

FILTER

LINE

AND THE MERV SYSTEM

MERV 20
MERV 19
MERV 18
MERV 17



MERV 16
MERV 15
MERV 14
MERV 13



MERV 12
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Definition of TERMS

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MERV 3
MERV 2
MERV 1



MERV 8
MERV 7
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FILTER-LINE and MERV - DEFINITION OF TERMS

Arrestance	The percentage (%) of test dust, by weight, that an air filter is able to capture (according to the ASHRAE 52.1 Standard).
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers.
ASHRAE 52-76	Test Standard for HVAC Filters (ASHRAE Standard 52-1968-RA 76) that was used from 1968 to 1992. It was superseded by ASHRAE Standard 52.1-1992 after that time period.
ASHRAE 52.1	Test Standard for HVAC Filters (ASHRAE Standard 52.1-1992) that has been used since 1992 to measure Arrestance, Dust Spot Efficiency and Dust Holding Capacity (DHC).
ASHRAE 52.2	Test Standard for HVAC Filters (ASHRAE Standard 52.2-1999) that has been used since 1999 to measure the fractional Particle Size Efficiency (PSE) of an HVAC Filter and assign a MERV depending on the PSE in three (3) different particle size ranges.
Contaminant	Any unwanted airborne constituent that effectively reduces or compromises the acceptability of the air.
DHC	Dust Holding Capacity. DHC is the weight of test dust that an air filter can hold at a specified final pressure drop (according to the ASHRAE 52.1 Standard).
DOP	Diocetylphthalate Oil testing is used for HEPA and ULPA Filters.
Efficiency	Defined as Dust Spot Efficiency (DSE), it reflects the air filter's ability to remove naturally occurring atmospheric dust.
Electrostatic	Enhancement of a mechanical filter's capture efficiency (particularly in the attraction of smaller diameter particles) by imparting an electric charge on the fibers in the media.
Hydrophobic	A characteristic of the fibers in the media to repel moisture.
MERV	Minimum Efficiency Reporting Value. A numerical system for comparing air filters based on the Particle Size Efficiency (PSE). A MERV of 1 is considered the least efficient. A MERV of 20 is considered the most efficient. See ASHRAE 52.2's definition.
Pressure Drop	The air filter's resistance to air flow.
PSE	Particle Size Efficiency. The air filter's ability to remove airborne particles in specific size ranges from 0.30 to 10.0 microns in diameter, using controlled aerosol potassium chloride (KCl).

FORMULAS and CONVERSIONS

$$\text{Media Velocity (fpm or m/s)} = \frac{\text{Air Flow (cfm or m}^3\text{/s)}}{\text{Effective Media Area (ft}^2\text{ or m}^2\text{)}}$$

$$\text{Energy Consumption (E)} = \frac{\text{QPT}}{\text{N1000}} \text{ (KWh)}$$

Where : Q is Air Flow (m³/s) P is Average Pressure Loss (Pa)
T is Operation Time (Hours) N is Efficiency of Fan

1 m/s	= 196.85 fpm
1 m ³ /s	= 2119 cfm
1 KWh	= 3413 btu
1 Pa	= .000145 psi
1 Pa	= .00402 in. H ₂ O
1 m ²	= 10.76 ft ²

