



## Manufacturing Facilities in APAC & ME



Camfil - Ipoh, Malaysia plant



Camfil - Kunshan, China plant



Camfil - Haryana, India plant



Camfil - Dubai, Middle East plant

## Protecting health, processes and the environment

The Camfil Group is a world leader in air filters and clean air solutions that protect health, processes and the environment. Camfil is also one of the most global air filtration specialists in the world with 27 production units and six R&D centers across Europe, the Americas and Asia.

The Group, headquartered in Stockholm, Sweden, has 4,000 employees and global sales amounting to SEK 6.7 billion per year.

The company's business is to provide customers with sustainable best-in-class air filtration products and services through three business areas: Filters, Power Systems and Air Pollution Control.

With more than 50 years of experience in air filtration products and solutions, Camfil delivers value to customers all over the world while contributing to something essential to everyone – clean air.





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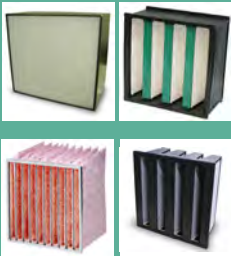



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Quick Selection Guide

	Filter Grade					Air Filter Selection
Primary Filtration	Medium Efficiency	Primary	US	EU	GLOBAL	
Filtration for Air Conditioning Systems	High Efficiency	Medium	ASHRAE 52.2 - 2007	EN 779:2012	ISO 16890 2016	
Final Filters/ Clean Room Filters	Very High Efficiency	EPA	DOP 0,3 um	EN 1822:2009	MPPS (Most penetrating Particle Size)	
Molecular		HEPA				
Filter Holding Frames and Casings		ULPA				

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.



## Services

### Camfil College

#### Become the air filtration specialist in your company

In addition to providing up date air filtration solutions Camfil can provide a structured training program covering all aspects of air filtration engineering. Adapted to suit your needs the training includes information on how to specify and select air filters, air filter standards, indoor air quality legislation, air filter application, and reducing energy and environment impact.



### Camfil On Site Expertise : Camfil Filter Management

Camfil has a fresh approach to managing on-site air filtration services. We understand that filtration is required for protecting people's health, ensuring legislative compliance and protecting valuable investments. We have our own site service team that can manage all aspects of your air filter requirements by offering a wholly inclusive service package.



Ensuring safe and efficient running of effective air filtration systems demands a multi-disciplined service solution. These extend beyond comprehensive logistics to ensuring that filters are fitted correctly, working efficiently, and optimised to reduce the overall cost of ownership for the lifetime of the installation.



In order to comply with current legislation and reduce cost of ownership of some installations, upgrading work is required. Camfil can provide a joined up solution which includes selection, supply, fitting, commissioning and validation of any new or upgraded installations.

### Filter installation upgrade service

Before After



### Air Filter system validation service



By fitting energy efficient filters and maintaining ventilation systems real energy savings can be made quickly. Maintained correctly these will translate into long lasting real reductions in cost and environmental impact. Camfil can provide a comprehensive package of air hygiene services that will ensure your systems are healthy, legislation compliant, and cost effective.



### Performance Managed Supply

Camfil complete the "cradle to grave" responsibility for all your filtration needs by providing a unique logistics system at the centre of which is a national transport fleet. This dedicated fleet of vehicles with trained employees ensures that you get your goods when and where you need them. To complete the service, we can remove and dispose of used filters together with providing all of the required certification.



### On-Site testing/Troubleshooting

We have a wide range of test equipment for On-Site measurements including particle counters, pressure gauges, airflow meters, energy data loggers, corrosion monitors and gas analysis equipment. Combined with the expertise of our engineers we are able to help you troubleshoot and improve your ventilation system.

## Air Filter Laboratory Testing

### Camfil Malaysia Test Facility

Camfil operates air filter testing laboratories in many of our R&D facilities around the world, all having a goal of developing technology for improved air quality for people, processes, and the environment. In Asia, our Malaysian facility operates around the clock, testing filters per ASHRAE Standard 52.2-2007 and European Standard EN779 and EN1822. This facility also performs burst tests and customer-specific or requested evaluations of our filters and our competitors. Reviewing hundreds of filters per year, this laboratory ensures that our products exceed published specifications and provide the improved air quality our customers desire.



*The Camfil Malaysia facility provides testing data for our customers and is used for research to support progression in the development of filter testing standards.*

### ISO 10121 Molecular Filter Test Rig

Camfil operates a state-of-the-art analytical laboratory for molecular contamination. Equipped with the latest technology, molecular filters and adsorbents are developed to meet our customers requirements, as their demands for cleaner air reach ever-higher levels. From casinos to airports, petrochemical facilities to ultra clean semiconductor Fab's, Camfil has developed molecular filter solutions for any applications.



*All our test facilities can test filters according to most recognized international standards including for specific molecular contaminants.*

### Scanning Electron Microscope (SEM)

In our quest to manufacture ultimate levels of air filtration, one of the tools we use is a scanning electron microscope (SEM). This is a type of electron microscope that images the sample surface by scanning it with a high-energy beam of electrons in a raster scan pattern. The electrons interact with the atoms that make up the sample, producing signals that contain information about the sample's surface topography, composition, and other properties, such as electrical conductivity.

In its primary detection mode, secondary electron imaging, the SEM can produce very high-resolution images of a sample surface, revealing details about 1 to 5 nanometer in size. Camfil can then study these particles in a three-dimensional form useful for understanding the surface structure of a sample. The information obtained can then be used to ensure proper filter selection or provide information for the development of new filter media or air filters.



*All of the photos of sub-micron particles used in this catalog were taken with Camfil's SEM in Trosa, Sweden.*

## Camfield Lab

Camfil takes the filter testing laboratory to the customer with a unique “mobile” approach to testing air filters in real-life operating conditions. Called the Camfield Lab, this new test rig makes it possible to determine the most effective filtration solution based upon the geographic location of a building and its specific environmental air quality circumstance. The Camfield lab unit is shown in the photo below.



The Camfield Lab consists of four parallel ducts that may be fitted with prefilters and final filters, allowing four different filter combinations to be tested at the same time. The test rig, installed on a flatbed, can be transported to any desired location and parked in the test area. Using actual environmental conditions, filter performance may be evaluated using various air filter types and efficiencies.

Forexample, placed in the immediate vicinity of an important facility (such as a government building, a hospital, etc.), the Camfield Lab could be used to: (a) analyze the ambient air quality; (b) determine whether the building is currently equipped with adequate filtration to handle these contaminants; and (c) further determine the best type and level of filtration for the building by simultaneously testing several filter combinations. It thereby combines the controlled environment of a laboratory with a more meaningful real world setting, offering the “best of both worlds” from a testing standpoint. Although the test rig will be used mainly at outdoor locations (due to its size), it could be placed indoors at a large facility, such as a stadium or convention center.

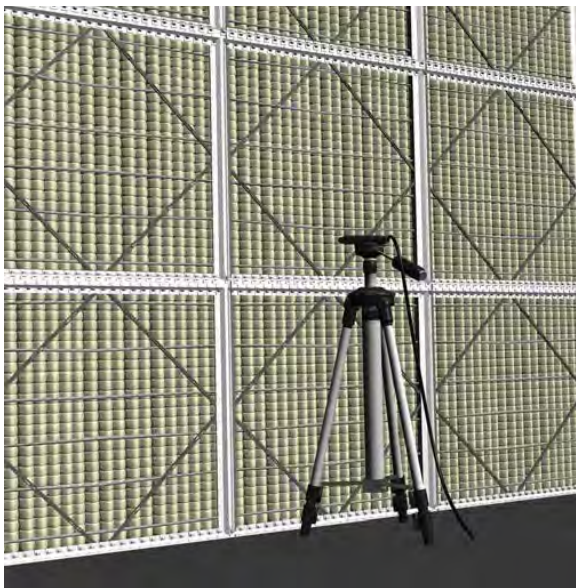


Each Camfield Lab includes four independent testing ducts, two on each side of the unit.





# In-Situ Testing



Today's air filtration marketplace includes products, offered in many configurations, that present various advantages and disadvantages when compared to other air filter offerings. There are also different types of media incorporating varying principles of particle capture, each with its own advantage when applied in a ventilation and air conditioning application.

How can filter users differentiate manufacturers' claims and make intelligent decisions as to what products are applicable to meet their needs? Historically, many depended upon test reports. Unfortunately, today's testing laboratory methodologies may not give a true barometer of a filter's performance over time, as these filters are not tested under real life conditions.

Camfil addresses these concerns by performing actual on-site (in-situ) filter performance evaluations using industry defined procedures. With the user designated participants, information is obtained using an optical particle counter which measures the number of particles in multiple bands, including sub-micron; defined as repairable and critical to human health.

Camfil then provides a final report which includes a particle size versus efficiency analysis detailing all of the tested filters abilities to capture large particles and sub-micron size particles, that may affect health or processes. Pressure drop data, relative to a filter's actual life within a system, and its overall effect on system airflow and use of energy is also detailed.

Users can evaluate the use of increased media area compared to standard media area offerings. They can evaluate filters of similar construction that use different types of media. And most importantly, they can evaluate Camfil products against other manufacturers offerings.

The process includes a facility survey to establish the integrity of the filter holding mechanisms, the overall HVAC worthiness of the system, and an analysis of past usage data to develop a baseline of comparison . Actual in-place testing begins with an initial filter efficiency test and continues on a periodic schedule (time-dependent upon the type of filters being evaluated).

The final data is often used to demonstrate performance to the facility's required standard of care for air quality and to prove that their filter expenditure has the lowest life-cycle cost.

Camfil also maintains a database of historical analysis from other facilities that may assist others in their selection of filters for their similar applications.

Contact your local Camfil office or distributor for details on Camfil's InSitu Filter Evaluation Program.

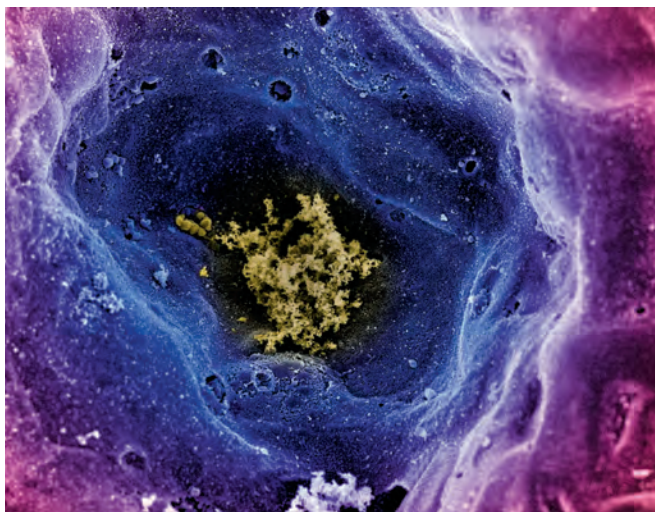


## Indoor Air Quality (IAQ)

### Environmental Health

**Environmental health** is becoming a central concern at national and international levels. Indoor Air Quality (IAQ) is an area that focuses on providing a comfortable and healthy indoor environment which is important to the well being of people. We spend 90% of our time in indoor spaces and, as such, the issue of IAQ is a key aspect of public health, especially since this affects the entire population, particularly the most sensitive and vulnerable.

The industrialised world is a very different place compared to 50 years ago and one major difference is that the air we breathe is now more heavily and more diversely polluted than at any time in the past. Although natural sources of pollution exist, the greater concerns arise as a result of mans own activities which have increased both the amount and the complexity of pollutants found in the atmosphere. There are tens of thousands of synthetic chemicals (not found in nature) made today with an estimated annual production rate in excess of a billion tonnes. These chemicals are released to the atmosphere during manufacture use and can subsequently travel vast distances. They are an inevitable part of our lives.



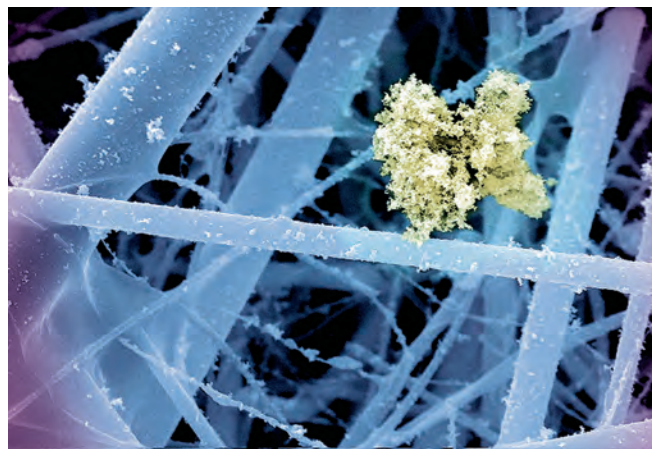
### Atmospheric pollution

**Atmospheric pollution** can be categorised in two different ways. The simplest is measurement (a physical categorisation) to distinguish gaseous pollutants from solid, dust and particulate pollutants. The second is based on the origin of pollutants and is divided into primary and secondary pollutants.

#### Primary pollutants

**Primary pollutants** are substances present in the atmosphere, in the form in which they are emitted. Of these pollutants, some are especially prominent:

Sulphur dioxide ( $\text{SO}_2$ ) emitted by certain industrial processes, such as paper-making and refining, and in particular by the use of sulphurous fossil fuels.  $\text{SO}_2$  is one of the main causes of acid rain on account of its transformation in the atmosphere into sulphuric acid ( $\text{H}_2\text{SO}_4$ ). Nitric oxides ( $\text{NO}_x$ ), and in particular nitrogen dioxide ( $\text{NO}_2$ ), which is usually emitted from the burning of fossil fuels (particularly vehicles), contribute towards the formation of ozone in the atmosphere. Polycyclic aromatic hydrocarbons are emitted by the incomplete burning of fuels or carbon, which can usually be found in the air, linked to particles. Some of them are known to be highly carcinogenic.



### Secondary pollutants

**Secondary pollutants** are substances whose presence in the atmosphere is the result of chemical transformations related to the interaction of compounds known as precursors. Ozone is the main secondary pollutant, it is formed as a result of a photochemical process in the presence of certain primary pollutants (carbon monoxide, nitric oxide and volatile organic compounds). This is a gas that is naturally present in the atmosphere in low concentrations at high altitude. At low altitude, on the other hand, the development of the concentration is primarily the result of human activity. Sulphuric acid and nitric acid form in the atmosphere as a result of humidity from sulphur dioxide and nitric oxide respectively.

