

The ISO 16890 standard is the new global standard for testing and classification of air filters, it replaced the EN779:2012 norm.

The ISO 16890 standard is a big change in the way air filters are evaluated, it has been published in December 2016.

Why a new filtration standard ISO 16890?

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.

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, 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.

$2.5\mu = 0.0025\text{mm}$

$10\mu = 0.01\text{mm}$

What is different?

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.

What does PM1 mean?

PM1 means all Particulate Matter with size smaller than 1 micron (a thousandth of a millimetre), just to be clear:

$$1\mu = 0.001\text{mm}$$

What is particulate matter?

Check out "what is particulate matter" short video here <https://youtu.be/yO5tq6vDjVw>

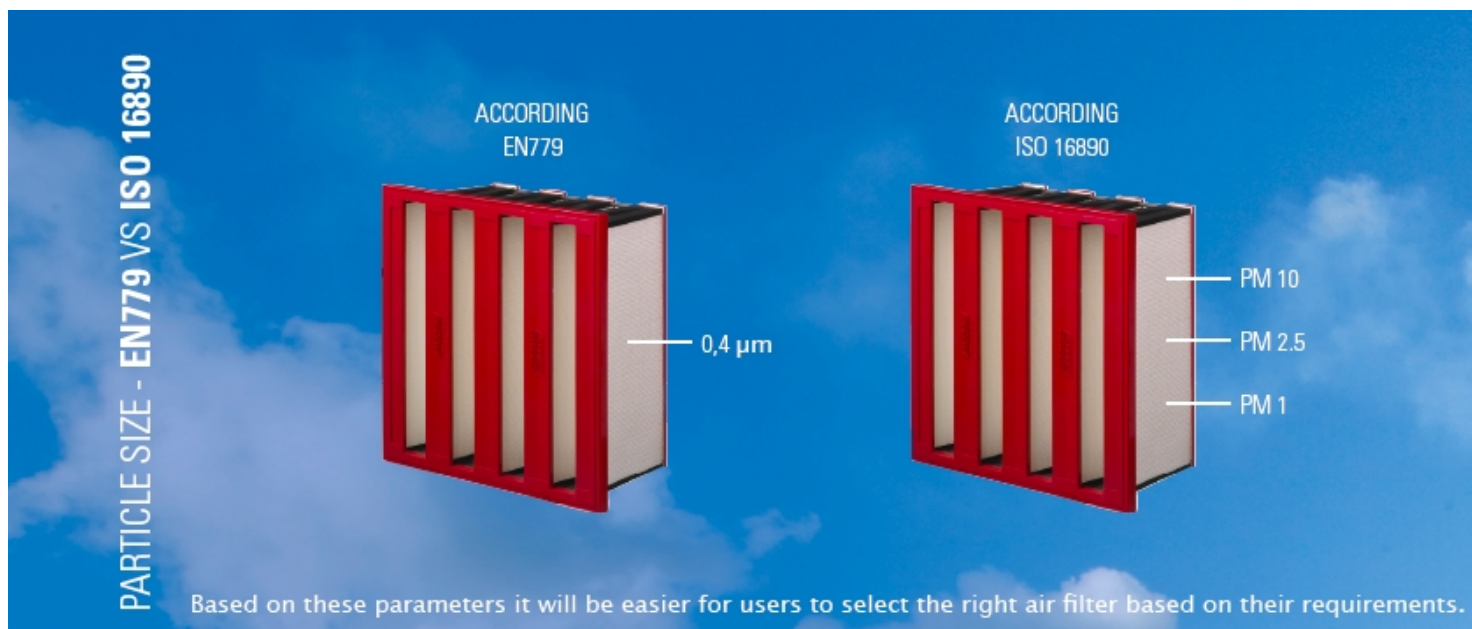
Group classification according ISO16890

ISO ePM1	ePM1,min \geq 50% (viruses, nanoparticles, exhaust gasses)
ISO ePM2.5	ePM2.5,min \geq 50% (bacteria, fungal and mold spores, pollen, toner dust)
ISO ePM10	ePM10 \geq 50% (pollen, desert dust)
ISO coarse	ePM10 \leq 50% (sand, hair)

With the introduction of the new ISO16890 standard, actual operating conditions will be more effectively taken into account. Instead of considering only the particle size 0.4 microns

(EN779:2012), as previously, a broad range between 0.3 microns and 10 microns will be used to determine separation efficiencies for particulate matter fractions PM10, PM2,5 and PM1 (ISO 16890). In order for an air filter to be rated to PM1 or any of the other PM sizes it will need to demonstrate a minimum efficiency of 50% and this will be recorded incrementally to the closest 5% – so an air filter performing at 66% to PM1 particles will be rated at ePM1 65%.

For coarse filters the new standard will include filters that capture less than 50% of particles in the PM10 range –these will be known as “ISO Coarse” and will detail their PM10 performance i.e. “PM Coarse 45%”.



Comparing EN779 with ISO16890 classes

A simple ‘translation’ of classes ISO 16890 to EN779:2012 fails because of the very different measurement and assessment methods. As of today there is no standard table available. As a guide, we initially offer the following translation table:

Class	ISO ePM1	ISO ePM2.5	ISO ePM10	ISO Coarse
G3	-	-	-	>80
G4	-	-	-	>90%
M5	-	-	> 50%	-
M6	-	50 - 65%	> 60%	-
F7	50 - 65 %	65 - 80%	>85%	-
F8	65 - 80 %	>80 %	>90%	-
F9	>80 %	>95 %	>95%	-

* All figures, descriptions, references and technical data contained in this text are given as mere example and are not binding. The data in ISO 16890 differ from improvements when compared to the EN 779. The data in ISO 16890 differ from improvements when compared to the EN 779.