50 years of experience
at the service of our customers

OUR ADDED VALUES

SPEED AND FLEXIBILITY

We deliver every order - including special ones - as quickly as possible, both in Italy and abroad.

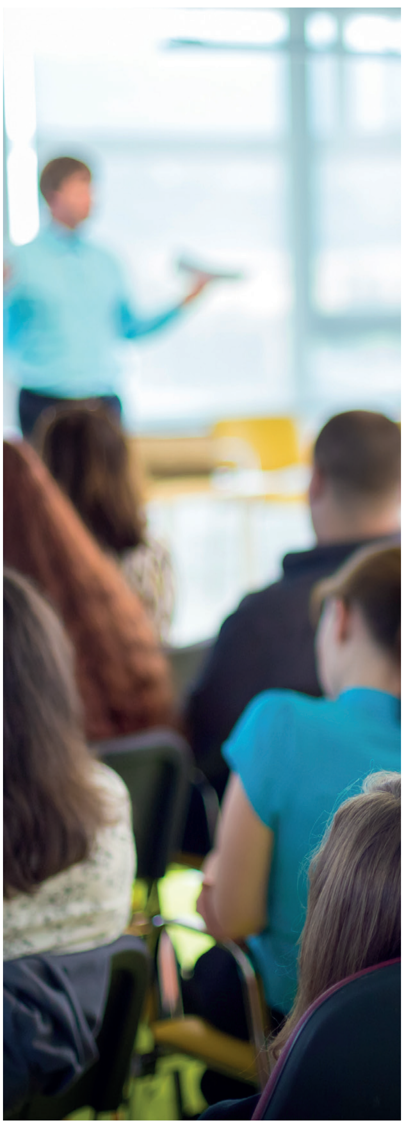
QUALITY AND CERTIFICATIONS

We can count on the quality of our production processes and of our products, thanks to a guaranteed supply chain, certified in compliance with Standard ISO 9001 and Eurovent.

GREEN PHILOSOPHY

Our R&D department is constantly focused on improving our product performance, in order to offer innovative solutions for the environment and for a sustainable economy.

GF LAB



GF LAB

GeneralFilter expert staff gives you the chance to hold theoretical and practical courses on how to manage air filtration systems, including sector-specific courses, for the medical, pharmaceutical, automotive, food&beverage field, etc., in order to offer a tool to optimize processes and performance to those operators in charge of designing, installing, managing and servicing air treatment systems. GF Lab helps you making the right choice based on your needs and on current regulations. We offer an updated support on air filtration and purification systems for different applications, on waste disposal, on inspection techniques, maintenance, and system selection and management.

THEORETICAL-PRACTICAL COURSE ON AIR FILTRATION SYSTEMS

Comfort, health and energy savings.
This course is addressed to those operators in charge of designing , installing, managing and servicing air-conditioning systems and "bio-clean" air treatment systems in the hospital, medical, chemical and pharmaceutical field.

AIR FILTRATION IN CLEANROOMS

Standards, classifications, specific filters.
This course addresses the specific air filtration needs of cleanrooms - controlled-contamination environments mostly used in the electronic and pharmaceutical industry, in hospitals, in food processing facilities, in the horticultural field, in many biomedical labs and in all those sites where air-borne contamination must be constantly monitored.

GENERAL FILTER
GROUP | Air quality experts

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GENERAL FILTER
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The main aspects of the new Standard UNI EN ISO 16890

GENERALFILTER

Since 1965, at your service to improve air quality

GeneralFilter, with over 50 years of experience in the filtration field, is capable of providing and guaranteeing the best technical and managerial solutions in the Indoor Air Quality (IAQ) field.

We produce a complete range of filters, from ISO Coarse to U15 efficiency class, plus filtration accessories and systems. We offer the certified guarantee of a customised service, where quality, flexibility and customer-oriented production are our stepping stones.

We believe we can improve our environment day by day, certain that the air we breathe is a precious asset. This is why we continue to invest in research & development, certifications and human resources, by focusing on sustainability and environmental comfort in our daily efforts.

GENERALFILTER'S CERTIFICATIONS

QUALITY SYSTEM CERTIFICATION
DNV·GL
ISO 9001

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

Year after year, we are increasingly focused on our production process, to offer the best quality experience possible to our customers.
We select our suppliers among the leading companies in the related fields, and we have been complying with Standard ISO 9001 since 1999.