### Solid pollutants

**Solid pollutants** usually in the form of small (fine) particles are very important and from a cleanliness point of view, these particles deserve particular attention. These are capable of acting as vectors to other substances, such as carcinogenic polycyclic aromatic hydrocarbons, which is particularly worrying given the capacity of the finest particles ( $< 1\mu\text{m}$ ) to find their way into the lungs and even to penetrate into the bloodstream. Effective solutions aimed at combating such particle pollution are now widely known. The development of the main standards and recommendations governing the manufacture and use of modern air filters is clearly geared towards much higher filtration levels than have been permitted in the past

### City

Our range of 'City' filters has been developed with the sole purpose of combating atmospheric pollution and its major components.

**CityCarb** and **CityFlo** combine particulate filtration with pollution and odour filtration. They are suitable for any new installation and can be readily installed to upgrade and improve systems currently equipped with standard filters.

With its higher molecular adsorption, **CitySorb** is ideal for highly polluted urban environments. **CitySorb** must be fitted in conjunction with a particulate filter above F7 efficiency, **HiFlo** or **OpakFil** type.

## Our “City” - Products

### CITY

Our range of ‘CITY’ filters has been developed with the sole purpose of combating atmospheric pollution and its major components. CITYCARB and CITYFLO combine particulate filtration with molecular and odour filtration. They are suitable for any new installation and can be readily installed to upgrade and improve systems currently equipped with standard filters. With its higher molecular adsorption, CITYSORB is ideal for highly polluted urban environments. CITYSORB must be fitted in conjunction with a particulate filter above F7 efficiency, HIFLO or OPAKFIL type.

### Sick-Building-Syndrome

Sick-Building-Syndrome is the negative impact on health of human beings caused by harmful substances.

The sources of harmful substances are outside e.g. traffic, power plants, industrial manufacturing, forest fires and bacteria. Inside of buildings e.g. furniture’s, coatings, carpets and detergents.

All these chemical, harmful substances together can cause headache, fatigue, allergy and decreasing concentration.

### Our 2-in-1 principle

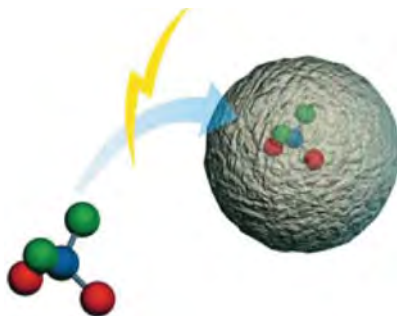
Our CityPleat, City-Flo and CityCarb filter are able to remove particles, bacteria, spores, air pollution and smell. As a result the indoor air quality (IAQ) index is significantly improved.

This improvement is due to:

1. High efficiency particle filtration: filter class F7 / F9 according EN 779.
2. Adsorption of volatile organic compounds (VOC) including smell, sulfur dioxide and ozone: High efficiency through RAD principle.

### RAD Principle

RAD stands for Rapid Adsorption Dynamics and is the basis for high efficiency gas filtration. Our filters are able to remove effectively smell and gaseous air pollutants. Ozone for instance is removed with an efficiency higher than 90% thanks to the high efficiency media used in Citycarb. Camfil is using best-in class media to achieve a relative long life time of the filters.



### Easy installation

Our filters can be easily installed due to the customer friendly HF frame set. The “City” filters can be normally installed in the existing bag filter frames.

**Active against dust, air pollution and smell with only one filter! .**





## Ozone rating



### Camfil introduce an ozone removal efficiency classification for molecular filters.

Ozone may be removed from air by molecular filters. To help customers assess the effectiveness of different products, Camfil introduce an ozone removal efficiency rating system. This is a first in the filtration industry.

### Ozone

Ozone is a naturally occurring gas that is widely present in our environment at ground level. The ozone molecule is composed of three oxygen atoms, rather than the two atoms of normal oxygen. Ozone is formed by the interaction of other gaseous pollutants such as oxides of nitrogen and volatile organic compounds (VOCs) under the influence of ultraviolet (UV) light. City centre levels of ozone increase during periods of high sunlight. Ozone is classed as an oxidising agent, and has the potential to damage or destroy other molecules.

### Ozone and human health

Ozone is an extremely reactive gas and inhalation of ozone can be harmful to human health. The presence of ozone in air may be readily correlated to hospital admission rates relating to respiratory illness. Symptoms of ozone exposure include; throat irritation, aggravation of asthma, decrease in lung function and increased susceptibility to respiratory infection. Ambient ozone levels and high alerts may be available on local government websites in many parts of the world.

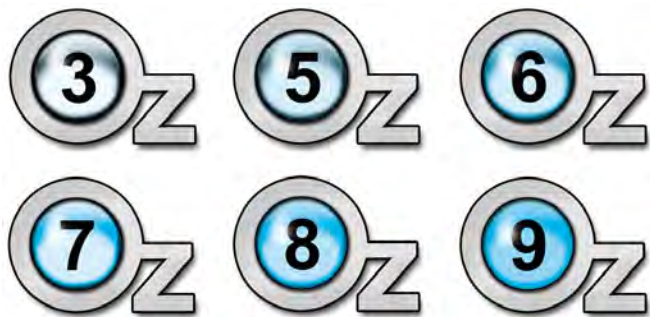
### Removing ozone from the air

Molecular filters reduce ozone levels in the air through processes of adsorption and decomposition.

### Measuring ozone removal efficiency

Camfil use a unique test rig to measure ozone removal efficiency. Temperature and relative humidity conditioned air is blown through full size production filters. Ozone is injected into the airstream and sensitive ozone detectors measure the concentration upstream and downstream of the filter. Filter efficiency is readily calculated from the up-and downstream ozone concentrations.

Camfil are market leaders in the validation of performance of molecular filters. Filters can be challenged with many different gases and vapours. Using temperatures between 5 and 50 deg C and relative humidity values between 30% and 90%, we can determine the performance of our filters under the conditions present in our customer applications.



### Table of ozone filtration ratings

Filter Type	Average Ozone Removal Efficiency	Ozone Rating
City-Flo XL	35%	3
CityPleat 200 2"	50%	5
CityPleat 480 4"	65%	6
CitySorb	70%	7
City-Flo	80%	8
CityCarb I	90%	9

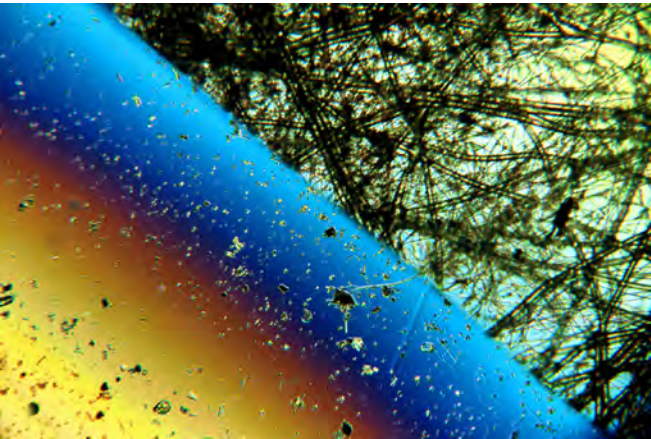
- (i) All filters tested at 2.5 m/s face velocity (500 fpm);
- ii) Ozone challenge = 150 – 450 ppb;
- iii) Temperature = 22 deg C;
- iv) Relative humidity = 50%)

All the filters use a high quality broad spectrum adsorbent, based on activated carbon to destroy the ozone molecules. Laboratory tests show that filters based on the use of potassium permanganate, which is itself a strong oxidising agent are unlikely to be effective.

# Indoor Air Quality EN 13779

## The industrialised world

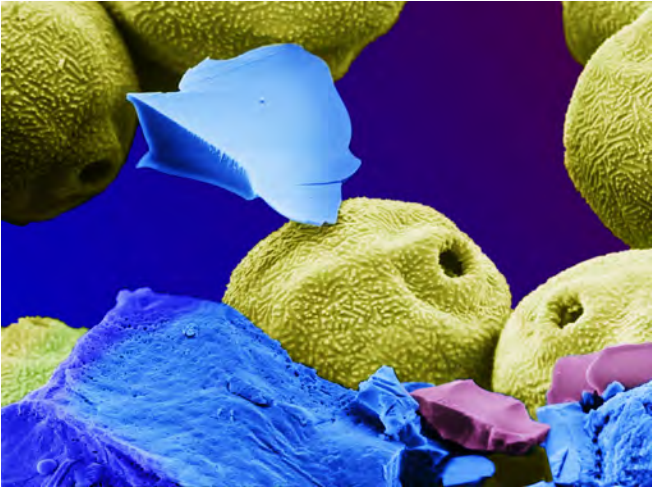
The world has changed immeasurably over the last 100 years. Industry, vehicle emissions and power generation mean that the air we breathe can be very heavily polluted. Although there are natural sources of pollution, the greater concern is pollution generated by human activity. Man has created approximately one hundred thousand chemicals that never pre-existed in nature and these are produced at the rate of more than a billion tonnes per year. All chemicals have a potential to vaporise and most of these synthetic chemicals are present in our air to some degree. Humans are spending an increasing amount of time inside buildings for both work and leisure purposes. Buildings have to be ventilated to replace oxygen and remove carbon dioxide. As a consequence, humans are increasingly exposed to the chemical pollutants in the external air, and that represents a threat to human health.



## The impact of pollution on our health

Pollutants in the air may be categorised as particulate (dust) or molecular (gas and vapours). Particulate and molecular pollutants are drawn into the human respiratory system during breathing. Most particles are trapped in the lung tissue,

however the much smaller molecules quickly pass through the lungs into the bloodstream and are distributed around the entire body. The effects of molecular pollutants are typically experienced much more easily and quickly than those due to particles. Typical symptoms include headaches, eye irritation and irritation of the respiratory system. Collectively these symptoms are commonly called “Sick Building Syndrome” or similar terms.



## The new European Standard for Ventilation

European Standard EN 13779 is aimed at achieving a comfortable, healthy indoor environment in all seasons with acceptable installation and running costs. EN 13779 has now been adopted as a national standard in all countries. It specifies the required filter performance in a system to achieve good IAQ taking into consideration contamination in the outdoor air. Outdoor air is split into three categories, from ODA 1, in which the air is pure apart from temporary pollution such as pollen, up to ODA 3 with high concentrations of gas and particles. This elevated pollution level ODA 3 is now typical of the contamination in urban areas.

## Recommendations in EN 13779 for air filters

Outdoor air quality	IAQ Indoor Air Quality			
	IDA 1 (High)	IDA 2 (Medium)	IDA 3 (Moderate)	IDA 4 (Low)
ODA 1	F9	F8	F7	M5
ODA 2	F7 + F9	M5 + F8	M5 + F7	M5 + M6
ODA 3	F7 + GF* + F9	F7 + GF* + F9	M5 + F7	M5 + M6

Table referring to appendix “A3. Use of Air Filters” in The European Standard EN 13779.

## Air Pollution and PM1

Air pollution has been assessed to be 4<sup>th</sup> highest risk factor to human health and by far the most serious environmental risk. Air pollution includes particulate matter (PM). We identify both man-made sources such as vehicle exhaust, construction and power generation alongside natural sources such as pollen, forest fires and windblown sand and soil. Particulate matter from man-made sources, especially combustion processes, tends to be at the small end of the size range and often these particles are released into the air near centres of high population density, i.e. cities.

Many governments and NGOs publish pollution data in real time on websites. The most commonly reported values relate to particle fractions PM2.5 and PM10. In 2005 the World health Organisation (WHO) published air quality guidelines (AQG) which included recommendations for exposure limits to PM2.5 and PM10.

Recently there has been a shift in focus towards a smaller particle fraction, PM1. This is all particles sized 1 micron and less. A micron is one thousandth of a millimetre. There is a growing body of evidence from the scientific and medical communities that it is the very small particles that we breathe that are most hazardous. By number, particulate matter is very much biased towards particles less than 1 micron in size.

The body has some natural defences against larger particles such as the nasal hairs and mucus membranes. However these are not so effective for smaller particles and potentially they are able to reach the lungs. Fine particles, less than 1 micron are able to penetrate into the important fine structure of the lungs, the alveoli. Extremely fine particles, so called ultra-fines and nano particles are able to pass through the alveoli and enter the bloodstream when they are distributed around the entire body and reach critical organs such as the brain, heart, liver and endocrine system.

A study published by UK researchers in 2016 reported that ultrafine metallic particles (<0.1 micron) had been found in the human brain and these have been linked to the onset of Alzheimer's Disease. These metallic particles appeared to have been exposed to high temperatures and it is concluded that they originated in the combustion cycle of diesel engines.

Camfil were involved in another study published in 2016. Polycyclic aromatic hydrocarbons (PAH) are a group of chemicals that are released into the air when petrol, diesel, coal, wood and other organic materials are combusted. PAH are characterised by their toxicity including the ability to be capable of causing

mutations in human DNA which can lead to cancers. This behaviour is known as mutagenicity. PAH can exist as particles or in the molecular form, but often they are found condensed onto the surface of PM1, particles smaller than 1 micron. In this study four different air filtration medias (corresponding to M6, F7 [x2] and F9 acc. EN779:2012) were assessed in respect of their ability to:

1. Remove fine particles (0.4 micron) according to method EN779:2012
2. Reduce the level of PAH in urban air.
3. Reduce the mutagenicity of urban air

The study concluded that:

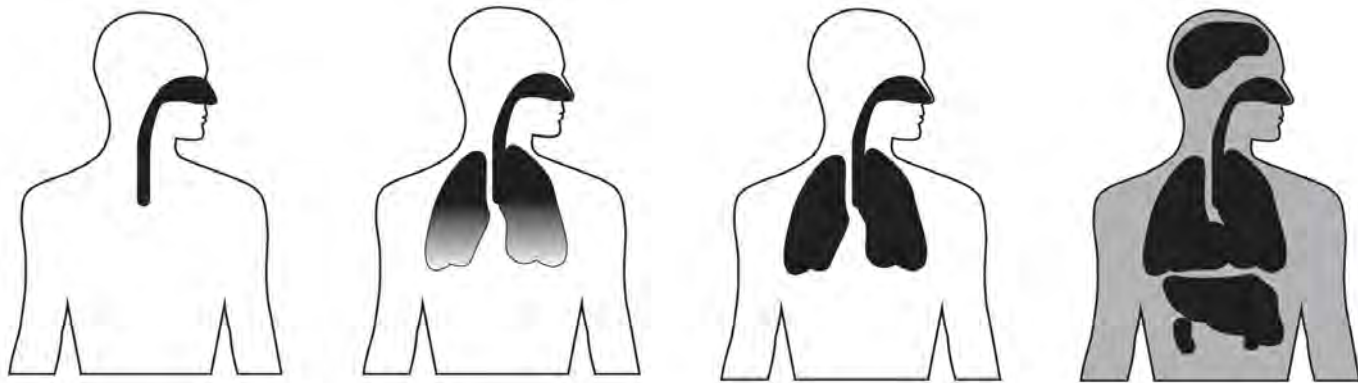
A.The PAH content of urban air was progressively reduced by passing the air through filter media of increasing efficiency between M6, F7 and F9. When the reduction in PAH was plotted against the efficiency of the filters in removing 0.4 micron sized particles (EN779:2012 results), the relationship was linear.

