

What does MERV Rating have to do with choosing an air filter?

MERV stands for Minimum Efficiency Rating Value. This is an industry standard rating system that allows you to compare filters made by different manufacturers. A MERV rating is a numerical value ranging from 1 (lowest efficiency) to 20 (highest efficiency) and tells the consumer how well the filter captures and holds dirt and dust of a specified size range. The chart below shows the MERV ratings, corresponding particle size ranges, and efficiency level as measured by the percentage of particles captured.

The MERV air filter efficiency rating system was developed by the ASHRAE, the American Society of Heating, Refrigerating, and Air-Conditioning Engineers. The rating system is referred to as ASHRAE Standard 52.2-2007: Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size. Standard 52.2 not only sets forth a testing protocol to ensure reliable and consistent testing of filter performance on particles of nominal 0.3-10 micron in diameter. ASHRAE 52.2 lead to the creation of the minimum efficiency rating value, or MERV, a guideline to determine a filter's performance by particle size, ranging from 0.3 – 10 microns in size. This value is based on the lowest, or minimum efficiency for the filter. In many cases this is when the filter is first installed.

Generally, the higher the MERV, the better the filter will perform at removing smaller particle sizes. MERV 1 through 4 are designed to remove large particles. These filters are used primarily to protect equipment and are used in light industrial and residential applications. For these values, the average particle size efficiency from 3 to 10 micron is less than 20%. Because of this, average arrestance, which is a measure of a filter's ability to remove coarse particulate, is used to determine MERV 1 through 4.

MERV 5 through 16 filters remove finer particles and are used in applications where it is important to protect individuals or processes from airborne contaminants that could otherwise affect health and productivity. The average particle size efficiency has three ranges: E1 (0.3 to 1 micron), E2 (1 to 3 micron) and E3 (3 to 10 micron) will determine MERV for these products.

At On Time Air Filters, we recommend [Merv 8 filters](#) as our "better" filter" and [Merv 11 filters](#) as our "best filter." For people with pets or otherwise desiring superior odor management, we offer a "best for pets" in some sizes. This is a [carbon activated Merv 8](#) filter. We do not recommend [Merv 13 filters](#), because these filters may negatively affect certain HVAC systems.

The following chart describes each MERV value in the rating system:

| MERV Value | Filter efficiency: Average percentage of particles trapped | | | Typical particles trapped by filter |
|------------|--|-------------------|--------------------|-------------------------------------|
| | Particle size: | | | |
| | 0.3 - 1.0 microns | 1.0 - 3.0 microns | 3.0 - 10.0 microns | |
| MERV 1 | - | - | Less than 20% | Pollen, dust mites, |
| MERV 2 | - | - | Less than 20% | standing dust, spray |
| MERV 3 | - | - | Less than 20% | paint dust, carpet |
| MERV 4 | - | - | Less than 20% | fibers |
| MERV 5 | - | - | 20% - 34% | Mold spores, hair |
| MERV 6 | - | - | 35% - 49% | spray, fabric protector |
| MERV 7 | - | - | 50% - 69% | cement dust |
| MERV 8 | - | - | 70% - 85% | |
| MERV 9 | - | Less than 50% | 85% or better | Humidifier dust, lead |
| MERV 10 | - | 50% - 64% | 85% or better | dust, auto emissions, |
| MERV 11 | - | 65% - 79% | 85% or better | milled flour |
| MERV 12 | - | 80% - 89% | 85% or better | |
| MERV 13 | Less than 75% | 90% or better | 85% or better | Bacteria, most tobacco |
| MERV 14 | 75% - 84% | 90% or better | 85% or better | smoke, propleet nuclei |
| MERV 15 | 85% - 94% | 90% or better | 85% or better | (sneeze) |
| MERV 16 | 95% or better | 90% or better | 85% or better | |

Typical applications for the major MERV value ranges are:
MERV 1 – 4

Minimum filtration, used almost exclusively in residential buildings

MERV 5 – 8

Most commercial applications and better residential buildings

MERV 9 – 12

Superior residential buildings and better commercial buildings

MERV 13 – 16

Hospital inpatient and general surgery; found in superior commercial buildings

MERV 17 – 20

Clean rooms and pharmaceutical manufacturing



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