FILTERS DIRECT

Guide to Air Filtration Standards

Our Locations

Christchurch
Unit 3, Sonter Road, Sockburn
03 341 7229

Auckland
Unit 13, 273 Neilson Street, Onehunga
09 364 5314

AFPRO Filtration Group

NAFA

ISO16890

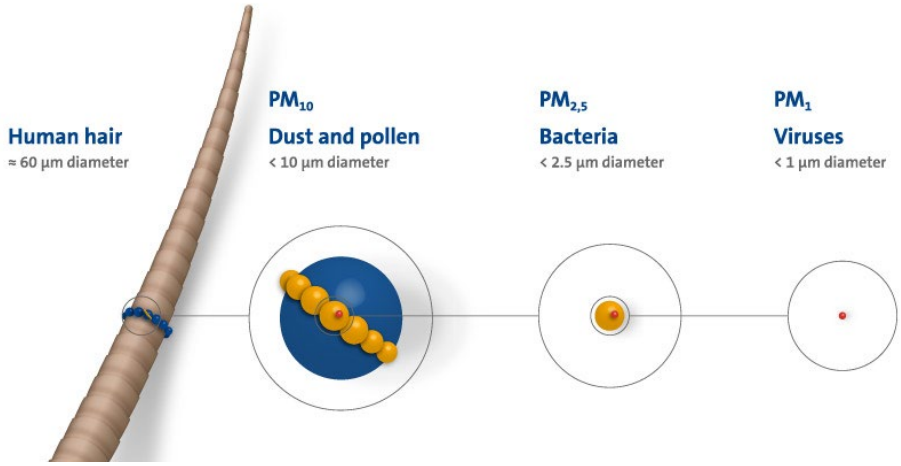
The new Air Filtration Standard

The ISO 16890 standard is the new global standard for testing and classification of air filters and replaces the existing EN779:2012 norm. This new ISO 16890 standard is a big change in the way air filters are evaluated. IS016890 is the latest air filtration standard that classes filter products based on their ability to capture different particulate matter sizes. The new ISO16890 test method shifts the focus on filtration performance to the classes of particulate matter size (PM) and is therefore a much more realistic test criteria than the theoretical EN779:2012.

What is different?

This means that with the new ISO 16890 standard filter efficiencies will be determined based on particulate matter size classes PM1, PM2.5 and PM10 (also called ePM1, ePM2,5 and ePM10), which are also used as evaluation parameters by the WHO (World Health Organization) and other authorities. Based on these parameters it will be easier for users to select the right air filter based on their requirements.

Size of PM relative to a human hair



What does PM1 mean?

PM1 means all Particulate Matter with size smaller than 1 micron (a thousandth of a millimetre)

1µ= 0.001mm (=PM1)
2.5µ= 0.0025mm (=PM2.5)
10µ= 0.01mm (=PM10)

ISO 16890 – The new group classification

The new ISO16890 standard divides air filters into four groups. A prerequisite for each group is that a filter captures at least 50% of the appropriate particle size range. If a filter, for example, captures more than 50% of PM1 particles, it will be grouped as an ISO ePM1 filter. The respective efficiency is then reported, rounded in 5 % increments.

Alongside fine dust filters, the new ISO standard also evaluates coarse dust filters as ISO coarse: that is, filters that capture less than 50 % PM10.

The new ISO 16890 standard offers several improvements when compared to the EN779 Standard:

- One global international standard
- The ISO16890 records their performance at a particle spectrum of 0.3 up to 10 microns (versus the EN779 test which qualified fine filter performance at 0.4 microns)
- Fractional efficiencies of the filter prior to and after IPA discharge of any electrostatic properties can be seen.
- Filters can be chosen for their specific performance related to the need of the application.

Conversion Tables

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ISO16890 – EN799:2012 – ASHRAE52.2

Filter guide

ISO 16890 Indicative Guide		EN799: 2012	ASHRAE 52.2	Application
Primary Iso Coarse Filters ePM1	40%	**G2**	Merv 2-4	**Pre-Filters** Dust removal
	50%	G3	Merv 5-6	**Pre-Filters** Fan Coils & split systems Commercial Air-Conditioning
	70%	**G4**	Merv 7-9	
Medium Filters	ePM10 >50%	M5	Merv 10	**Secondary Filters & Pre-Filters** Fine dust Commercial AHU's
	ePM10 70%	M6	Merv 11-12	
Fine Filters	ePM2.5 70%	**F7**	Merv 13	**Secondary Filters** High quality air & AHU's Hospitals Food Manufacture HEPA Pre-filtration Critical HVAC
	ePM1 70%	F8	Merv 14	**Secondary Filters** Hospitals Critical HVAC High Quality Ventilation
	ePM1 80%	**F9**	Merv 15	
High efficiency Particulate Air Filters **(HEPA)**		E10 & E11		Laboratories Food manufacture
		E12		
		H13		Operating Theatres
		H14		Biohazard Operating Theatres

*Note: There is no direct comparison from the older standards to ISO16890 classification

Useful airflow conversion table

From	To	Multiply By
CFM	L/Min	28.32
CFM	m3/h	1.699
L/S	CFM	2.119
L/S	L/Min	60
L/S	m3/h	3.6
m3/h	L/min	16.667

*Divide by the same number to achieve the reverse conversion