B.The mutagenicity of urban air was progressively reduced by passing the air through filter media of increasing efficiency between M6, F7 and F9. When the reduction in mutagenicity was plotted against the efficiency of the filters in removing 0.4 micron sized particles (EN779:2012 results), the relationship was linear.

C.There is a direct relationship between the removal of 18 common PAHs and the reduction of mutagenicity of urban air.

D.The observed results support the theory that a significant proportion of airborne PAHs are bound to very small particles; PM1, and highly efficient filters are required to effectively reduce their concentration in air.

So, the hazard from breathing very fine particles, PM1 is clear. There is a new global standard for the testing and classification of air filters. To afford maximum protection against these hazardous pollutants, Camfil strongly recommend the use of ePM1 rated filters according to ISO16890.



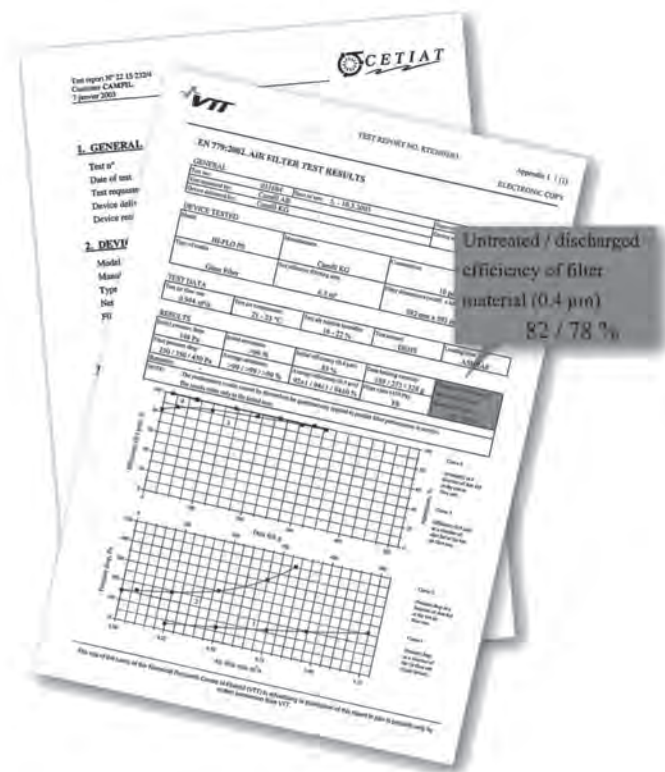
<sup>1</sup> Professor Michael Brauer. University of British Columbia, School of Population and Public Health, Vancouver, Canada.

<sup>2</sup> Prof David Allsop et al. Proceedings of the National Academy of Sciences, Sept. 2016.

<sup>3</sup> "Removal of polycyclic aromatic hydrocarbons and genotoxic compounds in urban air using air filter materials for mechanical ventilation in buildings" by Ioannis Sadiktis<sup>1</sup>, Gertrud Nilsson<sup>2,3</sup>, Ulf Johansson<sup>2</sup>, Ulf Rannug<sup>3</sup> and Roger Westerholm<sup>1</sup>. Published in ASHRAE's research publication Science and Technology for the Built Environment, February 2016



## Eurovent Certified Performance



Read more on Eurovent's website: [www.eurovent-certification.com](http://www.eurovent-certification.com)

Eurovent's certification of our fine-dust filters means that you can rest assured that we live up to the performance requirements and the data we print in our official documentation. Our fine-dust filters are tested by independent laboratories selected by Eurovent and that means security for you. Select Camfil air filters with Eurovent certification - its guaranteed!



### Independent test results

Our Eurovent certification covers bag filters, compact filters and panel filters in classes M5-F9, tested to EN779:2012. The initial pressure drop must remain within the tolerance levels set out in EN779:2012.\*

All filters that we officially market in brochures or on our website in these filter classes are covered by the certification. Each class contains a range of product groups:

- Same filter media/material (such as fibreglass)
- Same basic design (such as bag filters, compact filters etc)
- Same or lower air speed/net filter area
- Same filter class: M5, M6, F7, F8, F9
- Published data must be available, specifying the model, type, filter material, filter class as per EN779:2012,
- Nominal airflow and initial pressure drop at nominal airflow.

The filters are tested at independent test laboratories - in Sweden, the Technical Research Institute of Sweden, SP, in Borås; in Finland, VTT in Espoo. These are the only laboratories in Europe that are accredited to ISO 17025.

The test laboratories are not told which company's products they are testing, but are only given a number that Eurovent assigns to each individual filter.

\* Tolerance levels for initial pressure drop defined in EN779:2012:  $+(10\%+Mt)$  or  $+(10\text{Pa}+Mt)$ , whichever is highest.  $Mt = 5\text{Pa}$  (tolerance level defined in EN779:2012)

### Air filter certification You can count on us!

Camfil, in conjunction with the main independent test laboratories in Europe, is committed to bringing you the highest levels of transparency with regard to the new test protocols for air filters.

The European Committee for Standardisation has recently published a new standard on "Particulate air filters for general ventilation - determination of filtration performance". One of the aims of this new standard is to detail the in-situ performance of an air filter.

This new test protocol provides accurate data on the effectiveness of your air filters operating under real life conditions. Please always specify filters tested in accordance with EN779:2012. Your Camfil representative is available to explain this standard in detail should you require it - you can count on us!

### Air filter performance

At Camfil we are going a step further to ensure the best possible performance for our customers. The European ventilation industry organisation Eurovent has developed a certification programme to guarantee that our products live up to our promises.

The key elements of the programme are that:

- Published data must be correct
- The products must comply with the EN779:2012 standard
- Filters must be tested by independent laboratories - SP in Sweden and VTT in Finland
- The test laboratories must be ISO 17025 certified
- We as manufacturers must be quality certified to ISO 9000 or a corresponding standard
- Each year, Eurovent selects, at random, four new filters from our range for inspection

## Energy efficiency classification

### The way of comparing air filters.

At last, buyers of air filters will find it a lot easier to find the right filter– regarding both energy efficiency and indoor air quality. Eurovent’s new, objective energy efficiency classification has now been implemented. Now all air filters can be graded from A+ to E – A+ for the lowest energy consumption and E for the highest. The new classification is based on EN779:2012 and will give you a good understanding of annual energy consumption, initial efficiency and minimum efficiency. Higher demands. As the price of energy increases and the demands of reducing CO<sub>2</sub> emissions get tougher, the energy consumption related to air filters has become the focus of attention. Currently, air filters are classified only by their average efficiency. The new energy classification is far more precise.

### The standard.

The energy consumption of air filters can be determined as a function of the volume flow rate, the fan efficiency, the operation time and the average pressure drop. Due to the dust loading during operation, the pressure drop of an air filter is constantly increasing. The related energy consumption during a certain period of time can be calculated from the integral average of the pressure drop over this period of time.

### Put your supplier to the test.

Many suppliers do not test their filters properly, making it impossible for customers to compare different brands. At Camfil, we test all our filters to guarantee a high standard of quality. Does your air filter supplier have what it takes?

- Is the supplier certified by Eurovent?
- Are there labels on all boxes?
- Are all tests based on EN779:2012?
- Is there a test protocol for validation?



### Calculation and classification.

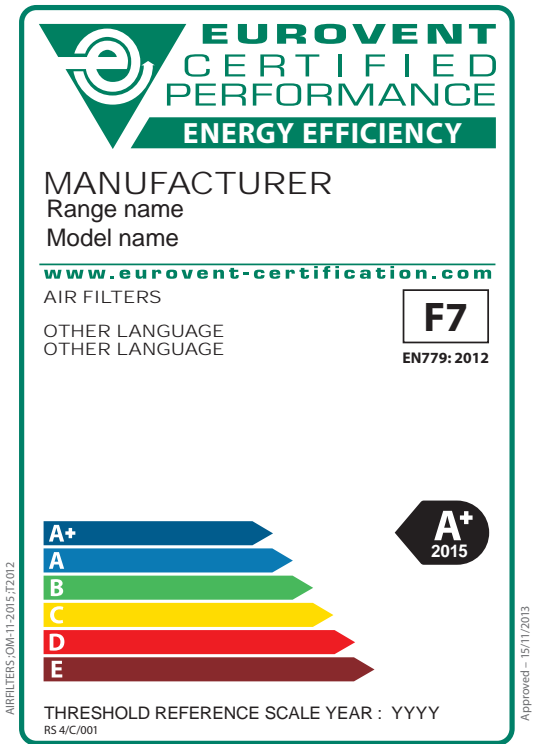
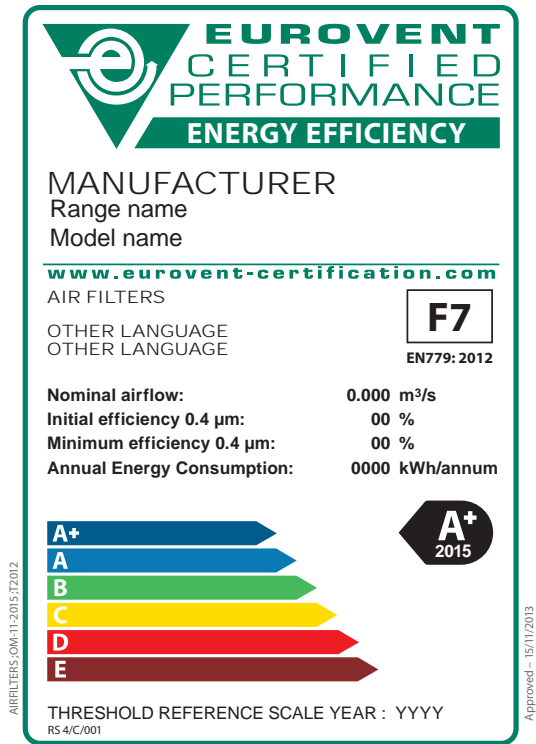
The new standard measures both filtration efficiency and pressure drop as a function of dust loading. A representative energy consumption level is calculated using the mean pressure drop difference averaged over the course of dust loading. On the basis of these figures, the energy performance of a filter over an operating period of one year is simulated in a laboratory. This representative energy value is used for a classification of air filters into energy classes.

$$W = \frac{q_V \cdot \Delta \bar{p} \cdot t}{\eta \cdot 1000}$$

The calculation used in the new energy efficiency classification by Eurovent.

Filter class	M5	M6	F7	F8	F9
ME	–	–	ME ≥ 35%	ME ≥ 55%	ME ≥ 70%
	M <sub>M</sub> = 250g ASHRAE			M <sub>F</sub> = 100g ASHRAE	
A+	0-450 kWh	0-550 kWh	0-800 kWh	0-1000 kWh	0-1250 kWh
A	> 450 kWh · 600 kWh	>550 kWh · 650 kWh	>800 kWh · 950 kWh	>1000 kWh · 1200 kWh	>1250 kWh · 1450 kWh
B	> 600 kWh · 700 kWh	>650 kWh · 800 kWh	>950 kWh · 1200 kWh	>1200 kWh · 1500 kWh	>1450 kWh · 1900 kWh
C	> 700 kWh · 950 kWh	>800 kWh · 1100 kWh	>1200 kWh · 1700 kWh	>1500 kWh · 2000 kWh	>1900 kWh · 2600 kWh
D	> 950 kWh · 1200 kWh	>1100 kWh · 1400 kWh	>1700 kWh · 2200 kWh	>2000 kWh · 3000 kWh	>32600 kWh · 4000 kWh
E	> 1200 kWh	>1400 kWh	>2200 kWh	>3000 kWh	>4000 kWh

## Energy efficiency classification



### Eurovent Energy Efficiency label

The new labeling system will be displayed on standard filter boxes.

There are two different ways of excersution.

1. Full size 592x592, to EN 15805

- Filter class
- Nominal air flow rate, m3/h
- Initial efficiency, %
- Minimum efficiency, %
- Annual Energy Consumption, kWh/annum
- Energy class

### Certified values are to be find at:

Certified values are to be find at: [www.eurovent-certification.com](http://www.eurovent-certification.com)

### Other "family" sizes of standard filters

2. Other "family" sizes of standard filters

- Filter class, according to 592x592
- Energy class, according to 592x592

Width	Height	Front dimension
592	892	
490	892	
287	892	
490	592	
287	592	
287	287	
592	287	
592	490	
490	490	



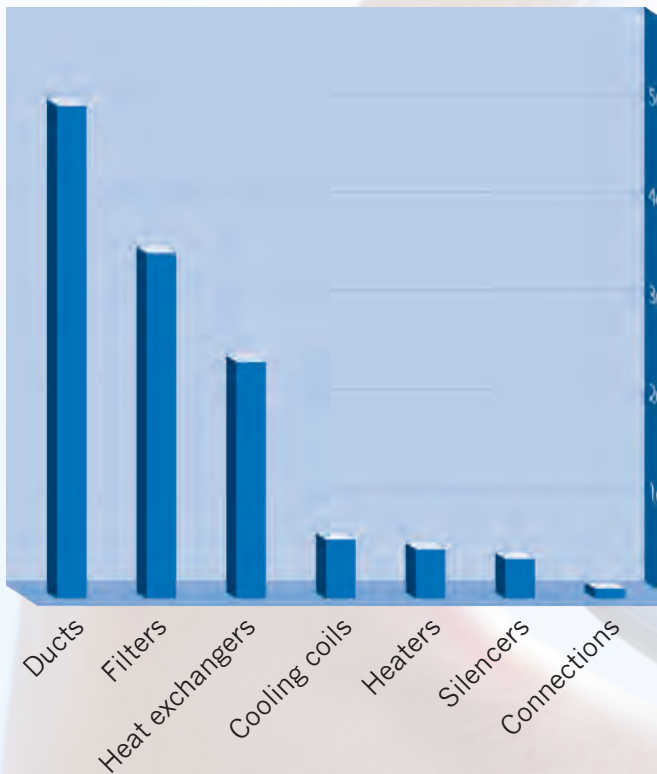
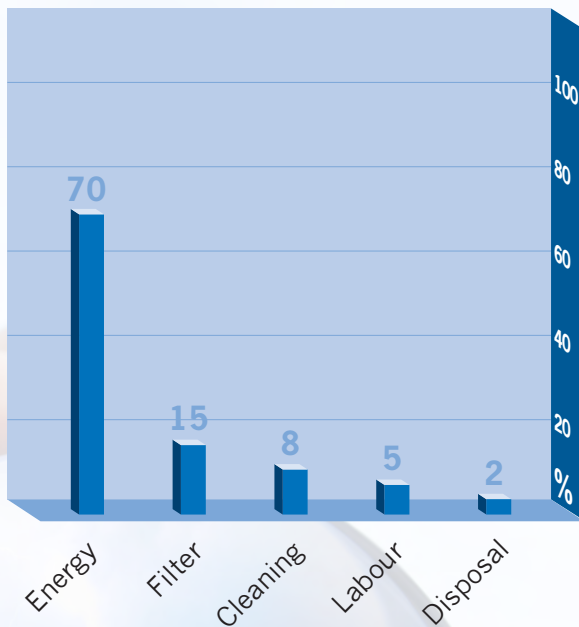
## Would you like to reduce your energy outgoings?

