

### Minimum Efficiency Reporting Value (MERV)

An "overall" reporting value of a 52.2-evaluated air filter is the expression of the Minimum Efficiency Reporting Value (MERV). The MERV is a single number that is used, along with the air velocity at which the test was performed; to simplify the extensive data generated by the method of testing. MERV is expressed on a 16 point scale and is derived from the Particle Size Efficiency (PSE) for each of the three groups. (See Table 2: MERV Parameters.) The average PSE for each of the three groups (E1, E2, and E3) is referenced against the Minimum Efficiency Reporting Value Parameters.

### Standard Test Airflow Rates

The Minimum Efficiency Reporting Value (MERV) must be stated with the air velocity at which the filter was tested. For example, if the filter was tested with an air velocity of 492 FPM and was found to be MERV 10, the filter's Minimum Efficiency Reporting Value would be MERV 10 @ 492 FPM. ASHRAE Standard 52.2 tests are to be conducted at one of seven airflow rates:

- 118 FPM (0.60 m/s)
- 246 FPM (1.25 m/s)
- 295 FPM (1.50 m/s)
- 374 FPM (1.90 m/s)
- 492 FPM (2.50 m/s)
- 630 FPM (3.20 m/s)
- 748 FPM (3.80 m/s)

### Minimum Final Resistance

Final resistance must be at least twice the initial resistance at the test airflow rate, or the values in Table 2, whichever is greater.

### Average Arrestance By Standard 52.1

Filters with an efficiency of less than 20% in E3 (MERV 1 through MERV 4) must be tested per the arrestance test of ASHRAE Standard 52.1

TABLE 1: ASHRAE 52.2 PARTICLE SIZE RANGES

Range	Size	Group
1	0.30 to 0.40	E1
2	0.40 to 0.55	
3	0.55 to 0.70	
4	0.70 to 1.00	
5	1.00 to 1.30	E2
6	1.30 to 1.60	
7	1.60 to 2.20	
8	2.20 to 3.00	
9	3.00 to 4.00	E3
10	4.00 to 5.50	
11	5.50 to 7.00	
12	7.00 to 10.00	

TABLE 3: MERV PARAMETERS

Standard 52.2 Minimum Efficiency Reporting Value (MERV)	Composite Average Particle Size Efficiency, % in Size Range, $\mu\text{m}$			Average ASHRAE Arrestance, % by Standard 52.1 Method	Minimum Final Resistance	
	Range 1 (0.3-1.0)	Range 2 (1.0-3.0)	Range 3 (3.0-10.0)		PA	Inches of Water
1	n/a	n/a	E3 < 20	Aavg < 65	75	.3
2	n/a	n/a	E3 < 20	65 < Aavg < 70	75	.3
3	n/a	n/a	E3 < 20	70 < Aavg < 75	75	.3
4	n/a	n/a	E3 < 20	75 < Aavg	75	.3
5	n/a	n/a	20 $\leq$ E3 < 35	n/a	150	.6
6	n/a	n/a	35 $\leq$ E3 < 50	n/a	150	.6
7	n/a	n/a	50 $\leq$ E3 < 70	n/a	150	.6
8	n/a	n/a	70 $\leq$ E3	n/a	150	.6
9	n/a	E2 < 50	85 $\leq$ E3	n/a	250	1.0
10	n/a	50 $\leq$ E2 < 65	85 $\leq$ E3	n/a	250	1.0
11	n/a	65 $\leq$ E2 < 80	85 $\leq$ E3	n/a	250	1.0
12	n/a	80 $\leq$ E2	90 $\leq$ E3	n/a	250	1.0
13	E1 $\leq$ 75	90 $\leq$ E2	90 $\leq$ E3	n/a	350	1.4
14	75 $\leq$ E1 < 85	90 $\leq$ E2	90 $\leq$ E3	n/a	350	1.4
15	85 $\leq$ E1 < 95	90 $\leq$ E2	90 $\leq$ E3	n/a	350	1.4
16	95 $\leq$ E1	95 $\leq$ E2	95 $\leq$ E3	n/a	350	1.4

\*Information provided from the National Air Filtration Association