



MERV—MINIMUM EFFICIENCY REPORTING VALUE VS. PERCENT EFFICIENCY

In the United States, ASHRAE standard 52.2: 2007 gives us the requirements for filter efficiency. Efficiency is determined by types of particles, rather than an overall efficiency. This rating is known as MERV—Minimum Efficiency Reporting Value and is in contrast to percent efficiency.

MERV rates both how effective the filter is at stopping particles of a particular size (particle count efficiency) and a particular weight (weight efficiency). This differs from percent efficiency and the European standards (EN), of which there are several (EN 1822:2012 and EN 779:2012).

MERV ratings are on a scale from 1–20 and filter everything from ash and insects at the low end to smoke and metal oxides in the middle to aerosol micro particles at the high end. MERV differs from the EU standards in that they have a higher level of filtration, known as U15–U17, which MERV does not match. Comparisons between these classes of filters are approximate.

Grade	ASHRAE Filter Class MERV	EN Filter Class	Efficiency	Particles Separated
Coarse > 10 micron	1	G1	<20%	Leaves, insects, textile fibers, sand, flying ash, mist, rain
	2	G2	<20%	
	3	G2	<20%	
	4	G2	<20%	
	5	G3	>20%	Pollen, fog, spray
	6	G3	>35%	
	7	G4	>50%	
	8	G4	>70%	
	9	G4	>75%	
Fine >1 micron	10	F5	>50%	Spore, cement dust, dust sedimentation
	11	F6	>65%	Clouds, fog
	12	F6	>80%	
	13	F7	>85%	Accumulated carbon black
	14	F8	>90%	Metal oxide smoke, oil smoke
	15	F9	>90%	
EPA & HEPA >0.01 micron	16	E10	>95%	Metal oxide smoke, carbon black, smog, mist, fumes
	16	E11	>95%	
	16	E12	>95%	Oil smoke in the initial stages, aerosol micro particles, radioactive aerosol
	17	H13	>95%	
	18	H13	>95%	
	19	H14	>95%	Aerosol micro particles
20	H14	>95%		
ULPA Micro particles		U15		Aerosol micro particles
		U16		
		U17		

Note: Correlations between ASHRAE and EN standards classifications and particle size are approximate