### Economic optimisation of air filtration

The price of crude oil has more than doubled in recent years and the cost of electricity is rising throughout the world. The World Bank's Energy Group has predicted that total energy consumption is set to rise at the current rate for at least the next 50 years.

#### The cost of ventilation

Ventilating buildings, as we know, can be a very expensive business. The average energy cost of filters is around 30% of the total costs of the system. By choosing the right filter, for example the F7 for its efficiency and its very low average pressure loss, energy savings can be made whilst maintaining a high level of IAQ. When you consider that the air filter is the most inexpensive and simplest component to change, savings can be made quickly.



Typical pressure loss (Pa) in a ventilation system with 2 stage filtration

#### 1Pa = 1 euro

A rule of thumb, for a typical installation running for half of the time over one year, is that one additional Pascal in pressure drop adds 1 euro per filter in extra energy cost.

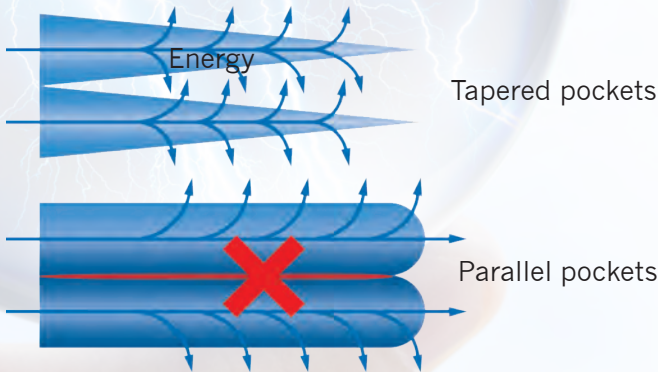
A badly designed filter construction could add 50 Pascal compared to a well engineered filter, even if it claims to have the same efficiency. In other words it adds 50 euros to the annual energy bill, for every filter.

#### 70% of the total cost comes from energy costs

Calculations show that energy normally accounts for 70% of the total cost of the life cycle of an air treatment system. Energy consumption is in direct proportion to the filter's average pressure loss.

### Choosing the right filter saves energy

In order to optimise the lifespan of the filter and to reduce energy consumption, it is important to bear in mind the extent to which their configuration and their structure influence the average pressure loss.



**X** Blocked surface = high energy consumption

### Software aimed at helping select the right filter = optimising energy costs

For over 50 years, Camfil has played a pioneering role in designing filters with low average pressure loss for all efficiency levels for air conditioning and ventilation systems. Camfil was the first filter manufacturer to develop sophisticated software that calculates the overall cost for the complete life cycle of air filters. As part of our continuous improvement, this software has evolved over time and it uses real life data collected from numerous tests in real use conditions. This enables us to calculate the pressure loss of the filter and its actual lifespan, rather than relying on theoretical calculations.

**For more information and assistance, please contact your nearest branch of Camfil.**

# European Standard EN 1822:2009

All HEPA / ULPA filters produced by Camfil are supplied fully in accordance with the European Standard EN1822:2009

- Qualified personnel responsible for testing.
- Unique serial number for each filter.
- Clear, unambiguous inspection procedures specifying test conditions, target values and actual performance of our filters.
- Complete traceability of materials and operations.
- Equipment and systems certified by accredited bodies.

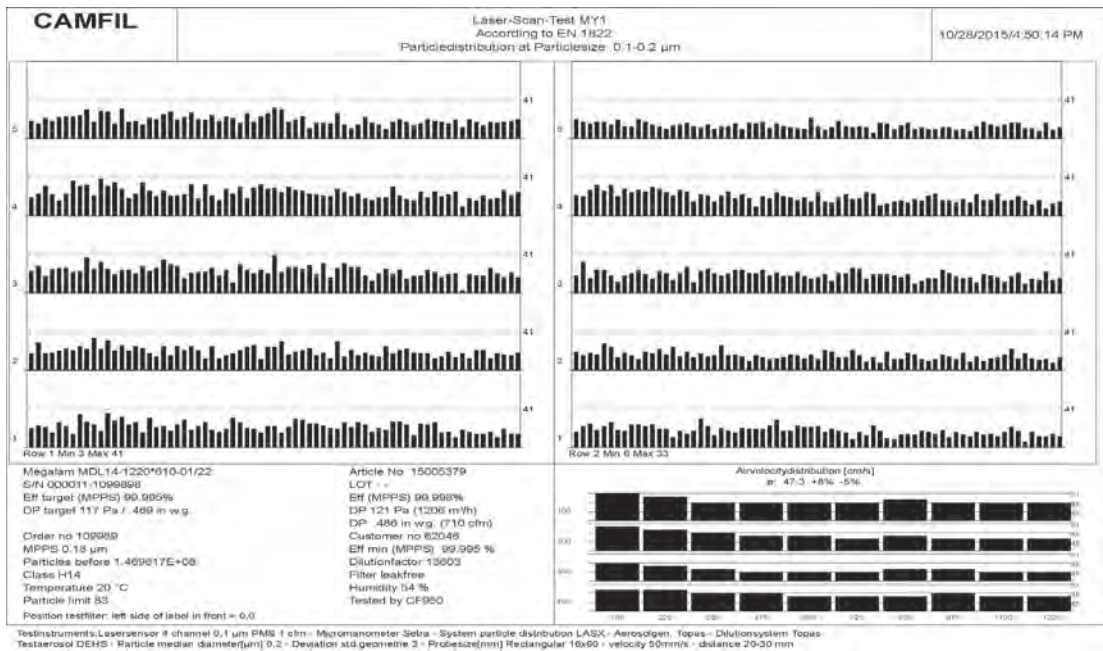
The CAMFIL extras:

- The filter label has a detachable copy which can be used to record the position of the individual filters in your installation.
- It can also be used as part of the validation process ensuring regulatory compliance of your installation.
- Automated scanning process to assure accuracy and reliability of the test result.

In short EN 1822:2009 means:

- Individually certified filters
- Tested using MPPS (Most Penetrating Particle Size) challenge.
- Detailed, standardised test procedures.
- Full traceability of materials and test data.

## EN 1822:2009 Test Report



## Filter Label

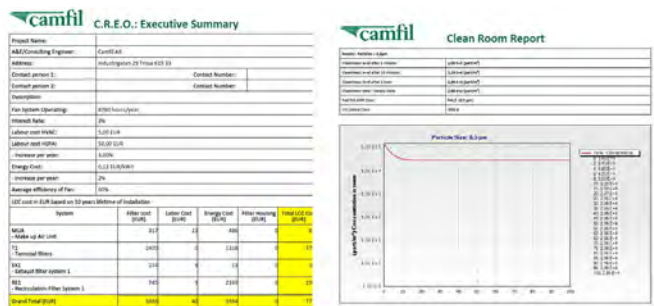


# CREO Software (Clean Room Energy Optimization)

## An overview of Camfil CREO Software

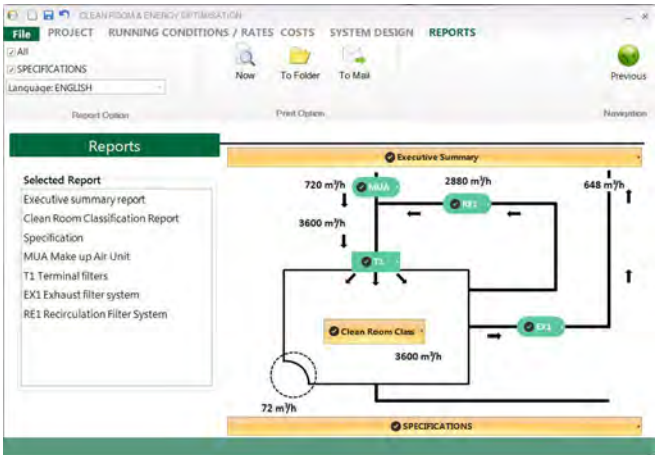
- Clean room theory and design
- Human particle generation calculations
- LCC (Life Cycle Cost) calculations
- Steady state condition calculations for various designs
- Air handling system design specific to the selection of air filters
- Latest and historic clean room standards
- Cleanliness Classification Report
- Total Cost of Ownership Reports
- Specification Generator

Clean Room Classification Report with Steady State calculation  
Clean rooms play a vital role in multiple industries, supporting product innovation and the latest developments in cutting-edge technologies. They are also extremely challenging to design, with very high demands for **air cleanliness** and an increasing demand from owners and operators to **reduce escalating energy costs**. As the air cleanliness level is dependent on various factors - the room's supply air, **contamination sources**, and the **design of the ventilation system** - **sophisticated computer-aided analysis** is often better suited to estimate cleanliness, and ensure that users end up with the facilities their application requires.



Clean Room Classification Report with Steady State calculation

Camfil, the world's leading provider of air filters is widely recognized as the leading clean air solutions supplier globally. In another industry first, they have released this **new software** to support end users and designers to optimize air filtration selection for the most sustainable clean rooms:



Output summary

## Key features of CREO

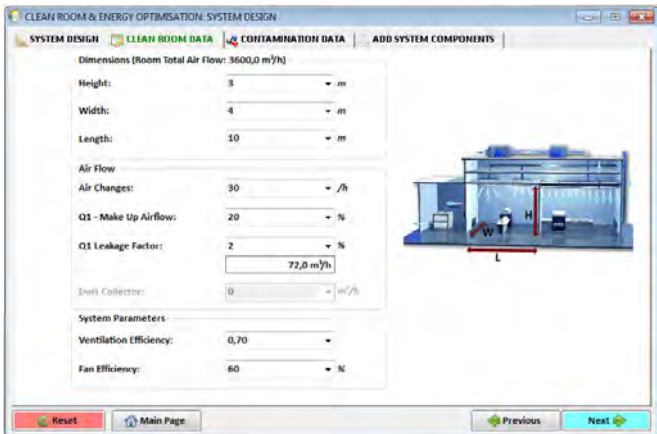
CREO software features a unique up-to-date simulation engine based on clean-room theory and design. Users calculate **human particle generation**, perform **calculations of steady-state conditions** for different designs, and select the appropriate air handling system design and **air filters**. As reference, CREO also contains the **latest and historic clean room standards** for the life sciences and microelectronic industries, including comparisons between ASHRAE and EN 779 2002/2012.

CREO is a very quick and accurate tool for designers to select the required filters. Comparison up to three different solutions can be obtained with just a few inputs. The end result is customized clean room application that also allows the user to calculate the life cycle cost and cleanliness class for different clean room configurations and optimize their energy consumption.

Outputs, in friendly standard file format, from CREO are:

- TCO Executive Summary
- Steady State Calculation Report
- Complete and Detailed TCO Calculation Report for all System Components
- Extensive Engineering Specifications

For further information and software simulation, contact your nearest Camfil office or representative.





# ATEX

## ATEX Directive: Explosive atmospheres

Two important new safety directives have entered into force in Europe. These new regulations come under the title of ATEX Directives and apply to manufacturers, suppliers and users of equipment intended for use in potentially explosive atmospheres (dangerous areas). An explosive atmosphere is defined as a mixture with air, under atmospheric conditions, of hazardous substances in the form of gases, vapours, mists or dusts in which, after ignition has occurred, combustion spreads to the entire unburned mixture. The 99/92/EC (ATEX 137) Directive, known as the ‘User Directive’ requires employers to protect their employees from the risks posed by explosive atmospheres. The 94/9/EC (ATEX 95 or ATEX 100A) Directive on ‘Equipment and protective systems intended for use in potentially explosive atmospheres’ covers electrical and non-electrical products intended for use in hazardous places (gases, vapours, mists). Conformity with the ATEX Directives

has been a legal requirement in all EU Member States since 1 July 2003. In biopharmaceutical applications, some procedures must use ATEX-classified filters in certain places (please see table). Camfil in Europe has developed HEPA filters and ATEX accredited housings for use in biopharmaceutical installations in order to prevent electrostatic dangers caused by gas or dust in an ATEX area. Camfil has developed specific versions of ATEX for most filters and housings used in biopharmaceutical installations in order to prevent electrostatic dangers caused by gas or dust in an ATEX area. Camfil’s ATEX solutions are entirely certified in accordance with the requirements of the ATEX Directives with the appropriate EX marking, the ATEX conformity statement and the instructions for use.


### Key to the table:

Definition of ATEX areas and corresponding product categories.  
Definitions of areas


Gas	Dust Areas	Definitions	Category ATEX	Typical suitability of place
0	20	Place where an explosive atmosphere is permanently present	1G	Equipment adapted to 0 areas
			1D	Equipment adapted to 20 areas
1	21	Place where an explosive atmosphere is probable occasionally under normal operating conditions	2G	Equipment adapted to 1 areas
			2D	Equipment adapted to 21 areas
2	22	Place where an explosive atmosphere is improbable under normal operating conditions, but, where applicable, only lasts a short time.	3G	Equipment adapted to 2 areas
			3D	Equipment adapted to 22 areas

## All Camfil ATEX air filtering solutions


All Camfil ATEX air filtering solutions are certified for use in explosive gas atmospheres (Classes 1 and 2) and explosive dust atmospheres (Classes 21 and 22). They comply with European Standard EN 13463-2001 Annex C Non-electrical equipment for potentially explosive atmospheres, as attested by the conformity statement attached to these products.




Camplis ATEX




Hi-Flo ATEX




Opakair-EX



Sofilair-EX




Megalam-EX



FCBL-KC-EX



Sofdistri-EX



Camsafe-EX

## Caring for the environment

### “How will your filters help you to reduce the environmental impact of your installations?”

Camfil has been involved in air quality for over 50 years, and has to set an example when it comes to the environment. It therefore has an obligation to provide its customers with practical assistance on green issues. With regard to complying with the law on waste disposal, Camfil is with you all the way; in designing products and services, Camfil shares your environmental concerns.

