

What is the MERV rating for the HAKKO FA-430 Fume Extraction System filters?

Established by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), the Minimum Efficiency Reporting Value (MERV) system is a common shorthand for assessing how effectively air filters can capture airborne particles.

The MERV system rates air filters on a scale of 1-20 on their ability to capture airborne pollutant particles.¹ The higher the MERV rating, the higher the filtration efficiency.

The ASHRAE MERV standard assesses filtration efficiency for three distinct air pollutant size ranges. Each MERV rating implies the total efficiency of a filter in capturing particles that fall into each size range.

	Coarse Particles	Fine Particles	
Size Range (diameter)	3-10 microns	1-3 microns	0.3-1 microns
Examples	PM10, pollen, dust, mold spores, pet dander	PM2.5, PM1, bacteria, viruses, soot, combustion particles, vehicle exhaust, wildfire smoke, tobacco smoke	
Health Effects	short-term irritation, such as coughing, sneezing, watery eyes	can penetrate lungs and enter bloodstream, increasing risk of heart disease, lung disease, and premature death	

A filter is then assigned a MERV rating from 1-20 based on that filter's total efficiency in

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filtering these airborne particles (see Figure 1 for filtration efficiencies of MERV filters from 1-16).

Composite Average Particle Size Efficiency, % in Size Range, μm				
Standard 52.2 Minimum Efficiency Reporting Value (MERV)	Range 1 0.30 to 1.0	Range 2 1.0 to 3.0	Range 3 3.0 to 10.0	Average Arrestance, %
1	N/A	N/A	$E3 < 20$	$A_{avg} < 65$
2	N/A	N/A	$E3 < 20$	$65 \leq A_{avg}$
3	N/A	N/A	$E3 < 20$	$70 \leq A_{avg}$
4	N/A	N/A	$E3 < 20$	$75 \leq A_{avg}$
5	N/A	N/A	$20 \leq E3$	N/A
6	N/A	N/A	$35 \leq E3$	N/A
7	N/A	N/A	$50 \leq E3$	N/A
8	N/A	$20 \leq E2$	$70 \leq E3$	N/A

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9	N/A	35 ≤ E2	75 ≤ E3	N/A
10	N/A	50 ≤ E2	80 ≤ E3	N/A
11	20 ≤ E1	65 ≤ E2	85 ≤ E3	N/A
12	35 ≤ E1	80 ≤ E2	90 ≤ E3	N/A
13	50 ≤ E1	85 ≤ E2	90 ≤ E3	N/A
14	75 ≤ E1	90 ≤ E2	95 ≤ E3	N/A
15	85 ≤ E1	90 ≤ E2	95 ≤ E3	N/A
16	95 ≤ E1	95 ≤ E2	95 ≤ E3	N/A

Figure 1: MERV rating efficiency chart for three particle size categories – ASHRAE Standard 52.2-2017.

The MERV rating for the standard main filter (PN: A1586) is 14.

The MERV rating for the high-efficiency main filter (PN: A1573) is 17.

HakkoUSA Knowledge Base

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