Our attention for the environment and for energy savings, combined to our will to guarantee quality and transparency, led us to achieve the Eurovent certification. This certification ensures that our products are compliant with European and international Standards.

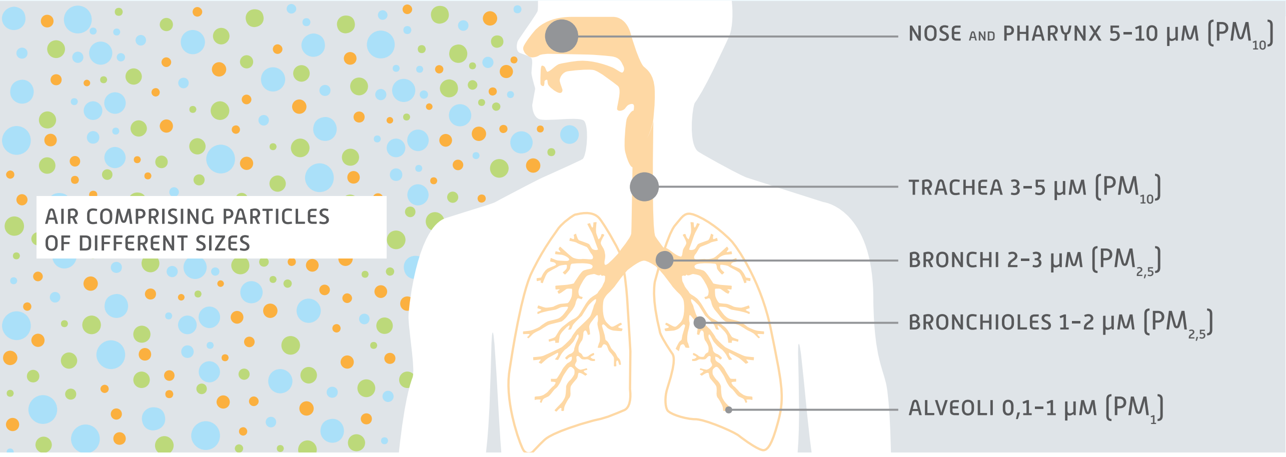
GeneralFilter
UNI EN ISO 16890 “General ventilation air filters”

Test efficiency and a classification directly connected to particulate classes (PM1, PM2,5 and PM10), are the stepping stones of the new Standard UNI EN ISO 16890, which will permanently replace the former European Standard EN 779:2012, from June 2018.

Medical-scientific studies are increasingly associating air quality to human health.

The main causes of most respiratory and cardiovascular issues are due to poor air quality and to fine particles (smaller than one micron) that our respiratory system is not able to block. They pass through the lungs and reach all the organs, through our blood. It is essential to have a good air quality at least indoors, and thus identifying a more efficient air filtration system. In light of this, it became apparent that the current European classification system does not take into account the actual conditions in which filters work. The atmosphere contains particles of several sizes, and EN 779 2012 takes into account only 0.4 µm particles. Another limit of the current European standard is that it does not apply throughout the world. Currently, the United States applies Standard ASHRAE 52.5, while Asia, apart from EN 779 and ASHRAE 52.2, applies local regulations. For these reasons, it has been decided to create an international directive, based on the different grain size of fine particulate.

RESPIRATORY SYSTEM AND POLLUTION



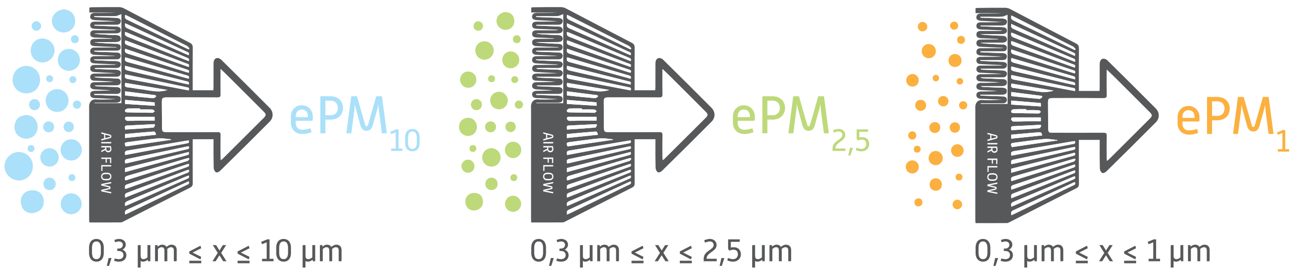
According to the first section of the Standard, there are four groups: ISO ePM1, ISO ePM2,5, ISO ePM10 and ISO Coarse.