It is now widely acknowledged that air conditioning filters can be considered ordinary industrial waste, whereas filters used in environments containing potentially hazardous products (e.g. return air from clean rooms, spray booths and operating theatres) should be considered special industrial waste and must be disposed of by an approved route using accredited systems.

Please Note - your individual circumstances depend entirely on your processes and we recommend that you approach your usual waste disposal provider, who will be qualified to advise you on the matter.

### In order to minimise waste, Camfil pay close attention to the life cycle of the product:

1. We make strenuous efforts to extend the lifespan of our filters and to optimise their performance, which means that you reduce your operating costs, the frequency with which you have to replace the filters and the cost of their disposal.

Just look at the large filter surface used in many of our products and remember large filter area is synonymous with long filter life.

2. We favour the use of recyclable or incinerable materials.

3. We are continually researching effective materials with low pressure loss, a parameter that has a direct influence on the energy consumed during the lifetime of the filter.

4. The Green CAMFIL range ensures that you can dispose of your used filters with less hassle and at lower cost. The use of plastics or cardboard lends itself to the incineration of used filters whilst ensuring compliance with all provisions of environmental law.

5. We minimise the weight of materials used in the construction of our filters which helps reduce the waste mass as far as possible when the filter reaches the end of its life.

6. In our ISO 14001 certified factories, we are phasing out the use of chloride solvents and hazardous products from our processes.



### Follow up CFM

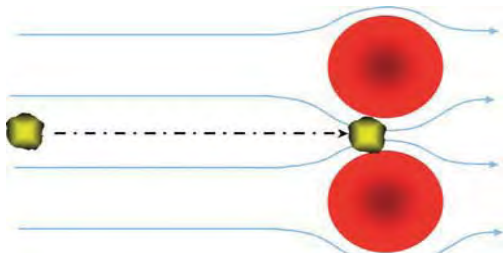
Conscious of the increasing importance attached by our customers to waste management, Camfil can support you and take charge of replacing and organising the disposal of certain used filters as part of its CAMFIL FILTER MANAGEMENT (CFM) programme. For more information and to find out whether this service might work for you, please contact us.



## Principles of Air Filtration

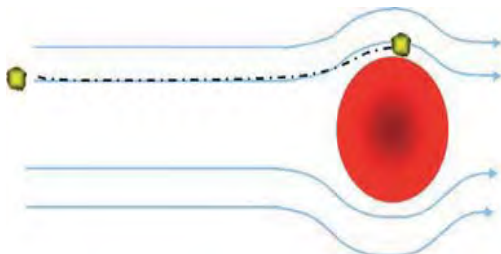
Five different collection mechanisms govern particulate air filter performance: straining, interception, diffusion, inertial separation, and electrostatic attraction. The first of these mechanisms applies mainly to mechanical filters and is influenced by particle size. The last involves an imparted charge to enhance performance.

### Straining Effect



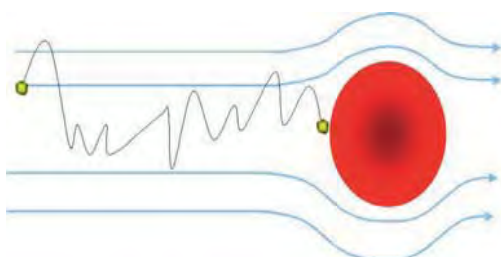
Straining occurs when the opening between the media members (fibers, screen mesh, corrugated metal, etc.) is smaller than the particle diameter of the particle the filter is designed to capture. This principle spans multiple forms, or filter designs, and is entirely related to the size of the particle, media spacing, and media density.

### Interception Effect



Interception occurs when a large particle, because of its size, collides with a fiber in the filter that the air stream is passing through.

### Diffusion Effect

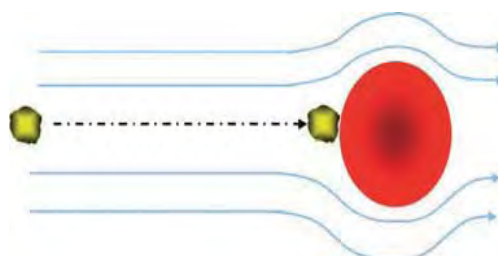


Diffusion occurs when the random (Brownian) motion of a particle causes that particle to contact a fiber. As a particle

vacates an area within the media, by attraction and capture, it creates an area of lower concentration within the media to which another particle diffuses, only to be captured itself. To enhance the possibility of this attraction, filters employing this principle operate at low media velocities and/or high concentrations of microfibrils, glass or otherwise.

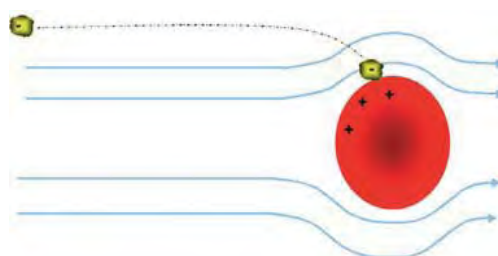
The more time a particle has in the “capture zone”, the greater the surface area of the collection media (fibers), the greater the chances of capture. Filter manufacturers have two distinct methods of addressing this principle — employ more square footage of fine glass-mat type media or employ less square footage of high lofted glass media.

### Inertia Effect



Inertial separation uses a rapid change in air direction and the principles of inertia to separate mass (particulate) from the air stream. Particles at a certain velocity tend to remain at that velocity and travel in a continuous direction. This principle is normally applied when there is a high concentration of coarse particulate, and in many cases as prefiltration mode to higher efficiency final filters..

### Electrostatic Effect



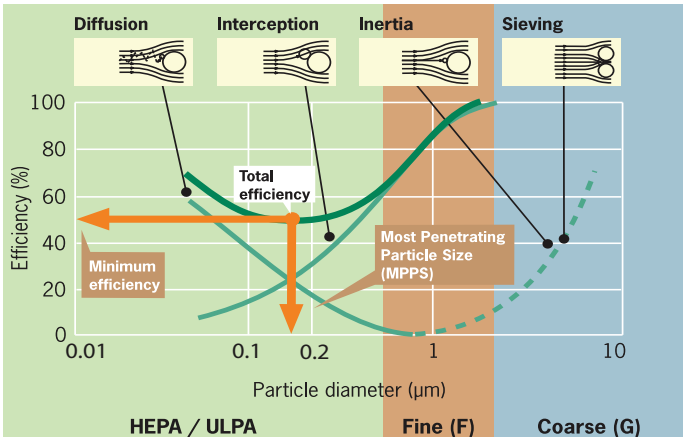
Electrostatic attraction plays a minor role in mechanical filtration. After fiber contact is made, smaller particles are retained on the fibers by a weak electrostatic force. The force may be created through a manufacturing process, or be dependent upon airflow across media fibers. The force is eradicated as media fibers collect contaminant that acts as an insulator to a charge.

Impaction and interception are the dominant collection mechanisms for particles greater than  $0.2\ \mu\text{m}$ , and diffusion is dominant for particles less than  $0.2\ \mu\text{m}$ .



# Principles of Air Filtration

The following chart notes the four mechanical particle capture effect principles and their value to relative particle sizes.



As mechanical filters load with particles over time, their collection efficiency and pressure drop typically increase. Eventually, the increased pressure drop significantly inhibits airflow, and the filters must be replaced. For this reason, pressure drop across mechanical filters is often monitored because it indicates when to replace filters.

Conversely, electrostatic filters, which are composed of polarized fibers, may lose their collection efficiency over time or when exposed to certain chemicals, aerosols, or high, relative humidity. Pressure drop in an electrostatic filter generally increases at a slower rate than it does in a mechanical filter of similar efficiency.

Thus, unlike the mechanical filter, pressure drop for the electrostatic filter is a poor indicator of the need to change filters. When selecting an HVAC filter, you should keep these differences between mechanical and electrostatic filters in mind because they will have an impact on your filter's performance (collection efficiency over time), as well as on maintenance requirements (change-out schedules).



The above photo shows coarse fiber/electret media magnified 400 times. Coarse/electret fibers, because of their large size, are easier and less expensive to produce. Their primary effect of particle capture requires a charge imparted on the fiber during the manufacturing process. As the charge dissipates because of particulate loading, so does the efficiency of the filter. This is a critical condition, as 98% of all particles are under 1 micron in size — the range where these types of filters suffer critical loss of efficiency.



The above photo shows fine fiber media magnified 400 times. Fine fiber media operates under a mechanical removal principle, and fibers do not lose efficiency over time. Their initial efficiency is indistinguishable from their actual efficiency over life, providing the user with the particle removal performance they have specified.

## Product Performance Barometers

### HEPA/ULPA Cleanroom Filter Testing in Camfil Facilities

#### Filter Classifications

Quite a few inaccuracies and erroneous ‘jargon’ are commonplace in the high efficiency filtration industry. One of the key issues pertains to nomenclature (i.e., HEPA, ULPA, VLSI, SULPA, etc.). This issue involves misconceptions regarding a filter’s efficiency and the relationship to particle size.

CEN, the Comité Européen de Normalization, has developed a Standard, EN 1822:2009, based on particle counting at the Most Penetrating Particle Size (MPPS). This European Standard applies to High Efficiency Particulate Air (HEPA) and Ultra Low Penetration Air (ULPA) filters used in the field of ventilation and for technical processes (e.g., for clean room technology or applications in the nuclear and pharmaceutical industries).

Key definitions from this Standard include:

**Penetration** - the ratio of the particle count downstream of the filter to the particle count upstream.

**Efficiency** - the ratio of the number of particles captured by the filter to the number of particles challenging the filter.

**Overall Efficiency/Penetration** - the efficiency/penetration averaged over the “superficial/useable” face area of a filter element under given operating conditions of the filter.

**Superficial/Useable Face Area** - the cross-sectional area of the filter element, through which the air passes.

**Local Efficiency/Penetration** - the efficiency/penetration at a specific point on the superficial/useable face area of the filter element under given operating conditions of the filter.

**Leak Threshold** - local penetration greater than or equal to five (5) times the filter’s overall penetration.

Filter Class	Overall Value %Efficiency	Overall Value %Penetration	Local Value %Efficiency	Local Value %Penetration
E 10	85	15		
E 11	95	5		
E 12	99.5	0.5		
H 13	99.95	0.05	99.75	0.25
H 14	99.995	0.005	99.975	0.025
U 15	99.9995	0.0005	99.9975	0.00025
U 16	99.99995	0.00005	99.99975	0.000025
U 17	99.999995	0.000005	99.9999	0.00001

*This Standard allows a classification of filters in terms of efficiency and is, therefore, useful for both buyer and seller.*

### Basic Test Protocols

#### Leak Scanning

Camfil leak tests each Megalam Panel and Ducted Ceiling Module HEPA/ ULPA filter. Testing is performed in Class 100 (M3.5) clean zones within a Class 100,000 (M5.5) cleanroom. All testing is conducted per the controlled and documented procedures of Camfil’s ISO 9001 certified quality system.

To enhance upstream sampling capability, leak-scanning systems are equipped with dilution equipment for measuring high particle concentrations. Probe geometry has been optimized to maximize traverse rate and eliminate undetected leaks while maintaining isokinetic sampling. The entire face of the filter is scanned with overlapping strokes, including the media to frame interface. DEHS is Camfil’s standard liquid challenge aerosol. By request we can also test with the solid aerosol Polystyrene Latex Spheres (PSL).

Any leak with a penetration exceeding five (5) times the filter’s average rated penetration, is repaired per industry standards or customer specifications. Polyurethane and other repair materials are available upon request.

Menu-driven, computer controlled auto-scanning is utilized for standard filter configurations. Manual scanning is performed for small quantity, custom filter designs/sizes and leak repair.

#### Filter Media Efficiency Testing

Per Camfil raw goods supplier specifications, suppliers are required to test each master roll of Camfil filtration media for efficiency, utilizing Condensation Nuclei Counters (CNC) & Q127 Penetrometers. Test results are submitted to Camfil for review & material acceptance prior to release authorization.

#### Filter Efficiency Testing

**Manual Scan:** Camfil’s computer integrated system gathers efficiency information from a fully encapsulated filter. The system features simultaneous upstream and downstream data collection. If the efficiency is lower than specified, the filter is rejected.

**Auto-Scan:** The discrete data points generated during the scan test are integrated to calculate the test filters global efficiency. If the efficiency is lower than specified, the filter is rejected.

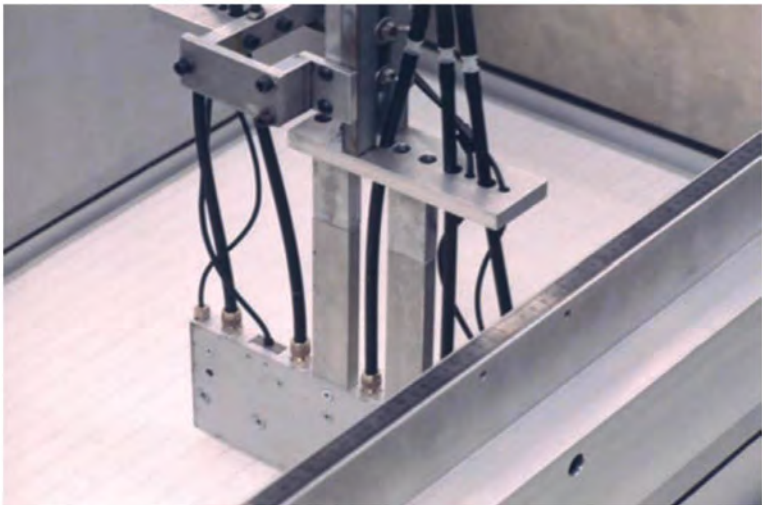
Filter Media Pressure Drop Testing

Per Camfil specifications, approved suppliers test each lot of media for pressure drop. Test results are submitted to Camfil for review & material acceptance prior to release authorization.

Filter Pressure Drop Testing

**Manual Scan:** During the test, the system continuously monitors and collects filter pressure drop data. If the pressure drop is higher than specified, the filter is rejected.

**Particle Counter Scanning:** If a particle count is detected, the operator checks the area for continuous counts. If continuous counts in excess of the specified leakage threshold are detected, the leak is repaired.



Auto-Scan Testing

Auto-Scanning Protocol

Camfil Auto-Scanners have been designed to detect pinhole leaks in HEPA/ULPA filters. The test apparatus is an automated, computer-controlled system, utilizing multiple particle counters for accuracy.

DEHS is the standard challenge aerosol. To further enhance system sensitivity, Camfil uses advanced dilution equipment for measuring high upstream particle concentrations. The automated system eliminates the possibility of incorrect test results that can result from human error. The computer interface controls filter airflow rate, test aerosol injection, particle counting upstream and downstream of the test filter, probe traverse rate, data reduction and data storage.

