

# ASHRAE 52.2-1999 MERV Parameters

Performance						Application		
ANSI/ASHRAE Standard 52.2			ASHRAE Standard 52.1			Controlled Particulate		
MERV	Composite Average Particle Size Efficiency, % in Size Range			Average arrestance	Average dust-spot efficiency	Size	Examples	Typical Application
	$E_1$ (0.3 $\mu\text{m}$ to 1.0 $\mu\text{m}$ )	$E_2$ (1.0 $\mu\text{m}$ to 3.0 $\mu\text{m}$ )	$E_3$ (3.0 $\mu\text{m}$ to 10.0 $\mu\text{m}$ )					
1	--	--	<20%	<65%	<20%	>10.0 $\mu\text{m}$	<ul style="list-style-type: none"> <li>Pollen</li> <li>Dust mites</li> <li>Sanding dust</li> <li>Carpet fibers</li> <li>Spray paint dust</li> <li>Textile fibers</li> </ul>	Minimum filtration, residential, window air conditioners
2	--	--	<20%	65 to 70%	<20%			
3	--	--	<20%	70 to 80%	<20%	>10.0 $\mu\text{m}$	<ul style="list-style-type: none"> <li>Pollen</li> <li>Dust mites</li> <li>Sanding dust</li> <li>Carpet fibers</li> <li>Spray paint dust</li> <li>Textile fibers</li> </ul>	Minimum filtration, residential, window air conditioners
4	--	--	<20%	75 to 80%	<20%			
5	--	--	20 to 35%	80 to 90%	<20%	>10.0 $\mu\text{m}$	<ul style="list-style-type: none"> <li>Pollen</li> <li>Dust mites</li> <li>Sanding dust</li> <li>Carpet fibers</li> <li>Spray paint dust</li> <li>Textile fibers</li> </ul>	Minimum filtration, residential, window air conditioners
6	--	--	35 to 50%	85 to 90%	<20%			
7	--	--	50 to 70%	>90%	20 to 30%	1.0 to 3.0 $\mu\text{m}$	<ul style="list-style-type: none"> <li>Legionella</li> <li>Lead dust</li> <li>Coal dust</li> <li>Auto emissions</li> <li>Milled flour</li> <li>Humidifier dust</li> <li>Nebulizer drops</li> <li>Welding fumes</li> </ul>	Better commercial buildings, hospitals laboratories
8	--	--	>70%	>90%	30 to 35%			
9	--	<50%	>85%	>90%	40 to 45%	1.0 to 3.0 $\mu\text{m}$	<ul style="list-style-type: none"> <li>Legionella</li> <li>Lead dust</li> <li>Coal dust</li> <li>Auto emissions</li> <li>Milled flour</li> <li>Humidifier dust</li> <li>Nebulizer drops</li> <li>Welding fumes</li> </ul>	Better commercial buildings, hospitals laboratories
10	--	50 to 65%	>85%	>95%	50 to 55%			
11	--	65 to 80%	>85%	>95%	60 to 65%	0.3 to 1.0 $\mu\text{m}$	<ul style="list-style-type: none"> <li>Bacteria</li> <li>Most tobacco smoke</li> <li>Cooking oil</li> <li>Droplet nuclei</li> <li>Most smoke</li> <li>Insecticide dust</li> <li>Copier toner</li> <li>Most face powder</li> <li>Most paint pigments</li> </ul>	Superior commercial, general surgery, smoking lounges, hospital inpatient care
12	--	>80%	>90%	>95%	70 to 75%			
13	<75%	>90%	>90%	>98%	80 to 90%	0.3 to 1.0 $\mu\text{m}$	<ul style="list-style-type: none"> <li>Bacteria</li> <li>Most tobacco smoke</li> <li>Cooking oil</li> <li>Droplet nuclei</li> <li>Most smoke</li> <li>Insecticide dust</li> <li>Copier toner</li> <li>Most face powder</li> <li>Most paint pigments</li> </ul>	Superior commercial, general surgery, smoking lounges, hospital inpatient care
14	75 to 85%	>90%	>90%	--	90 to 95%			
15	85 to 95%	>90%	>90%	--	>95%	0.3 to 1.0 $\mu\text{m}$	<ul style="list-style-type: none"> <li>Bacteria</li> <li>Most tobacco smoke</li> <li>Cooking oil</li> <li>Droplet nuclei</li> <li>Most smoke</li> <li>Insecticide dust</li> <li>Copier toner</li> <li>Most face powder</li> <li>Most paint pigments</li> </ul>	Superior commercial, general surgery, smoking lounges, hospital inpatient care
16	>95%	>95%	>95%	--	--			