



GENERAL MAINTENANCE AND REPAIR

YOUR FURNACE FILTER

WHAT A FURNACE FILTER CAN DO FOR YOU

Traditionally, furnace filters were designed to protect the furnace and fans. With increased air quality awareness, some filters are now being installed to reduce exposure to particles which can affect your health.

There is a wide variety of furnace filters available. However, you may find it confusing to select one which is suitable. This purpose of this document is to provide you with guidance when selecting your furnace filter.

WHAT AIRBORNE PARTICLES ARE FOUND IN YOUR HOME?

The particles you breathe in your home come from a variety of sources including:

- dust on floors or other surfaces that is disturbed by activity in the house
- dust generated by smoking, burning candles, cooking, doing laundry, etc.
- hair and skin flakes from humans or pets
- particles from the outside air which come into your home with infiltrating air
- Some particles are so small that they are inhaled and then exhaled without being trapped in your lungs. Some larger particles are trapped in your nose and throat and never reach your lungs. Still other particles are too large to be inhaled. The particles most dangerous to you are those that enter your lungs and lodge there.

You can see the particles of dust which accumulate on your television screen, shelves, and furniture. But you can't see the respirable particles. Respirable particles can be easily inhaled into your lungs and provoke respiratory illness. Although you would probably like to keep visible dust out of your home, the main health risk

comes from respirable particles, which include tobacco smoke, spores, bacteria, and viruses.

The activity levels of the people in your home can affect the air you breathe. Activity such as vacuuming and cooking can create or stir up particles. On the other hand, during periods of inactivity such as the middle of the night, particle concentrations tend to be much lower.

FILTER RESEARCH

CMHC conducted a study to verify filter manufacturer claims and to determine whether good filters will significantly reduce your exposure to airborne particles. All results are compiled and discussed in the research report: Evaluation of Residential Furnace Filters (1999). You can obtain a copy of this report by calling the Canadian Housing Information Centre (CHIC) at 1 800 668-2642. A summary of the results of this study follows.

RESEARCH PROGRAM

The CMHC study first tested ten filter types in a single home and then the following filters in 5 additional homes:

25 mm (1") premium media filter
Charged media type electronic
100 mm (4") pleated media filter
High efficiency bypass filters, such as a HEPA (high efficiency particle arrestor)
Electronic plate and wire (ESP)
Air in the houses was tested when these higher efficiency filters were in use. The results were compared to when no filter was used.

The electronic plate and wire filter (ESP) produces some ozone during its operation. Exposure to



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elevated ozone can irritate your lungs. Separate testing was done to verify whether the amount of ozone produced by the ESP could affect the occupants of the home.

Testing Limitations

Each filter was in use in each house only for one or two days. The effects of dust accumulation on filter performance could not be evaluated in these tests. If a filter actually cleaned dust out of a house by cleaning house air, these tests were too brief for such effects to be seen.

RESEARCH RESULTS

The research showed that exposure of the house occupants to airborne particles appears to be directly linked to their activities when they are in the home. The furnace filter appears to have only a moderate effect on the exposure of an individual to respirable particles in the home.

Consider each member in your home to be followed by a cloud of dust—like “Pig Pen” in the “Peanuts” comic strip by Charles Schulz. When occupants are moving around, they stir up the dust. The dust in this cloud is usually not affected by the quality of the furnace filter because the filter is far away down a duct.

Table 1 shows the percentage of improvement provided by each filter versus having no filter. The improvements are greater when there is no activity in the home, but particle levels were quite low in the test houses during these periods whether or not the air was being filtered.