PSL solid aerosols are used when outgassing of oil based aerosols is a concern, especially for microelectronic applications. PSL tested filters are available within the FabSafe product range.

UL900

Camfil Megalam Panel and Ducted Ceiling Module type HEPA/ULPA filters are listed with Underwriters Laboratories per UL 900, "Standard for Test Performance of Air Filter Units".





## UL Filter Testing

Air filters have always presented many numbers that users incorporated in their evaluations; including dust spot efficiency, arrestance, dust holding capacity, minimum efficiency reporting value (MERV) and various others. The American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) greatly simplified the selection process when they introduced MERV. This value supplied the user with the filters' minimum particle capture efficiency ensuring that the filter would provide the protection level required for the process or to protect building occupants in specific applications. In 2007 they also added Appendix J, an additional testing step designed to expose filters that may not maintain their efficiency over time.

Now Underwriters Laboratories (UL) has simplified their Standard UL 900, for evaluating a filters' combustibility and smoke generation when the filter is exposed to direct flame. The designations UL Class 2 and UL Class 1 are no longer. UL 900 covers both washable and throwaway filters, used for the removal of dust and other airborne particles from mechanically circulated air in equipment and systems.

The vast majority of air filters have historically tested as UL Class 2. The criterion for this type of filter is that when tested, the air filter, when clean, burns moderately when attacked by flame, or emits moderate amounts of smoke, or both. A UL Class 1 filter was an air filter which, when clean, did not contribute fuel when attacked by flame and emitted only negligible amounts of smoke.

Some municipalities required the UL Class 1 product through their local code. In many cases, because of the different components of construction between Class 1 and Class 2 rated products the user experienced premium costs of two to three times the cost of a UL Class 2 product. Additionally there was some confusion in engineering circles that a UL Class 1 product was a 'fireproof' product. This was not the case as a Class 1 product could burn if submitted directly to an open flame, but was less likely to contribute combustion byproducts. Both classes, when clean, would self-extinguish when the flame source was removed from contact with the filter.

It is important to note, after a period of service, the combustibility and smoke generation of an air filter will depend upon the nature and quantity of the material collected by the filter. The test requirements of this Standard, for classification purposes, applies only to air filters in a clean condition. This is a critical step forward as UL as a recognized leader in independent safety certification facilitated a simplified, costconscious revision.



*Camfil prints the above logo, as provided by Underwriters Laboratories, directly on our products, or on a product label, signifying the product is UL qualified. The logo is a registered trademark of Underwriters Laboratories.*

## ISO 16890

Camfil welcome the publication of a new ISO standard for the testing and classification of air filters used in general ventilation systems. Importantly, ISO16890 has global applicability and will ultimately be applied in all our markets. After a period of coexistence, ISO16890 will replace EN779:2012 and the

European norm will be withdrawn, probably sometime in 2018. It is obvious that it would be beneficial if ISO16890 also replaced ASHRAE 52.2. Whilst this could happen in the future, the time scale is not yet clearly defined..

### Benefits of ISO16890

For specifiers, purchasers and users of air filters	For the filter industry
The standard recognises that air filters positively influence indoor air quality and human health.	It will be easier to compare products. This will drive innovation and customer value. Very poor performing products may be eliminated.
The test method and filter classification system are better aligned with real-world pollution.	Easier to explain product value in terms of function and customer application.
The global applicability will eliminate confusion that occurred when attempts were made to compare results of EN779 and ASHRAE 52.2 tests.	This standard will remove an obstacle to global trade.

### How ISO16890 compares to EN779:2012 and ASHRAE 52.2.

	EN779:2012	ASHRAE 52.2	ISO16890
Filter test method	Efficiency measurement made using 0,4µm particles	Efficiency measurements made using 0,3- 10 µm particles. Classifications relate to results for E1, E2 & E3 efficiency classes - MERV rating	Efficiency measurements made using 0,3- 10 µm particles. Classifications relate to result for PM1, PM2,5 & PM10
Discharging method	Discharge only filter media, using IPA soak. A tough discharging method.	Discharge entire filter using KCL salt. A soft discharging method. Discharge is not mandatory - may be applied as Appendix J procedure.	Discharge entire filter using IPA vapor. A tough discharging method
Filter loading method	Dust loading with ASHRAE dust. Coarse dust.	Dust loading with ASHRAE dust. Coarse dust.	Dust loading with ISO fine dust. Fine dust (more like real-world).
Classification system	9 Classes	16 Classes	49 Classes In 4 different groups

### ISO16890: Overview of Classification System

Group Designation	Requirement			Class reporting value
	ePM <sub>1, min</sub>	ePM <sub>2.5, min</sub>	ePM <sub>10, min</sub>	
ISO Coarse	-	-	<50%	Initial gravimetric arrestance
ISO ePM <sub>10</sub>	-	-	>/=50%	ePM10
ISO ePM <sub>2.5</sub>	-	>/=50%	-	ePM2.5
ISO ePM <sub>1</sub>	>/=50%	-	-	ePM1

### ISO16890: Classification Table

PM 1 Classification	PM 2.5 Classification	PM 10 Classification	Coarse
ePM1[95] ePM1[90] ePM1[85] ePM1[80] ePM1[75] ePM1[70] ePM1[65] ePM1[60] ePM1[55] ePM1[50]	ePM2.5[95] ePM2.5[90] ePM2.5[85] ePM2.5[80] ePM2.5[75] ePM2.5[70] ePM2.5[65] ePM2.5[60] ePM2.5[55] ePM2.5[50]	ePM10[95] ePM10[90] ePM10[85] ePM10[80] ePM10[75] ePM10[70] ePM10[65] ePM10[60] ePM10[55] ePM10[50]	Arrestance reported in 5% increments starting at 5%
Requirement: >50% initial efficiency >50% discharged efficiency	Requirement: >50% initial efficiency >50% discharged efficiency	Requirement: >50% initial efficiency No discharge requirement	No discharge requirement

Note: ISO16890 demands a minimum (discharged efficiency) of 50% for ePM1 and ePM2.5 rated filters. This will ensure that those filters always provide a decent standard of long-term filtration in real-world customer applications.

# Comparison Chart

## ASHRAE 52.2, ISO16890, EN779, EN1882

ASHRAE Standard 52.2-2012				EN779: 2012				ISO16890: 2016				EN1822: 2009
Min. Efficiency Reporting Value	Composite Average Particle Size Efficiency (E <sub>m</sub> ) % in Size Range, μm			Filter Class	Average Arrestance (A <sub>m</sub> ) of Synthetic Dust	Average Efficiency (E <sub>m</sub> ) at 0.4μm	Minimum Efficiency (E <sub>min</sub> ) at 0.4μm	Average of initial and discharged efficiency E <sub>m</sub> = (E <sub>i</sub> +E <sub>d</sub> )/2		Initial efficiency (E <sub>i</sub> )	Initial Arrestance (A <sub>m</sub> )	Initial Efficiency (E <sub>i</sub> ) at MPPS (typically 0.08 - 0.15 μm)
	Range 1	Range 2	Range 3		Test Final dP 250Pa	Test Final dP 450Pa		ePM1 (%)	ePM2.5 (%)	ePM10 (%)	Coarse (%)	
(MERV)	0.3-1.0	1.0-3.0	3.0-10.0		%	%	%	0.3-1.0	0.3-2.5	0.3-10	ISO Fine Dust	%
1 (A)			E <sub>m</sub> <20	G1	50≤A <sub>m</sub> ≤65						A <sub>m</sub> <75 Final dP 200 Pa	
2 (A)			E <sub>m</sub> <20	G2	65≤A <sub>m</sub> ≤80							
3 (A)			E <sub>m</sub> <20									
4 (A)			E <sub>m</sub> <20									
5 (A)			E <sub>m</sub> ≥20	G3	80≤A <sub>m</sub> ≤90						A <sub>m</sub> >75 Final dP 300 Pa	
6 (A)			E <sub>m</sub> ≥35									
7 (A)			E <sub>m</sub> ≥50	G4	A <sub>m</sub> ≤90							
8 (A)		E <sub>m</sub> ≥20	E <sub>m</sub> ≥70									
9 (A)		E <sub>m</sub> ≥35	E <sub>m</sub> ≥75	M5		40≤E <sub>m</sub> ≤60				E <sub>i</sub> >50		
10 (A)		E <sub>m</sub> ≥50	E <sub>m</sub> ≥80									
11 (A)	E <sub>m</sub> ≥20	E <sub>m</sub> ≥65	E <sub>m</sub> ≥85	M6		60≤E <sub>m</sub> ≤80			50≤E <sub>m</sub> ≤60	E <sub>i</sub> >60		
12 (A)	E <sub>m</sub> ≥35	E <sub>m</sub> ≥80	E <sub>m</sub> ≥90									
13 (A)	E <sub>m</sub> ≥50	E <sub>m</sub> ≥85	E <sub>m</sub> ≥90	F7		80≤E <sub>m</sub> ≤90	E <sub>min</sub> ≥35	50≤E <sub>m</sub> ≤75	E <sub>m</sub> > 70	E <sub>i</sub> >80		
14 (A)	E <sub>m</sub> ≥75	E <sub>m</sub> ≥90	E <sub>m</sub> ≥95	F8		90≤E <sub>m</sub> ≤95	E <sub>min</sub> ≥55	75≤E <sub>m</sub> ≤85	E <sub>m</sub> >80	E <sub>i</sub> >90		
15 (A)	E <sub>m</sub> ≥85	E <sub>m</sub> ≥90	E <sub>m</sub> ≥95	F9		95≤E <sub>m</sub>	E <sub>min</sub> ≥70	E <sub>m</sub> >85				
16 (A)	E <sub>m</sub> ≥95	E <sub>m</sub> ≥95	E <sub>m</sub> ≥95									
N/A	N/A	N/A	N/A	E10				N/A	N/A	N/A	N/A	E <sub>i</sub> ≥85
				E11								E <sub>i</sub> ≥95
				E12								E <sub>i</sub> ≥99.5
				H13								E <sub>i</sub> ≥99.95
				H14								E <sub>i</sub> ≥99.995
				U15								E <sub>i</sub> ≥99.9995
				U16								E <sub>i</sub> ≥99.99995
				U17								E <sub>i</sub> ≥99.999995
A <sub>m</sub> =Average Arrestance E <sub>m</sub> = Average Efficiency E <sub>min</sub> = Minimum Efficiency E <sub>d</sub> = Discharged Efficiency E <sub>i</sub> = Initial Efficiency												
Note: The filter class is the highest class where the filter meets all requirements. Comparisons are approximation given for reference only. Filters should be tested to the most recent standards. For ISO ePM1 and ePM2.5 both initial and discharged efficiency need to be over 50% to qualify for a class.												

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.



Standards, Regulations and Recommendations

MPPS integral values				MPPS local values		
Filter group	Filter class	Minimum efficiency (%)	Maximum penetration (%)	Minimum P.C.	Maximum efficiency (%)	Maximum penetration (%)
ULPA (U)	U15	99.9995	0.0005	200,000	99.9975	0.0025
	U16	99.99995	0.00005	2,000,000	99.99975	0.00025
	U17	99.999995	0.000005	20,000,00	99.9999	0.0001
EPA : Efficiency Particulate Air (filter)						
HEPA : High Efficiency Particulate Air (filter)						
ULPA : Ultra Low Penetration Air (filter)						
P.C. : Purification Coefficient						

Classification as per Eurovent 4/4 recommendation, NaCl method

EUROVENT 4/4	Initial efficiency Ei (%)	Penetration Pi (%)
Filter class	Limits of filter classes	
EU 10	95 ≤ Ei < 99.9	5 ≥ Pi > 0.1
EU 11	99.9 ≤ Ei < 99.97	0.1 ≥ Pi > 0.03
EU 12	99.97 ≤ Ei < 99.99	0.03 ≥ Pi > 0.01
EU 13	99.99 ≤ Ei < 99.999	0.01 ≥ Pi > 0.001
EU 14	99.999 ≤ Ei	0.001 ≥ Pi

Clean rooms

Classification of different air qualities required for manufacture of sterile products

Maximum number of particles per m³ of a size greater than or equal to					Max. nbr: of µorganisms per m³ (active)
0.5 µm	5 µm	0.5 µm	5 µm		
inactive (b)		active			
A	3,500	0	3,500	0	< 1
B	3,500	0	350,000	2,000	10
C	350,000	2,000	3,500,000	20,000	100
D	3,500,000	20,000	not defined (c)	not defined (c)	200

Pharmaceutical industry

Pharmaceutical industry

Guide to good Manufacturing Practice (2002)  
(b) Corresponds approximately to the US Federal Standard 209 E and ISO as follows: classes A and B to class 100. M 3.5. ISO 5; class C to class 10,000. M 5.5. ISO 7; class D to class 100,000. M 6.5 ISO 8.

