

**TABLE 2: MINIMUM EFFICIENCY REPORTING VALUE (MERV) PARAMETERS**

ASHRAE Standard 52.2				ASHRAE Standard 52.1	Application Guidelines		
MERV	Particle Size Removal Efficiency, Percent in Particle Size Range, $\mu\text{m}$			Dust-Spot Efficiency Percent	Particle Size and Typical Controlled Contaminant	Typical Applications	Typical Air Filter/Cleaner Type
	0.3 to 1	1 to 3	3 to 10				
20	$\geq 99.999$	in 0.1 – 0.2 $\mu\text{m}$ particle size		—	<b>&lt; 0.3 <math>\mu\text{m}</math></b> Virus (unattached) Carbon dust Sea salt All combustion smoke	Electronics manufacturing Pharmaceutical manufacturing Carcinogenic materials	HEPA/ULPA Filters*
19	$\geq 99.999$	in 0.3 $\mu\text{m}$ particle size		—			
18	$\geq 99.99$			—			
17	$\geq 99.97$			—			
16	> 95	> 95	> 95	—	<b>0.3-1 <math>\mu\text{m}</math></b> All bacteria Droplet nuclei (sneeze) Cooking oil Most smoke Insecticide dust Most face powder Most paint pigments	Superior commercial buildings Hospital inpatient care General surgery	<b>Bag Filters</b> – Nonsupported (flexible) microfine fiberglass or synthetic media, 12 to 36 inches deep. <b>Box Filters</b> – Rigid style cartridge, 6 to 12 inches deep.
15	85-95	> 90	> 90	> 95			
14	75-85	> 90	> 90	90-95			
13	< 75	> 90	> 90	80-90			
12	—	> 80	> 90	70-75	<b>1-3 <math>\mu\text{m}</math></b> Legionella Humidifier dust Lead dust Milled flour Auto emission particles Nebulizer drops	Superior residential Better commercial buildings Hospital laboratories	<b>Pleated filters</b> –Extended surface with cotton or polyester media or both, 1 to 6 inches thick. <b>Box Filters</b> – Rigid style cartridge, 6 to 12 inches deep.
11	—	65-80	> 85	60-65			
10	—	50-65	> 85	50-55			
9	—	< 50	> 85	40-45			
8	—	—	> 70	30-35	<b>3-10 <math>\mu\text{m}</math></b> Mold Spores Dust mite body parts and droppings Cat and dog dander Hair spray Fabric protector Dusting aids Pudding mix Powdered milk	Better residential Commercial buildings Industrial workplaces	<b>Pleated filters</b> –Extended surface with cotton or polyester media or both, 1 to 6 inches thick. <b>Cartridge filters</b> –Viscous cube or pocket filters <b>Throwaway</b> –Synthetic media panel filters
7	—	—	50-70	25-30			
6**	—	—	35-50	< 20			
5	—	—	20-35	< 20			
4	—	—	< 20	< 20	<b>&gt; 10 <math>\mu\text{m}</math></b> Pollen Dust mites Cockroach body parts and droppings Spanish moss Sanding dust Spray paint dust Textile fibers Carpet fibers	Minimum filtration Residential window air conditioners	<b>Throwaway</b> – Fiberglass or synthetic media panel, 1 inch thick. <b>Washable</b> – Aluminum mesh, foam rubber panel <b>Electrostatic</b> – Self-charging (passive) woven polycarbonate panel
3	—	—	< 20	< 20			
2	—	—	< 20	< 20			
1	—	—	< 20	< 20			

This table is adapted from ANSI/ASHRAE Standard 52.2-2007.<sup>15</sup>

\*The last four MERV values of 17 to 20 are not part of the official standard test, but have been added by ASHRAE for comparison purposes. Ultra Low Penetration Air filters (ULPA) have a minimum efficiency of 99.999 percent in removing 0.3  $\mu\text{m}$  particles, based on the IEST test method. MERVs between 17 and 19 are rated for 0.3  $\mu\text{m}$  particles, whereas a MERV of 20 is rated for 0.1 to 0.2  $\mu\text{m}$  particles.

\*\* For residential applications, the ANSI/ASHRAE Standard 62.2-2007<sup>16</sup> requires a filter with a designated minimum efficiency of MERV 6 or better.