In the first three groups, filters are classified based on their spectral efficiency, while in the last one they are classified based on gravimetric arrestance.

Each efficiency group takes into account a certain size range: ePM1 from 0.3 to 1 µm, ePM2,5 from 0.3 to 2.5 µm and ePM10 from 0.3 to 10 µm. This classification system allows designers to choose the filters (or filtration system) based on maths calculations, considering the air quality data at the installation site, which can be easily sourced from the databases of environmental monitoring bodies (ARPA, in Italy).

In order to be classified as ePMx, according to the new Standard, in the spectral efficiency test, the filters must reach a value higher than 50%; furthermore, for ePM1 and ePM2,5 classes, this threshold must be reached also during the test without electrostatic load. One filter can fall into several categories and ePMX, but only one of them can be listed in the label, along with its rounded off efficiency percentage. For those filters that do not meet the ePMX conditions, a gravimetric arrestance test with ISO Fine particle load will be performed, and they will be classified as ISO Coarse based on the arrestance percentage.

EFFICIENCY-BASED CLASSIFICATION



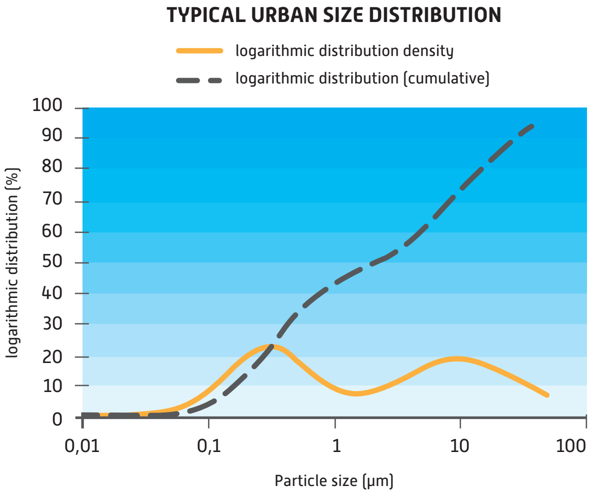
MINIMUM CLASSIFICATION REQUIREMENTS

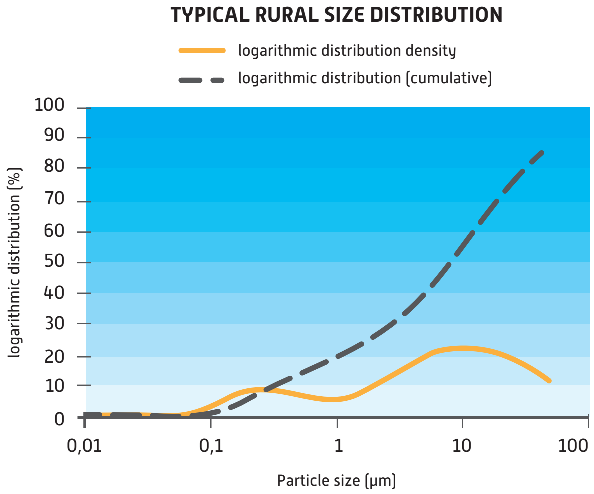
GROUP	CLASS			REFERENCE VALUE	Final ΔP (Pa)
	$ePM_{1, min}$	$ePM_{2,5, min}$	ePM_{10}		
	$0,3 \le x \le 1$	$0,3 \le x \le 2,5$	$0,3 \le x \le 10$		
ISO Coarse	-	-	< 50%	Initial gravimetric arrestance	200
ISO ePM10	-	-	≥ 50%	ePM_{10}	300
ISO ePM2,5	-	≥ 50%		$ePM_{2,5}$	300
ISO ePM1	≥ 50%	-		ePM_{1}	300

The second section describes the methods to measure the fractional efficiency and airflow resistance.