Comparison of international classification standards

Nbr of part 0.5 µm/ m³ (approx.)	US Fed. Std 209 E 1992	EN ISO 14644-1 1996	France AFNOR NF X 44.101 1981	European Union Pharma industry Guide GMP 1989	Nbr of part 0.1 µm/ m³ (approx.)
-	-	-	ISO 1	-	10
1	-	-	-	-	35
4	-	-	ISO 2	-	100
10	M 1	-	-	-	350

Nbr of part 0.5 µm/ m³ (approx.)	US Fed. Std 209 E 1992	EN ISO 14644-1 1996	France AFNOR NF X 44.101 1981	European Union Pharma industry Guide GMP 1989	Nbr of part 0.1 µm/ m³ (approx.)
35	M 1.5	1	ISO 3	-	1,000
100	M 2	-	-	-	3,500
353	M 2.5	10	ISO 4	-	10,000
1,000	M 3	-	-	-	35,000
3,530	M 3.5	100	ISO 5	4,000	A and B
10,000	M 4	-	-	-	350,000
35,300	M 4.5	1,000	ISO 6	-	1,000,000
100,000	M 5	-	-	-	-
353,000	M 5.5	10,000	ISO 7	400,000	C
1,000,000	M 6	-	-	-	-
3,530,000	M 6.5	100,000	ISO 8	4,000,000	D
10,000,000	M 7	-	-	-	-
35,000,000	-	-	ISO 9	-	-

Permissible particle levels in different classes of clean rooms and clean zones

ISO classification CD 14644-1 (1996)	Maximum permissible concentrations (particles/m³ of air) of particles of a size greater than or equal to the size shown below					
	0.1 µm	0.2 µm	0.3 µm	0.5 µm	1 µm	5 µm
ISO 1	10	2	-	-	-	-
ISO 2	100	24	10	4	x	-
ISO 3	1,000	237	102	35	8	-
ISO 4	10,000	2,370	1,020	352	83	-
ISO 5	100,000	23,700	10,200	3,520	832	29
ISO 6	1,000,000	237,000	102,000	35,200	8,320	293
ISO 7	-	-	-	352,000	83,200	2,930
ISO 8	-	-	-	3,520,000	832,000	29,300
ISO 9	-	-	-	35,200,000	8,320,000	293,000

US Fed Std 209 E (1992)

Class Name		Class Limits				
		0.1 µm	0.2 µm	0.3 µm	0.5 µm	5 µm
S1	English	Volume Units m³	Volume Units m³	Volume Units m³	Volume Units m³	Volume Units m³
M 1	-	350	75.7	30.9	10.0	-
M 1.5	1	1,240	265	106	35.3	-
M 2	-	3,500	757	309	100	-
M 2.5	10	12,400	2,650	1,060	353	-
M 3	-	35,000	7,570	3,090	1,000	-
M 3.5	100	-	26,500	10,600	3,530	-
M 4	-	-	75,700	30,900	10,000	-
M 4.5	1000	-	-	-	35,300	247
M 5	-	-	-	-	100,000	618
particles / m³ = 10M(0.5/d)2 . 2						
particles / ft³ = Nc(0.5/d)2 . 2						

Standards, Regulations and Recommendations

		Class Limits				
Class Name		0.1 µm	0.2 µm	0.3 µm	0.5 µm	5 µm
	Volume Units	Volume Units	Volume Units	Volume Units	Volume Units	Volume Units
S1	English	m³	m³	m³	m³	m³
M 5.5	10,000	-	-	-	353,000	2,470
M 6	-	-	-	-	1.000,000	6,180
M 6.5	100,000	-	-	-	3.530,000	24,700
M 7	-	-	-	-	10,000,000	61,800
particles / m³ = 10M(0.5/d)2 . 2						
particles / ft³ = Nc(0.5/d)2 . 2						

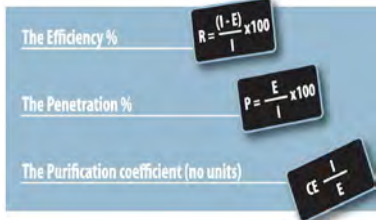
Air-conditioning/ Comfort

Air quality of premises with non specific pollution

Regulatory aspect		Recommendations
Labour code / Circular of application of decrees 84/1093-1094 dated 7/12/1984		UNICLIMA Air-conditioning & Health guide (1993)
Fresh air	Labour code Art. R235.2.6 Minimum arrestance efficiency 90% (G4 according to EN779:2012)	Air-conditioning system inlet: 85% opacimetric (F7 according to EN779:2012) Air-conditioning system outlet: 90% opacimetric (F8 according to EN779:2012)
air	Labour code Art. R232.5.4 Minimum opacimetric efficiency 50% (F5 according to EN779:2012)	85% opacimetric (F7 according to EN779:2012)

FILTER ENGINEERING - Calculations

An air filter’s efficiency is expressed in 3 forms:



Clearly the purification

Clearly the purification coefficient is the most representative expression for high levels of filtration. E.g.:  
Efficiency 99.995 % : CE of 20,000  
Efficiency 99.9998% : CE of 500 000  
The second filter is 25 times more efficient than the first.  
Note : I = particle concentration upstream E = particle concentration downstream

Conversion table (%)

Efficiency	Penetration	Purification Coefficient	Efficiency	Penetration	Purification Coefficient
95	5	20	99.99	0.01	10,000
99	1	100	99.995	0.005	20,000
99.5	0.5	200	99.999	0.001	100,000
99.9	0.1	1.000	99.9995	0.0005	200,000
99.95	0.05	2.000	99.9999	0.0001	1.000,000
99.97	0.03	3 333	99.99995	0.00005	2.000,000
99.98	0.02	5 000	99.99999	0.00001	10.000.000

Comparative efficiencies

		on 1 µm			on 0.5 µm		
		E	P	PC	E	P	PC
90%	ARRESTANCE	10%	90%	1.1	5%	95%	1.05
50%	EFFICIENCY	30%	70%	1.4	10%	90%	1.1
65%	EFFICIENCY	45%	55%	1.8	25%	75%	1.3
85%	EFFICIENCY	85%	15%	6.6	70%	30%	3.3
95%	EFFICIENCY	95%	5%	20	90%	10%	10
95%	0.3 µm	≥ 98%	< 2%	≥100	≥98%	<2%	≥ 50
E = Efficiency, P = Penetration, PC = Purification Coefficient							

Operating life

An air filter’s operating life is not directly proportional to its useful filtering surface. It is much better to opt for a model comprising 50% additional surface. This increases its operating life by 100%, not 50%!

Actual case study

Filter model	Effective filtering surface	Initial pressure drop at 3 600m³/h	Operating life*
Hi-Flo 3P 85	6.5 m²	120 Pa	3.500 hours
Hi-Flo 3M 85	9.4 m²	100 Pa	6.500 hours
Gain	3 m²	20 Pa	3.000 hours
Outcome	+ 46% in surface (x 1.5)**	- 17% in energy	+ 86% in operating life (x 1.9)**
* Determined using the Camfil calculation charts in the Hi-Flo brochure, for an average town environment			
** factor of increase			

Standards, Regulations and Recommendations

Energy costs

Energy consumed by an air filter due to its pressure drop:

E = (q x dP x h) / (e\_f x 1000) = kWh

q = flow rate (m3 /s)  
dP = pressure drop (Pa)  
h = operating period (hours)  
e1 = fan efficiency (generally 0.6 to 0. 7)

Conversions

Speed			
1 m/s = 3.6 km/h	1 km/h = 0.278 m/s	1 ft/min = 0.00508m/s	1 m/s = 196.85 ft/min
Length			
1 mile = 1.609 km	1 km = 0.621 mile	1 yd = 0.914 m	1 m = 1.09 yd
1 ft = 0.305 m	1 m = 3.28 ft	1 in = 25.4 mm	1 mm = 0.039 in
1 mm = 1.000 μm	1 μm = 0.001 mm	1 μm = 1.000 nm	1 nm = 0.001 μm
1 μm = 10,000 Å	1 Å = 0.0001 μm		
Surface			
1 ft² = 0.0929 m²	1 m² = 10.8 ft²	1 in² = 6.45 cm²	1 cm² = 0.155 in²
Volume			
1 ft³ = 0.0283 m³	1 m³ = 35.3 ft³	1 ft³ = 28.3 litres	
Flow rate			
1 cfm = 0.472.10 -3 m³/s	1 m³/s = 3 600 m³/h	1 m³/h = 0.278.10 -3 m³/s	
1 cfm = 1.699 m³/h	1 m³/s = 2 120 cfm		
Weight			
1 lb = 0.454 kg	1 kg = 2.20 lb	1 oz = 28.3 g	1 g = 0.0352 oz
Force			
1 kgf = 9.80665 N	1 N = 0.102 kgf	1 lbf = 4.45 N	1 N = 0.225 lbf
Pressure			
1 mmCE = 9.81 Pa	1 Pa = 0.102 mmCE	1 kPa = pz	1 kPa = 10.2 g/cm²
1 kg/cm² = 0.980665 bar	1 bar = 1.02 kg/cm²	1 kg/m² = 98.0665 kPa	1 kPa = 0.00987 atm
1 psi = 6.89 kPa	1 bar = 101325 Pa	1 atm = 101.325 kPa	1 mb = 100 Pa
1 mmCE = 1kg/m²	1 kPa = 0.145 psi	1 Pa = 1 N/m²	1 in w.g. = 250 Pa
Energy			
1 kgm = 9.80665 J	1 J = 0.102 kgm	1 cal = 4.184 J	1 J = 0.239 cal
1 kWh = 3.6 MJ	1 MJ = 0.278 kWh	1 Btu = 1.055 kJ	1 J = 0.945.10-3 Btu
Power			
1 CV = 0.736	1 kW = 1.36 CV	1 kcal/h = 1.16 W	1 W = 0.860 kcal/h
1 Btu/h = 0.292 W	1 W = 3.42 Btu/h		

Temperature: conversion formulae	
0 °C = 32 °F	0 °F = -17.8 °C
0 °F = (9/5) x °C	+32 °C = (5/9) x °F - 17.8

Temperature: conversion table							
°F	°C	°F	°C	°F	°C	°F	°C
0	-17,8	30	-1,1	50	10,0	80	26,7
10	-12,2	32	0	60	15,6	90	32,2
20	-6,7	40	4,4	70	21,1	100	37,8

Energy

Energy	
1 kcal/kg = 4.19.103 J/kg	1 J/kg = 0.239.10-3 kcal/kg

Heat transmission	
1 kcal/h.m².°C = 1.16 W/(m².°C)	1 W/(m².°C) = 0.86 kcal/h.m².°C
1 Btu/(h.ft².°F) = 5.64 W/(m².°C)	1 W/(m².°C) = 0.177 Btu/(h.ft².°F)

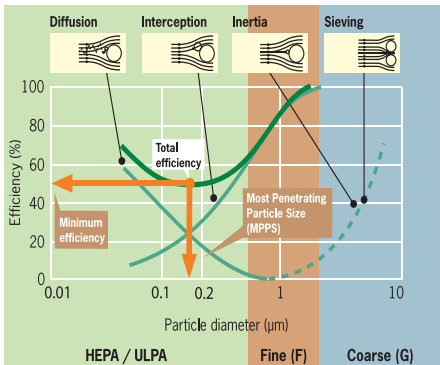


# Standards, Regulations and Recommendations

## FILTER ENGINEERING - Theory

### MPPS

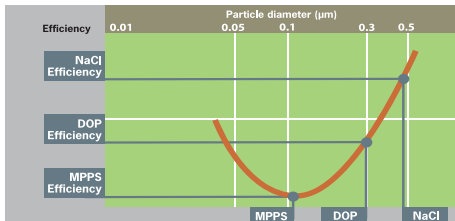
#### Minimum efficiency of air filters



The overall efficiency of an air filter is the result of a combination of 4 basic filtration mechanisms (sieving, inertia, interception and diffusion), so that the efficiency curve of an air filter adopts a characteristic V shape showing a minimum level of efficiency. This minimum efficiency corresponds to a particle size called MPPS (Most Penetrating Particle Size). In other words, the MPPS is the particle size that is the most difficult to stop. The MPPS is situated between 0.1 and 0.2 µm depending on the filter type, and the speed of air flow through the filtering media

#### EFFICIENCY TESTS (Not all the tests are equivalent)

#### MPPS (Most Penetrating Particle Size)



#### The NaCl test (EUROVENT 4/4)

The NaCl test (EUROVENT 4/4) is less demanding than the DOP test, which in turn is less demanding than the MPPS test

### Whitby diagram

#### Distribution of particles in atmospheric air

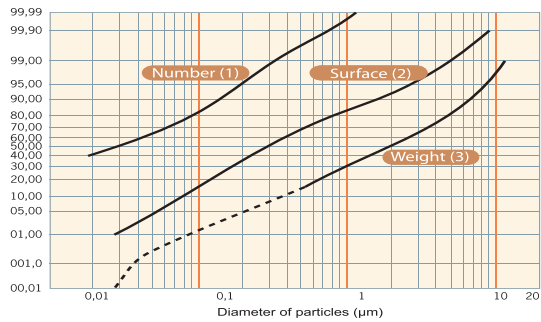
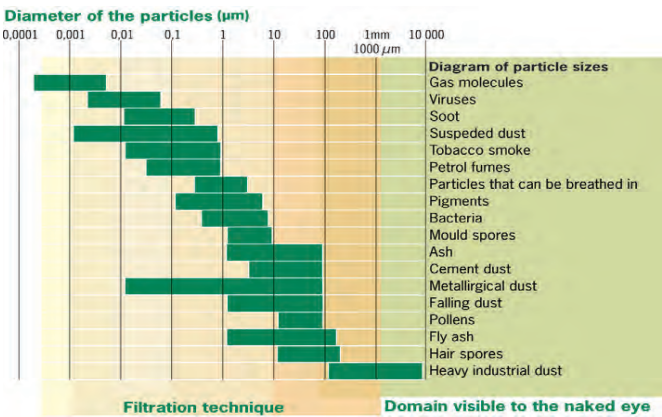


Diagram of Whitby: This diagram shows that more than 99.90% of airborne particles are less than or equal to 1 µm in size. Therefore, the essential part of air filtration's activity takes place in the invisible domain (human ocular partition power: 30 µm).

