



ISO16890-1:2016

'Air Filters for General Ventilation'
One Global International Standard

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ISO 16890-1:2016 - A Breath of Fresh Air

One global international standard

The new ISO16890 standard 'Air Filters for General Ventilation' became effective on 1 Dec 2016. It is an efficiency classification system of air filters for general ventilation based upon particulate matter (PM). It also provides an overview of the test procedures, and specifies general requirements for assessing and marking the filters, as well as for documenting the test results. It is intended for use in conjunction with ISO 16890 2, ISO 16890 3 and ISO 16890 4.

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

ISO 16890 - Details

ISO 16890 will address many issues by creating a process that is more simple, easier to duplicate with fewer steps, use more real-world applicable information, and have real discernible differences between ratings.

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.

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, 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.

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 PM1, PM2.5, PM10.

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%".

According to the new ISO standard filters are divided 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 ISO16890 ePM1 filter.

ISO 16890	Group Classification
ISO ePM1	ePM1, min ≥ 50 %
ISO ePM2,5	ePM2,5, min ≥ 50 %
ISO ePM10	ePM10 ≥ 50 %
ISO coarse	ePM10 < 50 %

Comparing EN779 with ISO16890

A simple 'translation' of ISO 16890 to EN779:2012 fails because of the very different measurement and assessment methods.

As a guide, we offer the following translation table:

Class	ISO ePM1	ISO ePM2.5	ISO ePM10	ISO Coarse
G3	—	—		>80%
G4	—	—		>98%
M5	—	—	>50%	
M6	—	50 - 65%	>60%	
F7	50 - 65%	65 - 80%	>85%	
F8	65 - 80%	> 80%	>90%	
F9	> 80%	>95%	>95%	

*All figures are just a guide

Human Health and Particle Facts

The effects of particulate matter (PM) on human health have been extensively studied. The results are that fine dust can be a serious health hazard, contributing to or even causing respiratory and cardiovascular diseases.

- Visible particles constitute only about 10% of indoor air!
- Particle visibility depends on the eye itself. In other words, light intensity and quality, background and particle type.
- Particles on furniture and those in a shaft of light are approximately 50 microns or larger.
- It may be possible to see particles as small as 10 microns under favourable conditions.

We all know that air pollution is bad for human health. A much less known fact is that new research indicates that the smallest particles in the air are the most dangerous.

To provide a healthy and productive indoor air environment, this means that the focus should be put on filtering particles that are 1µm (micrometre) or smaller in diameter - particles also known as PM1 (Particulate Matter 1).

PM1 is so bad for our health because the human body has no protection against these very small particles. They enter our bodies through the respiratory system - we inhale them - and a significant part go deep into our lungs and continue out into the blood stream.

At worst, PM1 particles contribute to deadly diseases such as heart attacks and lung cancer. More than 5.5 million people worldwide are dying prematurely every year as a result of air pollution, according to new research.

The main culprit is the emission of small particles from power plants, factories, vehicle exhausts and from the burning of coal and wood.

The average person breathes in about 18,000 litres of air per day. Each litre contains some 70,000 visible and invisible particles. That's over a billion particles per day that our lungs have to filter out!

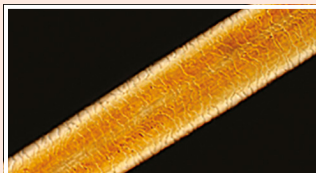
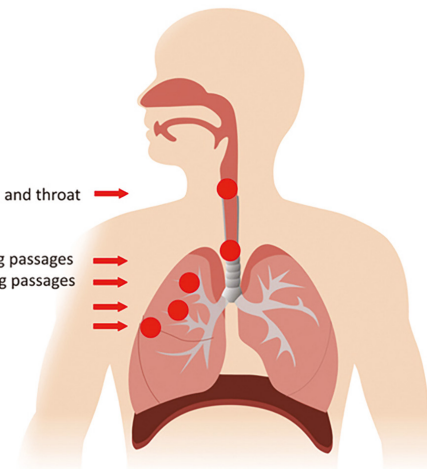
- The average home collects about 1 pounds of dust per week!
- A 3.0m x 3.0m carpet or rug will collect an average of about 4.5kgs of dust per year!
- Every day we
- Eat 1kg of food
- Drink 2kg of fluid
- Breathe 25kg of air

Indoor air is up to 50 times more polluted than outdoor air and we spend approx 90% of our life indoors. Every breath is approx. 25million particles.

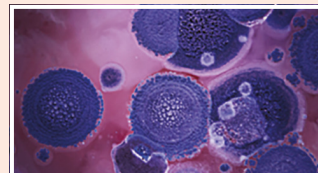
Where airborne particulate go

Particle Size	Effect
5.5 - 9.2 microns	Lodges in nose and throat
3.3 - 5.5 microns	Main breathing passages
2.0 - 3.3	Small breathing passages
1.0 - 2.0	Bronchi
0.3 - 1.0	Air sacs

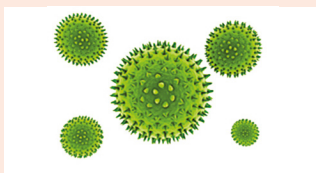
PM 10 refers to particulate matter that is less than 10 microns in size.



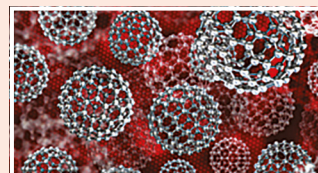
Human Hair – 75 micron
Course Particles visible course dust and sand, leaves and other large organic particles.



Spores - 1 to 10 micron
PM2.5 Bigger spores and other organic particles.



Pollen - 10 to 100 micron
PM10 Smoke, dust, dirt and pollen. Coarser fine dust and bigger organic particles.



Nano Particles - 0.1 to 1 micron
PM1 Very fine dust, combustion particles, bacteria, viruses and smaller spores.

Why Choose Jasun Envirocare

The scale and scope of Jasun Envirocare enables us to provide customers with an all-in-one package of reduced filter costs, contamination prevention, improved IAQ and enhanced service life cycles.

As one of the UK's largest air filter manufacturers, Jasun Envirocare Plc provides a complete range of air filters and systems.

We are committed to continuous environmental improvement. Our objective is to progressively introduce measures that optimize energy efficiency gains and prevent pollution and, in so doing, reduce the environmental impact of the industries we serve.

What makes us special...

- Our in-house expertise puts us at the forefront of innovation in the commercial air hygiene and water treatment industry.
- We provide a UK wide 'one-stop-shop' for filter supply, distribution and installation to meet all commercial air hygiene and water treatment needs.
- We deliver clean air where it matters.
- We provide air filters, clean ductwork, monitor indoor air quality and validate Clean Rooms.
- We manage water hygiene systems by monitoring, cleaning and refurbishment of commercial water systems.
- We have a proven track record in providing fast turnaround, from order to delivery: including a comprehensive European wide filter supply facilities.
- As the only filter company with a UK located IS16890 Test Facility we are able to manufacture and supply filter products that meet International Organisation for Standardisation (ISO) and European (Eurovent) requirements.
- We provide a customer care and advice service that is rapid in its response and effective in meeting the challenge.

Our Accreditation



Our determination to be at the forefront of our industry means that we seek validation of our working practices and quality standards from all relevant accreditation bodies and agencies.

We aim to provide our customers with the 'peace of mind' that they are complying with all statutory regulations in: protecting the environment; caring for the health and safety of employees and the communities in which we live.

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