

Filtrair Talk

Editorial



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NEW ERA FOR FILTER TESTING

Per January 2017 the new ISO 16890 is valid and this standard is replacing the EN779:2012. The EN779:2012 will still be valid during a transition time of 18 months.

What will the new ISO 16890 bring to us? The new ISO 16890 standard is more realistic to the real life performance of a filter. Instead of classifying only at 0,4 µm particles, the new ISO 16890 standard is using the range of 0.3 to 10 microns in order to determine the separation efficiency for the groups PM₁₀, PM_{2,5}, and PM₁. This Filtrair Talk is specially aimed to inform you about the new ISO 16890, the test method and new classification system.

Filtrair is ready for the new ISO 16890. Our test rig has been rebuild and upgraded to ISO 16890 last January and we are ready to test our filters according this standard. In the coming half year we will test our product range and define the new ISO 16890 classification for our products. After this stage we will inform you with new test reports and we will upgrade our leaflets up to ISO 16890. By January 2018 the complete ISO 16890 transition should be completed. Please do not hesitate to contact us for further questions regarding the new ISO 16890.

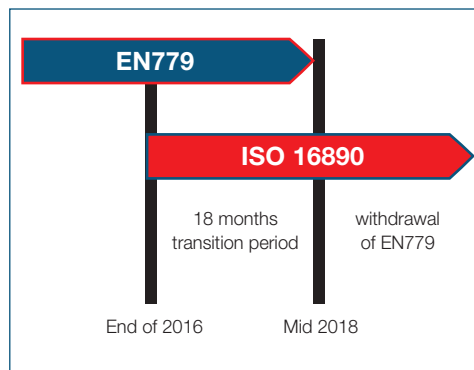
Your sincerely,
Gerrit Wijbenga
Sales & Marketing Director



NEW ISO 16890 FILTER TEST STANDARD IS ACTIVE PER 1 JANUARY 2017

The new ISO 16890 standard, Air filter for general ventilation (part 1-4) is active per 1 January 2017. The new ISO 16890 will supersede the currently used EN779:2012 (filter classes G1-F9).

There will be a transition period of 18 months to replace the EN779 into ISO 16890. The ISO 16890 will determine an air filter's efficiency class by using its efficiency factor for the environmental measuring of the relevant PM₁₀, PM_{2,5} and PM₁.



New ISO 16890 is closer to real life performance

The fine dust concentrations of outdoor air, Particulate matter PM₁₀, PM_{2,5} has been measured for several years at measuring stations of Federal states and Federal Environment Agency, as well as the public stations of the other EU countries. Up to date values for the particle fractions PM₁₀, PM_{2,5} are published on the websites of Federal Environment Agencies (WHO). The fraction PM₁ is respirable dust and is also considered but not explicitly measured everywhere. If the evaluation of air quality is based on the concentrations of particulate fractions mentioned above, it seems only logical to valuate air filters using the same criteria.

The new ISO 16890 is build up in 4 different parts. Test procedure details will be changed when we compare this to the existing standard EN779:2012.

The ISO 16890 covers four parts;

- **Part 1:** Technical specifications, requirements and classification system based upon particulate matter efficiency (ePM)
- **Part 2:** Measurement of fractional efficiency and air flow resistance
- **Part 3:** Determination of the gravimetric efficiency and the airflow resistance versus the mass of test dust captured
- **Part 4:** Conditioning method to determine the minimum fractional test efficiency

The new ISO 16890 standard is more realistic to the real life performance of a filter. Instead of classifying only at 0,4 µm particles, the new ISO 16890 standard is using the range of 0.3 to 10 microns in order to determine the separation efficiency for the groups PM₁₀, PM_{2,5}, and PM₁.

Table 1. Optical particle diameter size ranges for the definition of the efficiencies ePM_x

EFFICIENCY	SIZE RANGE (µm)
ePM ₁₀	0,3 ≤ X ≤ 10
ePM _{2,5}	0,3 ≤ X ≤ 2,5
ePM ₁	0,3 ≤ X ≤ 1

Classification according ISO 16890

The filter classification according EN779 (G1-F9) will disappear and according the new ISO 16890 filters will be classified into four new groups;

- ISO Coarse
- ISO ePM₁₀
- ISO ePM_{2,5}
- ISO ePM₁

The filters will be classified in accordance with their filter efficiencies with respect to the PM₁₀, PM_{2,5} and PM₁ particle fractions. A prerequisite for each group is that the filter stops at least

50% of the particles from that group. When a filter for example, removes more than 50% PM₁ particles, then it will be classified as an ISO ePM₁ filter. In addition to particulate filters,

the new ISO standard also evaluates filters for coarse dust. These filters will be classified as ISO Coarse when they remove less than 50% PM₁₀ particles.

Table 2. Filter groups

GROUP DESIGNATION	REQUIREMENT			CLASS REPORTING VALUE
	ePM _{1,min}	ePM _{2,5,min}	ePM ₁₀	
ISO Coarse	-	-	< 50%	IGA
ISO ePM ₁₀	-	-	≥50%	ePM ₁₀
ISO ePM _{2,5}	-	≥50%	-	ePM _{2,5}
ISO ePM ₁	≥50%	-	-	ePM ₁

- IGA = Initial Gravimetric Arrestance

The filter classes are reported as class reporting value in conjunction with the group designation. For the reporting of the ePM classes, the class reporting values shall be rounded downwards to the nearest multiple of 5% points. Values larger than 95% are

reported as ">95%". Examples of reporting classes are ISO Coarse 60%, ISO ePM₁₀ 60%, ISO ePM_{2,5} 80%, ISO ePM₁ 85%, or ISO ePM₁ >95%. Except for filters of the group ISO Coarse, the dust loading in accordance to ISO 16890-3 and the measurement of the

initial gravimetric arrestance is optional. ISO coarse filters can be classified only based on the initial gravimetric efficiency and hence, in this case the measurement of the ePMx efficiency values is optional.

Comparison of EN779 versus ISO 16890

It is not possible to make a direct comparison between the EN779 and the ISO 16890. The test measurements and classification criteria of both standards are different. In the following guiding table you can check how the EN779 filter class can be interpreted to the new ISO 16890.

Table 3. classification interpretation EN779 vs ISO 16890

EN779	ISO ePM ₁	ISO ePM _{2,5}	ISO ePM ₁₀	ISO COARCE
G2	-	-	-	>60%
G3	-	-	-	>80%
G4	-	-	-	>90%
M5	-	-	>50%	-
M6	-	50-65%	>60%	-
F7	>50%	70-80%	>85%	-
F8	>80%	>80%	>90%	-
F9	>80%	>95%	>95%	-

All data above are indicative values. We reserve the right to modify performance data without prior notice.

The Benefits of ISO 16890

The new ISO 16890 standard includes some improvements in comparison with the standard EN779:

- One global international guideline
- The ISO16890 records the performance of the particle size in the range of 0.3 to 10 microns (At the EN779 test evaluation was awarded fine filter at 0.4 micron)
- The fractional filtration efficiency is visible before and after a matter of electrostatic discharge is done.
- Now, there arises the possibility of choosing filters based on performance and the intended use.

In January 2017 the Filtrair test rig was rebuilt to test according ISO 16890 and EN779:2012. All our high quality products will be tested according the new ISO 16890. During the transition period we will update our literature and test reports of our products. The filter class print on our media is still under discussion. For questions please contact our Filtrair sales team.

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