

Air Filters & Efficiency Classification

ASHRAE 52.2:

Filter testing was originated from America in 1930 (ASHVE and AFI code). It was then reviewed and modified in 1967 and 1968. ASRHAE collaborated with American National Standard Institute (ANSI) in 1992 to create ASHRAE-ANSI 52.1. Finally updated to ASHRAE 52.2 in 2007.

EUROVENT 4/4 and 4/5:

Eurovent 4/5 was established in 1974 by modifying existing ASHRAE 52-68 to suit the applications in Europe. Eurovent 4/5 is catered for primary and secondary filter while Eurovent 4/4 is catered for high efficiency filters

EN 779:

It was the first European's Air filter test method in 1993, built on the foundations of Eurovent 4/5. This standard was modified later in 2002 and 2012. Only covers primary and secondary filters.

EN 1882:

It is the improvisation from Eurovent 4/4 in 1998. This standard was modified only once in 2010. It covers high efficiency filters (E10 and above).

AIR FILTERS & EFFICIENCY CLASSIFICATION

AIR FILTERS And EFFICIENCY CLASSIFICATION

CLASSIFICATION	Arrestance or Dust Spot Efficiency	US ASHRAE 52.2	European Union EN779 Class		Typical Controlled Contaminant	Application
PRE Filter (G Class)	AFI <65 % M	MERV 1	G1	$Am < 65\%$	Particle bigger than 10.0µm (Pollen) (Spanish moss) (Dust mites) (Sanding dust) (Spray paint dust) (Textile fibers)	Gross filter, domestic and commercial
	AFI 65%-70%	MERV 2	G2	$65\% \leq Am < 80\%$		
	AFI 70%-75%	MERV 3				
	AFI 75%-80%	MERV 4				
	AFI 80%-85%	MERV 5	G3	$80\% \leq Am < 90\%$	Particle size within 3.0µm-10.0µm (Mold) (Spores) (Hair spray) (Cement dust) (Snuff) (Powdered milk)	Commercial, industrial, paint shop
	AFI 85%-90%	MERV 6				
	NBS 25%-30%	MERV 7	G4	$90\% \leq Am$		
	NBS 30%-35%	MERV 8				
MEDIUM Filter (F Class)	NBS 40%-45%	MERV 9	F5	$40\% \leq Em < 60\%$	Particle Size within 1.0µm-3.0µm (Lead dust) (Milled flour) (Coal dust) (Auto emissions) (Nebulizer drop) (Welding fumes)	IAQ concerned commercial & industrial, medical
	NBS 50%-55%	MERV 10				
	NBS 60%-65%	MERV 11	F6	$60\% \leq Em < 80\%$		
	NBS 70%-75%	MERV 12				
	NBS 80%-85%	MERV 13	F7	$80\% \leq Em < 90\%$	Particle size within 0.3µm-1.0µm (All bacteria) (cooking oil) (Most smoke) (Copier toner) (Most face powder) (Most paint pigments)	IAQ concerned commercial, industrial, medical, food etc
	NBS 90%-95%	MERV 14	F8	$90\% \leq Em < 95\%$		
	NBS >95%	MERV 15	F9	$95\% \leq Em$		
		MERV 16				

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HEPA Filter (H Class)	≥95% at 0.3μm		H10 ≥85% at MPPS	Particle size bigger than 0.3μm (Virus [unattached]) (Carbon dust) (Sea salt) (All combustion smoke) (Radon progeny)	All types of cleanrooms
	≥98% at 0.3μm		H11 ≥95% at MPPS		
	≥99.97% at 0.3μm	TYPE A			
	≥99.99% at 0.3μm	TYPE C	H12 ≥99.5% at MPPS		
	≥99.995% at 0.3μm		H13 ≥99.95% at MPPS		
	≥99.999% at 0.3μm	TYPE D	H14 ≥99.995% at MPPS		
ULPA Filter (U Class)	≥99.9995% at 0.12μm	TYPE F	H15 ≥99.9995% at MPPS	Particle size bigger than 0.12μm	super cleanroom
	≥99.99995% at 0.12μm		H16 ≥99.99995% at MPPS		
	≥99.999995% at 0.12μm		H17 ≥99.999995% at MPPS		