

ASHRAE Standard 52.2-2012				ISO16890: 2016				EN	EN779: 2012			EN1822: 2009
Min. Efficiency Reporting Value	Composite Average Particle Size Efficiency (E_m) % in Size Range, μm			Average of initial and discharged efficiency $E_m = (E_i + E_d)/2$		Initial efficiency (E_i)	Initial Arrestance (A_m)	Filter Class	Average Arrestance (A_m) of Synthetic Dust	Average Efficiency (E_m) at 0.4 μm	Minimum Efficiency (E_{min}) at 0.4 μm	Initial Efficiency (E_i) at MPPS (typically 0.08 - 0.15 μm)
	Range 1	Range 2	Range 3	ePM1 (%)	ePM2.5 (%)	ePM10 (%)	Coarse (%)		Test Final dP 250Pa	Test Final dP 450Pa		
(MERV)	0.3-1.0	1.0-3.0	3.0-10.0	0.3-1.0	0.3-2.5	0.3-10	ISO Fine Dust		%	%	%	%
1			$E_m < 20$				$A_m < 50$ Final dP 200 Pa	G1	$50 \leq A_m \leq 65$			
2			$E_m < 20$					G2	$65 \leq A_m \leq 80$			
3			$E_m < 20$									
4			$E_m < 20$									
5			$E_m \geq 20$				$A_m \geq 50$ Final dP 300 Pa	G3	$80 \leq A_m \leq 90$			
6			$E_m \geq 35$					G4	$A_m \leq 90$			
7			$E_m \geq 50$									
8		$E_m \geq 20$	$E_m \geq 70$									
9		$E_m \geq 35$	$E_m \geq 75$			$E_i > 50$		M5	$40 \leq E_m \leq 60$			
10		$E_m \geq 50$	$E_m \geq 80$									
11	$E_m \geq 20$	$E_m \geq 65$	$E_m \geq 85$		$E_m \geq 50$	$E_i > 70$		M6	$60 \leq E_m \leq 80$			
12	$E_m \geq 35$	$E_m \geq 80$	$E_m \geq 90$									
13	$E_m \geq 50$	$E_m \geq 85$	$E_m \geq 90$	$E_m \geq 50$	$E_m \geq 65$	$E_i > 80$		F7	$80 \leq E_m \leq 90$		$E_{min} \geq 35$	
14	$E_m \geq 75$	$E_m \geq 90$	$E_m \geq 95$	$E_m \geq 70$	$E_m > 80$	$E_i > 90$		F8	$90 \leq E_m \leq 95$		$E_{min} \geq 55$	
15	$E_m \geq 85$	$E_m \geq 90$	$E_m \geq 95$	$E_m > 80$				F9	$95 \leq E_m$		$E_{min} \geq 70$	
16	$E_m \geq 95$	$E_m \geq 95$	$E_m \geq 95$									
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	E10			$E_i \geq 85$	
								E11			$E_i \geq 95$	
								E12			$E_i \geq 99.5$	
								H13			$E_i \geq 99.95$	
								H14			$E_i \geq 99.995$	
								U15			$E_i \geq 99.9995$	
								U16			$E_i \geq 99.99995$	
								U17			$E_i \geq 99.999995$	

A_m = Average Arrestance
 E_m = Average Efficiency
 E_{min} = Minimum Efficiency
 E_d = Discharged Efficiency
 E_i = Initial Efficiency

Note: The filter class is the highest class where the filter meets all requirements. Comparisons are approximation given for reference only. Filters should be tested to the most recent standards. For ISO ePM1 and ePM2.5 both initial and discharged efficiency need to be over 50% to qualify for a class.