

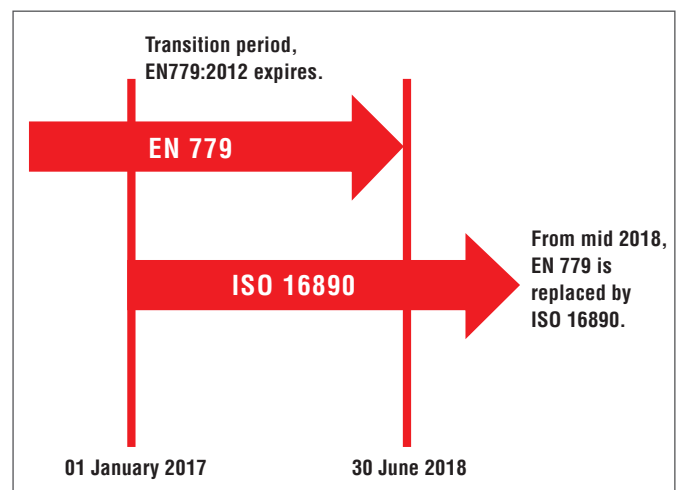
ISO 16890 – THE NEW FILTER STANDARD

In mid 2018, the filter standard EN 779:2012 expired and was replaced by ISO 16890. The approach of the new standard is to adapt the test conditions of the filters to real conditions in the outside air. They are associated with particle sizes e.g. between 0 and 50 µm.

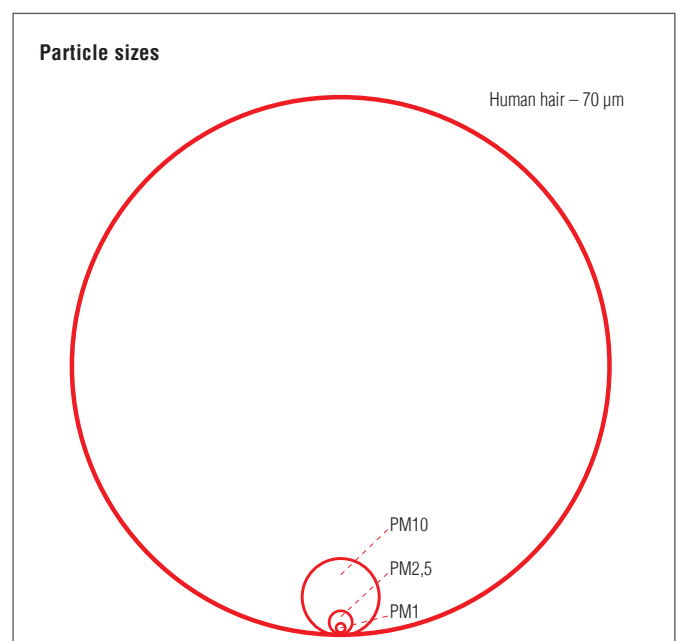
Particulate matter can have harmful effects on human health. The general state of knowledge is that the finer the dust particles, the greater the potential health hazards can be. In this respect, the new filter classification follows these approaches and classifies the separation performance of different filter classes according to particle size and separation efficiency.

In Germany, it is possible to retrieve current particulate concentrations for all regions of Germany via the website of the Federal Environment Agency (<https://www.umweltbundesamt.de/daten/luftbelastung/aktuelle-luftdaten>).

In the course of the amendment to ISO 16890, the filter efficiency was adjusted in accordance with the already existing particulate matter classes of the WHO (World Health Organisation) PM1 = 1 µm, PM2.5 = 2.5 µm and PM10 = 10 µm (PM = Particulate Matter).



AL-KO has adapted all filters in the ventilation units to the new filter classification. The right selection of filters is available for all applications. Optimized filter elements for all air qualities can be selected in the form of compact filters, pocket filters, HEPA filters, activated carbon filters and panel pre-filters.



The previous classification of the filters according to EN779, G1- F9, no longer applies and is replaced by the filter class groups ISO ePM1, ISO ePM2,5, ISO ePM10. Coarse dust is replaced with ISO coarse (ePM= efficiency Particulate Matter).

Class	Efficiency range	Example particulate/ Particulate matter
ISO ePM1	ePM1,min \geq 50%	Viruses, bacteria, nanoparticles, soot (from fossil fuels), sea salt, oil mist
ISO ePM2,5	ePM2.5,min \geq 50%	Bacteria, fungal & mould spores, pollen, toner dust
ISO ePM10	ePM10 \geq 50%	Pollen, rock dust, dusts from field cultivation
ISO Coarse	ePM10 <50%	Sand, lint, fly seedlings, hair etc.

When ISO 16890 was introduced in 2018, changes were also made to other regulations. They concerned both VDI 6022, maintenance of hygiene in air handling units, and DIN EN 16798-3, design of ventilation systems for non-residential buildings. The latter standard describes the use of filter classes depending

on the outdoor air quality (classes ODA1 to ODA3) and the targeted supply air quality (classes IDA1 to IDA4).

A simple „translation“ of the classes ISO 16890 to EN779 fails because of the very different measurement and evaluation methods. A standardized key does not exist and cannot

be assumed due to the complex differences. With the revision of VDI 6022-1 of January 2018, the following filter classes are recommended for air conditioning systems based on DIN EN 16798-3:

According to VDI 6022-1/2018, at least one ISO ePM1 50% filter must always be provided in an air conditioning system in single-stage or two-stage operation.

Outdoor air quality (according to VDI 6022 sheet 3a)	Quality standard ZUL 1 (very high)	Quality standard ZUL 2 (high)	Quality standard ZUL 3 (medium)
ODA 1 (neat)	ISO ePM10 50 % + ISO ePM1 50 %	ISO ePM1 50 %	ISO ePM1 50 %
ODA 2 (polluted)	ISO ePM2,5 65 % + ISO ePM1 50 %	ISO ePM10 50 % + ISO ePM1 50 %	ISO ePM10 50 % + ISO ePM1 50 %
ODA 3 (highly polluted)	ISO ePM1 50 % + ISO ePM1 80 %	ISO ePM2,5 65 % + ISO ePM1 50 %	ISO ePM2,5 65 % + ISO ePM1 50 %