



# Filter Classification

## ISO16890-1:2016

Titon: The indoor air quality experts

# What is ISO16890-1:2016?

***'Air filters for general ventilation - Part 1: Technical specifications, requirements and classification system based upon particulate matter efficiency (ePM)'***

ISO 16890-1:2016 establishes 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 ISO16890 standard 'Air Filters for General Ventilation' became effective on 1st December 2016 and widely adopted internationally since 2018, replacing EN 779:2012.

Each year in the UK, around 40,000 deaths are attributable to exposure to outdoor air pollution which plays a role in many of the major health challenges of our day. It has been linked to cancer, asthma, stroke and heart disease, diabetes, obesity, and changes linked to dementia. - Royal College of Physicians

## How does this compare to EN779?

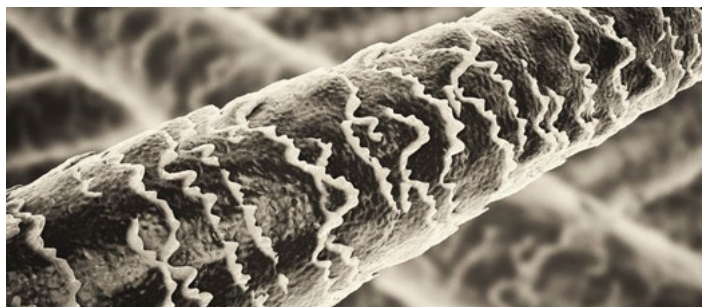
ISO16890 test methods differ from EN779:2012 by focusing on filtration performance to the classes of particulate matters sizes (PM) and looks at test data more realistically than being theoretical like that in EN779:2012.

This means that ISO16890 will be based on particulate matter as used by the WHO (World Health Organization) and other authorities. It makes it easier for the users to determine which filter is needed for different applications.

EN779:2012 in the past looked at particle sizes of up to 0.4  $\mu\text{m}$ , ISO16890 looks at the filter efficiency and is measured with three different particle fractions; PM10 (all particles up to 10  $\mu\text{m}$ ), PM2.5 (all particles up to 2.5  $\mu\text{m}$ ) and PM1 (all particles up to 1  $\mu\text{m}$ ). It changed the measuring process and made it possible to select the best filter for the correct environment. Fine particles are always complex and a mixture of solid and liquid particles have a very broad range of different sizes, ISO16890-1:2016 helps classifies these into a more structure definition.

# Particles Sizes

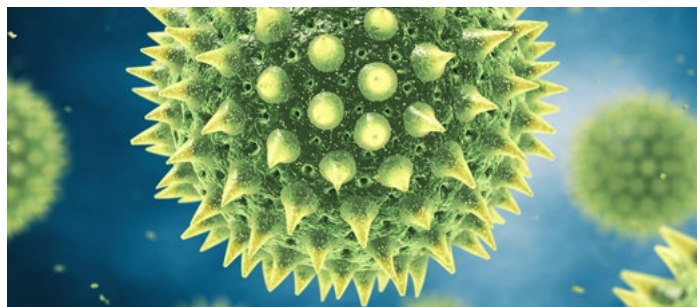
To help explain how ISO16890-1:2016 works, you need to define particles and how they fit into every day life. Below is an explanation of current particles sizes that are around us every day.



**Human Hair - 75 micron ( $\mu\text{m}$ )**

**COARSE PARTICLES**

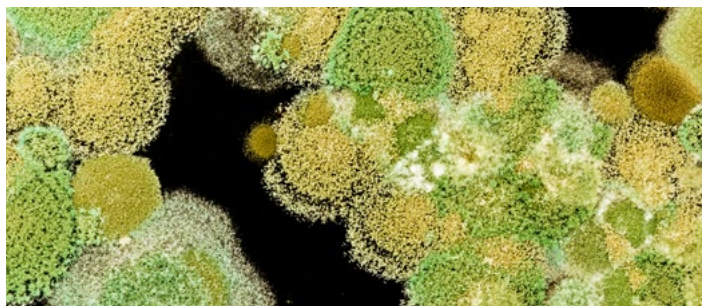
Visible particles such as dust, sand, hair and other organic particles.



**Pollen - 10 to 100 micron ( $\mu\text{m}$ )**

**PM10**

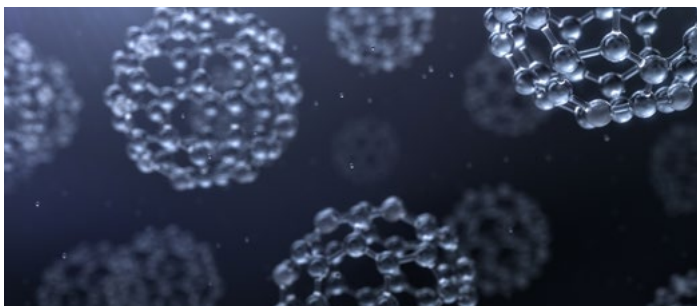
Smoke, dust, dirt and pollen. Coarser fine dust and bigger organic particles.



**Spores - 1 to 10 micron ( $\mu\text{m}$ )**

**PM2.5**

Larger spores and other organic particles.



**Nano Particles - 0.1 to 1 micron ( $\mu\text{m}$ )**

**PM1**

Very fine dust, combustion particles, bacteria, viruses and smaller spores.

## ISO16890-1:2016 classifies these into the following:

**ISO Coarse**  
=  
 $10 \mu\text{m} < 50 \%$

**ISO ePM10**  
=  
 $0,3 \mu\text{m} \leq x \leq 10 \mu\text{m}$

**ISO ePM2.5**  
=  
 $0,3 \mu\text{m} \leq x \leq 2,5 \mu\text{m}$

**ISO ePM1**  
=  
 $0,3 \mu\text{m} \leq x \leq 1 \mu\text{m}$

# So how does this impact Titon?

Currently Titon use filters in its MVHR, Sonair and Pre Filter/Trimbox products. The current filters in these products are still fine to use, but now have a 'new' classification to allow users to know what type of grade filter they have. This helps to define the application and reinforces the need for filters to help combat indoor air pollution.

Table below shows Titon's product comparison:

EN779 2012 rating	ISO 16890 Rating	Titon Products
G3	ISO Coarse 55%	HRV1.35, HRV1.6
G4	ISO Coarse 60%	HRV1.35, HRV1.6, TrimBox NO2 (pre-filter), Sonair 3
G4	ISO Coarse 85%	HRV4, HRV4.25, H200
F7	ISO ePM1 55%	HRV4, HRV4.25, H200
F7	ISO ePM1 88%	TrimBox NO2 (pre-filter)



We recommend that you change your filters every 6-12 months.

For more information:  
Tel: +44 (0) 1206 713800  
Email: [ventsales@titon.co.uk](mailto:ventsales@titon.co.uk)  
Web: [www.titon.com](http://www.titon.com)

