and minimize the amount of dust on the heating and cooling coil. They also can capture large particles from the air. This basic filtering system may be upgraded by using a high-efficiency filter to trap additional pollutants (see below).
- **Washable/reusable filters** are designed to be washed and reused. They never get

completely clean and can, therefore, become restrictive to air flow. These filters are ineffective at capturing small particles.

- **Pleated filters** are basically panel filters that have been pleated or folded to provide more surface area. These filters are typically more efficient than a panel filter by increasing the surface area for collecting particles. However, the flow velocity through the filter is reduced when the filter collects particles. It is important to change the filter on a regular basis so as not to restrict airflow.
- **High efficiency pleated filters** have an electrostatic charge that is designed to capture small particles and allergens such as dust, pollen, mold, pet dander and smoke. These are the particles that make up 99% of your air, can aggravate allergies and asthma, and which contribute toward dust in your air and on your furniture. It is important to change them on a regular basis. Refillable high efficiency pleated filters are also available.
- **High Efficiency Particulate Air (HEPA) filters** are extended filters that remove sub-micron particles with high efficiency. HEPA filters consist of a core filter that is folded back and forth over corrugated separators that add strength to the core and form the air passages between the pleats. The filter is composed of very fine sub-micron glass fibers in a matrix of larger fibers. These types of filters are not designed to fit most standard furnaces. They generally need a separate system consisting of a fan and filter.
- **Electronic air cleaners** use an electrical field to trap charged particles. Like mechanical filters, they can be installed in central heating and/or cooling system ducts. Electronic air cleaners trap a high percentage of particles from the air passing through them.

It is important to note that central filtration systems must be operated with the fan "on" for constant air movement through the HVAC system.

Maintenance is key

When selecting a filter note that efficiency will change over time. As filters become loaded with particles, the available openings for air to flow through become smaller. The result is better

filtration but less air movement, causing your furnace to work harder to move air through the system. Disposable filters need to be replaced on a regular basis to insure proper airflow. As for electronic precipitators, they are most efficient when first installed, and lose their efficiency as they get dirty. Regular maintenance and cleaning is required to keep these operating at peak efficiencies.

Tips on using a furnace filter

- Read the manufacturer's instructions on maintaining your furnace to determine where the filter is located and how often you should have your furnace inspected by a licensed heating contractor.
- Identify from the instructions the type of filter appropriate for the furnace you have.
- When buying filters, look for the highest efficiency filter that works with your furnace (the higher the MERV rating, which is usually listed on the packaging, the better). Health House guidelines require a MERV rating of 10 or higher.
- Replace your filter at the stated intervals instructed by the manufacturer, usually about every three months, i.e., the first day of every season. Replace more often if you are introducing higher levels of particulates into your home, such as when renovations are being done. Also, consider more frequent replacements if you have a family member with asthma, allergies or another lung disease.

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For further information:

- American Lung Association®: www.LungUSA.org
- American Lung Association® Health House®: www.HealthHouse.org
- Environmental Protection Agency (EPA): www.EPA.gov/iaq/pubs/airclean.html
- Local Department of Health

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For more information on creating a healthier home environment, visit our Web site at www.HealthHouse.org.