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STANDARDS (Approximate)				TYPICAL CONTROLLED CONTAMINANTS	TYPICAL APPLICATIONS & LIMITATIONS	BLC's FILTER-LINE			
ASHRAE 52.2		ASHRAE 52.1				AIR FILTERS (Approximate)		EXAMPLES OF MODEL # KEYS	
LINKS	VALUE	EFFICIENCY	ARRESTANCE			CATEGORY	MORE SPECIFICALLY		
	MERV 20	N / A	N / A	< or = 0.30 Micron (Particle Size) All Bacteria Virus (Unattached) Carbon Dust Sea Salt Combustion Smoke Radon Progeny	Mostly Final Filter Cleanrooms Radioactive Materials Carcinogenic Specialized Surgery Pharmaceutical Hospitals/Electronics Laboratories Precision Machining Food Processing	HEPA/ULPA Filters	HEPA - High Efficiencies of 95, 99.97, 99.99 % Wet Laid Paper Media/Gel Seal Available ULPA - Highest Possible Efficiency of 99.9995 %		FLH97/122424SPD FLH99/121224SMD FLU99/122424SMD
	MERV 19	N / A	N / A						
	MERV 18	N / A	N / A						
	MERV 17	N / A	N / A				> or = 99.999 % Efficiency on 0.10 - 0.20 Micron Particles, IEST Type F > or = 99.999 % Efficiency on 0.30 Micron Particles, IEST Type D > or = 99.99 % Efficiency on 0.30 Micron Particles, IEST Type C > or = 99.97 % Efficiency on 0.30 Micron Particles, IEST Type A		
	MERV 16	N / A	N / A	0.30 to 1.0 Micron All Bacteria Most Tobacco Smoke Droplet Nuclei Cooking Oil Most Smoke Insecticide Dust Copier Toner Most Face Powder Most Paint Pigments	Mostly Final Filter Superior Industrial/Commercial VAV Systems High Humidity Turbulent Air Flow Smoking Lounges Hospitals/Surgery Precision Machining Laboratories/Airports	ESR Cells	CLASS 2, 12" Deep - 65, 75, 85, 95 and 98 % Efficient "V" Configuration = 35 % More Filter Area vs FLR	FLESR85/121224 FLESR98/122424	
	MERV 15	> 95 %	N / A			Compact	CLASS 2, 4" Deep - 60, 80 and 90 % Efficient Dual Density Microglass, Adhesive Separators	FLCDR80/41224 FLCDR90/42424	
	MERV 14	90 - 95 %	> 98 %			Rigid Cells	CLASS 2 / 1, 6" or 12" Deep - 60, 80 & 90 % Efficient Microglass Paper Pleated, Aluminum Separators	FLR60/121625 FLR90/122424	
	MERV 13	80 - 90 %	> 98 %			Bag Filters	CLASS 2 / 1, 25" Deep - 80 and 90 % Efficient 2 Layered Fiberglass Pockets, Rust Resistant Dividers	FLB80/25122405 FB190/25242410	
	MERV 12	70 - 75 %	> 95 %	1.0 to 3.0 Microns Legionella Humidifier Dust Lead Dust Milled Flour Coal Dust Auto Emissions Nebulizer Drops Welding Fumes	Prefilter/Final Filter Healthcare Facilities Paint Spray Booths Better Industrial/Commercial Institutional/Hospitals Pharmaceutical VAV Systems Food Processing	Cartridge Filters	CLASS 2 / CLASS 1 6" or 12" Deep - 50, 60, 80 and 90 % Efficient Microglass Pleated, Stabilizers, Support Braces		FLC50/121620 FLC80/122025 FC190/122424
	MERV 11	60 - 65 %	> 95 %						
	MERV 10	50 - 55 %	> 95 %			Bag Filters	CLASS 2, 14" Deep - 40 and 50 % Efficient CLASS 2 / 1, 25" Deep - 60 % Efficient 2 Layered Fiberglass Pockets, Rust Resistant Dividers		FLB40/14242406 FLB50/21242406 FB160/25242410
	MERV 9	40 - 45 %	> 90 %						
	MERV 8	30 - 35 %	> 90 %	3.0 to 10.0 Microns Mold Spores Hair Spray Fabric Protector Dusting Aids Cement Dust Pudding Mix Snuff Powdered Milk	Most Used Prefilter More Life for Final Filters Industrial Workplaces Commercial Buildings Institutional/Paint Better Residential Built-Up Filter Banks Side Access Housings Central Air Handlers	Pleated Filters	EXTENDED SURFACE - CLASS 2 30 % Efficiency and 90 % Arrestance 1", 2" or 4" Deep - Special Sizes Available Non-Woven Cotton Fiber Media Pleats - Stabilizers		FLP30/11224 FLP30/21625 FLP30/42025
	MERV 7	25 - 30 %	> 90 %						
	MERV 6	< 20 %	85 - 90 %				EXTENDED SURFACE - CLASS 1 30 % Efficiency and 95 % Arrestance 1", 2" or 4" Deep - Special Sizes Available Ultrafine Fiberglass Media Pleats - Stabilizers		FP130/11620 FP130/22020 FP130/42424
	MERV 5	< 20 %	80 - 85 %						
	MERV 4	< 20 %	75 - 80 %	More than 10 Microns Pollen Spanish Moss Dust Mites Sanding Dust Spray Paint Dust Textile Fibers Carpet Fibers	Minimum Filtration General Ventilation Heating/Cooling Industrial/Commercial Residential/Ink/Mist Printing/Newspapers Automatic Prefilter Lint/Paper Dust Textile Mills Reusable Filter	Disposable	DAF - 1" or 2" Deep for Low Efficiency Filtration, with 70 - 82 % Arrestance and Very Low Cost		FLDAF11625 FLDAF22025
	MERV 3	< 20 %	70 - 75 %			Pads	PAINT ARRESTOR PADS - 5 Different Types AIR FILTER MEDIA PADS - 3 Distinct Media Types		FLSFP21620 FLFGO2424
	MERV 2	< 20 %	65 - 70 %			Roll Media	ROLL MEDIA - 8 Different Types, 75 - 90 % Arrestance COLLECTION MEDIA - For Ink (NCM) and Lint (PCM)		FLGRMBLC47 FLPCMBLC43
	MERV 1	< 20 %	< 65 %			Washable	DRY (81 - 91 % Arr.), METAL (3 Different Types) and BAFFLE (2 Types) - Permanent / Reusable		FLGFS42025 FLSBF22516