Airflow resistance is measured at 50%, 75%, 100%, 125% of the nominal capacity, with the filter clean.
For the fractional efficiency test, the filter is subjected to two aerosols: DEHS for the size range from 0.3 to 1 µm, KCl for the size range from 1 to 10 µm; the choice between one aerosol or the other is based on physical reasons related to their nature. After calculating the fractional efficiency curved described in this section, the filter is electrostatically discharged by immersing it in isopropanol vapours, and then retested under the same conditions.
The curve obtained, along with the one obtained during the first test, is used to calculate the ePMx.
Then the filter is classified according to section one of the Standard; if it does not fall in the ePMX group, then the gravimetric test must be performed, with the attribution of the ISO Coarse class.

(URBAN AND RURAL) PARTICLE DISTRIBUTION





The third section describes the gravimetric efficiency and airflow resistance measures.

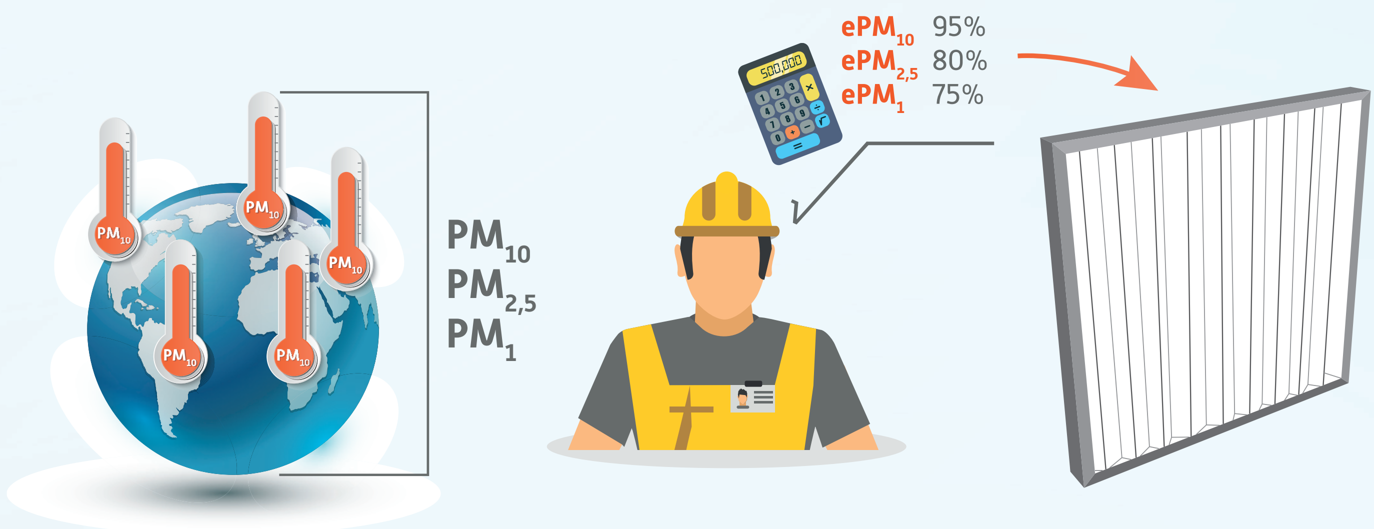
The tests are performed in the same circuit. After weighting and placing the device within the conduit, the initial airflow resistance is calculated. Then, L2 ISO FINE particles are gradually loaded, and, after each 30 g increase, the motion resistance changes are measured. Then the filter is weighted a second time to determine the quantity of built-up particles and to calculate the gravimetric efficiency.

The fourth section defines the electrostatic load removal process.

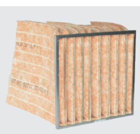
The filter electrostatic discharge process includes the following steps: the filter is placed within a conditioning chamber saturated with isopropanol vapour (IPA); the discharge process lasts 24h.
Then it is left to rest for about half an hour to remove any alcohol residues. The filter is ready to be retested with both aerosol types (part 2).
The actual electric load neutralization must be assessed by testing at 100% and at 50% of its nominal capacity. If the efficiency values with respect to the 0.4 µm particle differ more than 5%, the discharge process must be repeated until the error falls within that percentage.

GeneralFilter

UNI EN ISO 16890 “General ventilation air filters”



FILTER CLASSIFICATION EXAMPLES

	CODE	RANGE NAME	FILTER CLASS ACCORDING TO **EN 779-2012**	FILTER CLASS ACCORDING TO **ISO 16890**
	BF45106	AB50	M5	ISO ePM10 50%
	BF55106	AB60	M6	ISO ePM10 60%
	BF85106	AB70	F7	ISO ePM1 65%

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