### Diagram of particle sizes

#### particle sizes



Filter Industry Definitions

µm	Micrometer or micron, one-millionth of a meter.
ACFM - Actual Cubic Feet Per Minute	This is a measure of airflow referenced to the current density of the gas. The mass flow rate of the air equals the ACFM multiplied by the air density.
Adsorption	Activated carbon is a porous, sponge-like substance which is capable of collecting and retaining many odor-bearing gas/vapor phase chemical compounds. The surface area of activated carbon is very large and consists of one surface layer and a submicroscopic pore structure. This pore structure is also known as the macropore and micropore wall surfaces. Molecules and atoms from the surrounding atmosphere are attracted and collected on these surfaces. The manufacture of an activated carbon is achieved by burning these submicroscopic holes into the carbon structure at 1000° C.
Aerosols	Solid and liquid airborne particles, typically ranging in size from 0.001 to 100 µm.
Approach Velocity	The actual velocity of the air as it approaches the filtration bank. Approach velocity can be determined by dividing the cfm of a system by the area of the filter bank opening. A 20,000 cfm system with a filter bank opening 10 feet high, by 10 feet wide (an area of 100 sq. ft.), would have an approach velocity of 200 feet per minute. 20,000 cfm = 200 fpm x 100 sq.ft.
Arrestance	Gravimetric efficiency on an ASHRAE test dust that provides a value for a filter's ability to capture contaminant by weight. Has value when considered for filters in the MERV 1-4 range of ASHRAE Standard 52.2-2007.
Atmospheric Air Contaminants	Atmospheric air can be very dirty with concentrations of up to 10,000,000 particles per cubic foot, and rural areas are only about 50% better than industrialized cities. This equals 1 ton of settled contaminant per cubic mile, or 500 tons per square mile per year.
Bioaerosols	An airborne suspension of particles of biological origin.
Breakthrough Concentration	Saturation point of downstream contaminant buildup, which prevents the collection ability of a sorbent to protect against gases and vapors.
Brownian Motion or Movement	As particle sizes decrease below 0.3 micron, their movement in the air stream, both direction and velocity, are influenced more by collisions with the molecules that make up the fluid or air in which they are captive. These particles do not follow the trained arrows of the designers' drawings, but instead, move in an unpredictable, random direction, battered back and forth, in a vain attempt to follow the air stream itself. It is easy to imagine how a particle of sub-micron size can stay in suspension in a particular space indefinitely.
Bypass (Filter Bypass)	A reference to the unfiltered air going around the filter because it has not been properly sealed in place.
Capacity	The volume of air (cfm) which can be delivered through a filter unit.
Celsius (Centigrade)	A thermometric scale in which the freezing point of water is 00 and its boiling point is 1000 at normal atmospheric pressure (14.696 PSI).
cfm (cubic feet per minute)	A measure of the volume of air being used in a system. An air handling system rated at 20,000 CFM would have a volume of air equal to 20,000 cubic feet entering the plenum every minute. CFM = FPM x Sq. Area.
Change of State	Change from one phase, such as solid, liquid, or gas, to another.
Chemisorption	Removal of gases from the airstream by the chemical reaction of the gas with an impregnant on the surface of, or distribute throughout the absorbant or carrier.
Chimney-Effect	The tendency of heated air to rise, due to lower density, in comparison with ambient, also called thermal updrafts. In clean room area, heat generating equipment may cause severe upward air currents, resulting in unwanted turbulence.
Cleanroom	A specially constructed, enclosed area environmentally controlled with respect to airborne particulate, temperature, humidity, air pressure, airflow patterns, air motion and lighting.
Clean Space	A term referring to cleanrooms or workstations within a room.
Collection Efficiency	Fraction of entering particles that are retained by the filter (based on particle count or mass).
Contaminants	Airborne dirt, dust, spores, viruses, bacteria, and allergens, which are sometimes referred to as aerosols. They may also be molecular in size and are then referred to as gaseous contaminants.
Conventional Flow (Non-Laminar Flow) Clean Room	A cleanroom with no requirements for uniform airflow patterns and air velocities.
Critical Surface	The surface in a cleanroom or workstation to be protected from particulate contamination.
Damper, Multiple Louver	A damper having a number of adjustable blades.
Δp - (Delta P)	A Greek symbol designating the difference in total air pressure between two points. Generally measured at the inlet and outlet of a filter. Normally measured in inches water gauge (in W.G.).
Depth Loading	Filtration accomplished by a progressively denser, deep medium designed to allow finer particles to penetrate further into the medium, while larger particulates are lodged closer to the surface. Progressive density medium has superior dust holding capability.
Diffuser	An air distribution outlet specifically designed to mix conditioned air with room air by induction. Mixing is accomplished by venturi action as the high velocity air stream leaving the diffuser aspirates ambient air toward the device.
Diffusion	A method of filtration that is effective on particles 0.1 micron and smaller. Their direction and velocity are influenced by molecular collisions (called "Brownian movement"). Particles of size do not follow the air stream but behave more like gases than particulate. Their dwell time in the media is longer, as they are battered across the direction of flow in a random "helter skelter" fashion. When a particle strikes a fiber, it is retained by the inherent adhesive forces between the particle and fiber (van der Waals forces).
Disposable	Refers to an expendable component or assembly which is discarded and replaced with a new unit when completely loaded.
D.O.P. (Dioctyl Phthalate)	An oil-like plasticizer which is readily atomized to form the 0.3 micron test aerosol used in overall penetration and scan tests of HEPA filters (extinct test).
Downstream	That portion of the system located after the filter. Also, the leaving air or the clean air side of a filter.
Dry Laid Media	Media fibers assembled in a media blanket, 1/8" to 3/8" thick.
Dust Holding Capacity	The total weight of ASHRAE test dust a filter can hold before reaching a given final resistance. The amount will vary depending on the size and design of the filter and airflow rate. Reported in grams, or grams per square foot. May provide a relative measure of filter service life in low efficiency filters.
Efficiency	In general terms, efficiency is the degree to which a filter will perform in removing solids. Specifically, it refers to any of three filter tests: ASHRAE 52-92 Arrestance, ASHRAE 52-92 Atmospheric Dust Spot, or DOP Penetration.

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Filter Industry Definitions

Electret	Filter media to which an electrostatic charge is applied during its formation.
Electrostatic Filter	A filter that uses electrostatically enhanced fibers to attract and retain particles, usually decreases in efficiency over time.
Electrostatic Precipitation	A method of filtration that imparts a positive charge to airborne particulate matter and collects the particles on negatively charged collection plates.
E.T.L.	An independent testing laboratory for various types of air filters and equipment, now known as Intertek Testing.
Exfiltration	Air flow outward through a wall, leak membrane, etc.
Exhauster	A fan used to withdraw air under suction.
Extended Surface Filter	A category of filter that is designed with pleats or pockets to increase the amount of media exposed to the air stream within a given face dimension. Greater filter surface area reduces media velocity and increases efficiency, and dust holding capacity.
Fan	An air-moving device comprising a wheel or blade, and housing or orifice plate.
Fan, Centrifugal	A fan rotor, or wheel, within a scroll-type housing. It may be either belt drive or have a direct motor connection.
Fan Coil	A terminal unit consisting of a finned tube coil and a fan in a single enclosure
Fan Laws	Equations used to calculate fan flow, pressure, and power at different fan speeds, different air temperatures, and different air pressures.
Fan, Propeller	A propeller, or disc-type wheel, within a mounting ring or plate. It includes the driving mechanism supports for either belt drive or direct connection.
Fan, Tubeaxial	Propeller, or disc-type wheel, within a cylinder. It includes the driving mechanism supports for either belt drive or direct connection for moving air.
Face Area	The area of an air filter or other air treatment device normal to the flow of air through it.
Face Loading	The phenomenon by which contaminants in the air load up on the surface of the filter media, causing an abnormal rise in resistance.
Fan, Vaneaxial	A disc-type wheel within a cylinder, a set of air guide vanes located either before or after the wheel. It includes driving mechanism supports for either belt drive or direct connection.
Fiber Break-Off	Particles of the media fiber breaking off and entering the air stream, thereby becoming contaminants.
Fiberglass	A term used to describe filter medias made with coarse or fine glass fibers.
Filter Bypass	Airflow around a filter or through an unintended path.
Filter Face Velocity	Air stream velocity just prior to entering the filter.
Final Filters	The last and most effective filter in a multi-stage progressive filtration system.
Final Resistance	The maximum recommended pressure drop across a filter. Used as an indicator as to when a filter should be changed. Expressed in "inches w.g.", may or may not be synonymous with final pressure drop.
Filter	A term generally applied to a filter used to remove airborne particulate from the air. A filter may be one of many types, such as panel, automatic self-renewable, extended surface, HEPA, or electrostatic. The term "filter" is sometimes erroneously used to describe a media used inside the device.
Filter Media	Material that makes up the filter element. Glass, cotton, synthetic or cellulose fibers are examples of filter media types.
fpm (feet per minute)	The speed (velocity) of the air at a given point in the air handling system. $fpm = cfm \div Area$ .
Fresh Air	Outdoor air introduced into a system.
Gas	Formless fluids which tend to occupy an entire space uniformly at ordinary temperatures.
Gas-Phase Filter	Composed of sorbent medium, e.g., natural zeolite, alumina-activated carbon, specialty carbons, synthetic zeolite, polymers.
Gel Seal	In cleanroom panels, the two compound silicone-sealing material in the downstream casing sides of knife-edge modules to effect a seal. Can be any color, but blue is the most popular.
HEPA	"High Efficiency Particulate Air" capable of removing a minimum of 99.97% of 0.3 micron DOP smoke particles from a test concentration of 80 micrograms per liter.
High Efficiency	Normally considered MERV 9 to MERV 15 (ASHRAE 52.2-2007).
Humidity	Water vapor within a given space.
Humidity, Relative	The ratio of the mole fraction of water vapor present in the air to the mole fraction of water vapor present in saturated air, at the same temperature and barometric pressure. Approximately, it equals the ratio of the partial pressure or density of the water vapor in the air to the saturation pressure or density, respectively, of water vapor at the same temperature.
Impingement	A method of filtration, effective on particles, with sufficient inertia to cause them to leave the air stream and collide with a fiber. Often referred to as viscous impingement, where fibers are coated with an adhesive.
Inch of Water	A unit pressure equal to the pressure exerted by a column of 1" high liquid water.
Inches - w.g.	Abbreviation for "inches - water column gauge". Method of reporting filter resistance (or pressure drop of a filter).
Infiltration	Air flowing inward through a wall, leak, etc.
Initial Resistance	Differential pressure across a clean filter. Expressed in inches W.G. Synonymous with initial pressure drop.
Interception	A special case of the impingement method of filtration that does not depend on the inertia of particles to bring them in contact with a fiber. Interception occurs when a particle follows the air stream, but touches a fiber as it attempts to flow around it. The particle is held by the inherent adhesive forces between the particle and fiber (van der Waals force).
Interstices	The points where two microfibers in filter media intersect.
Knife-Edge Seal	A narrow point where the peripheral sealing surface of a filter or filter frame provides a seal compression of a sharp edge into a gel.
Laminar Airflow	Airflow in parallel uniform lines, with uniform velocity and minimum eddies.
Laminar Flow Cleanroom	A cleanroom where a requirement for laminar airflow is usually 20 FPM.
Life Expectancy	The service life of changeout interval of a filter cartridge. Even with known dust holding capacity, the useful life will vary according to type and size of contaminants and particle distribution entering the filter on makeup air or 100% outside air systems.

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Filter Industry Definitions

Life-Cycle Cost	Sum of all filter costs from initial investment to disposal and replacement, including energy and maintenance costs.
Loft	Thickness and surface irregularity of filter media.
Low Efficiency	Considered MERV 1 to MERV 5 (ASHRAE 52.2-2007). Examples: Coarse fiberglass media, layered metal screens, standard polyester, roll filters.
Makeup Air	Outside air introduced to the HVAC system for ventilation, pressurization, or to replace exhausted air quantities.
Mass Transfer Zone	Adsorbent bed depth required to reduce the chemical vapor challenge to the breakthrough concentration.
Maximum Allowable Resistance	Published final pressure drop by manufacturer.
Maximum Differential Pressure	The maximum pressure differential which a filter is required to withstand without structural failure or collapse.
Media	Plural of medium. Materials of which elements are made.
Media Velocity	Speed of air flowing perpendicular to media. Divide total cfm by total media area.
Medium	The porous material through which air is passed to remove particulates. Generally made of fiberglass, synthetic fibers or cellulose. Usually confined within a frame or cell sides, the assembly is referred to as a filter or filter cartridge.
MERV	Minimum Efficiency Reporting Value, a single number that designates an efficiency level when an HVAC level filter is tested using the practice defined in ASHRAE Standard 52.2, <i>Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size</i> . Values are MERV 1 through MERV 16. Filters higher than MERV 16 are HEPA filters and are evaluated through a practice prescribed by IEST.
MERV-A	A value, noted as MERV-A, that denotes an air filter's efficiency after an optional conditioning step, prescribed in Appendix J of ASHRAE 52.2. The step simulated how a filter may perform over its life within a system by simulating natural filter loading. A properly performing filter should have a MERV-A equivalent to its rated MERV.
Micron Or Micrometer Symbol - μ	A unit of length in the metric system equal to one millionth of a meter (0.000039 inches). Commonly used as a measure of particle size or fiber size in filter media. The naked eye can see a particle approximately 10 microns or larger.
Migration	The process by which the adhesive or oily substance releases itself from the media fibers, enters the air stream, and becomes a contaminant. Migration may cause clogged coils and dirty ducts as the oil collects in the system, often called entrainment.
Net Effective Media Area	The amount of media area in a filter that is exposed to airflow and usable for collecting airborne contaminants. Opposite of blind spots or dead area. Synonymous with net effective filtering area.
Non-Laminar	As applied to cleanroom airflow, this is less desirable than laminar flow because the air supply is introduced at random, causing turbulence and induction, which stir the airborne dust particles, keeping them in suspension.
Non-Supported Media	Filters in which the points are extended and supported in the air stream only by the airflow, with no separate media support.
Off-Gassing	Any toxic gas released by a product during operation or combustion.
Packing Density	Ratio of fiber volume to total filter volume.
Panel Filter	A low efficiency filter consisting of a flat sheet of media that is usually contained within a cardboard frame. An alternate design has an internal wire frame, normally made with fiberglass or synthetic media from ½ to 2 inches thick. Generally called throw-a-ways.
Particle Count	In a cleanroom, the quantities of airborne particulate at work levels are monitored periodically during operation. Particle populations per cubic foot are simultaneously recorded for .5 micron and larger sizes. The better particle counters will ingest one cubic foot per minute and record the results. Systematic particle counts are an important tool in maintaining any quality cleanroom.
Particle Size Efficiency	Descriptive value of filter performance, loading based upon specific particle sizes.
Particle Sizes of Contaminants	Average airborne atmospheric dust is approximately 1 - 10 microns; heavy atmospheric dust, such as fly ash, is 10-100 microns. One micron = 1/25,000 inch. A human hair is approximately 75-150 microns.
Particle Distribution of Atmospheric Air	98% of all particles are smaller than 10 microns (invisible to the human eye) when evaluating by count, and 94% of the total particles, by weight, are 10 microns and smaller. The majority of all particulate matter in a standard sample of atmospheric air, whether by weight or by count, are smaller than the eye can see, and are not trapped by low efficiency filters.
Penetration	The leak rate through the filter, penetration is expressed as a percentage based upon a specific particle size. % penetration is the reciprocal of % efficiency. HEPA filters, for example, have a .03% maximum penetration on 0.3-micron particles.
Phosphorous Free	Urethane sealant free of phosphorous components.
Physicochemical Properties	Physical and chemical characteristics of sorbents (pore size, shape, surface area, affinities, etc.). Characteristics of sorbent medium, e.g., pore size, shape, surface area, etc.
Pleated Panel Filter	An extended pleated media filter with media support wire grid and beverage board enclosing frame. The media is a blend of cotton and synthetic fibers, with an ASHRAE efficiency of 25-30%.
Prefilters	A filter placed in front of another filter to remove the larger, heavier particles. Primary purpose is to extend life of the final filters. Prefilters are highly recommended in systems requiring high efficiency filtration, especially where a high concentration of lint is present. Two stages of prefilters are recommended for cleanroom applications.
Pressure Differential/Drop	The difference in static pressure measured at two locations in a ventilation system, as referenced herein, the difference between the upstream and downstream side of the filter. Usually measured in inches of water, abbreviated as "w.g.".
Pressure, Static	The fan-induced pressure which tends to burst or collapse a duct, which is required to move air through a system. Fans must push and pull air to deliver against resistance from duct friction, filters, coils, and other airflow obstructions.
Pressure, Total	The combination of static pressure and velocity pressure within a duct.
Pressure, Velocity	The pressure required to maintain movement of air through a duct.
Rated Capacity	The air volume, usually specified in cfm, which a manufacturer specifies for a specific air filter.
Residence Time	Length of time that a hazardous agent spends in contact with a sorbent or within the capture zone of a filter.

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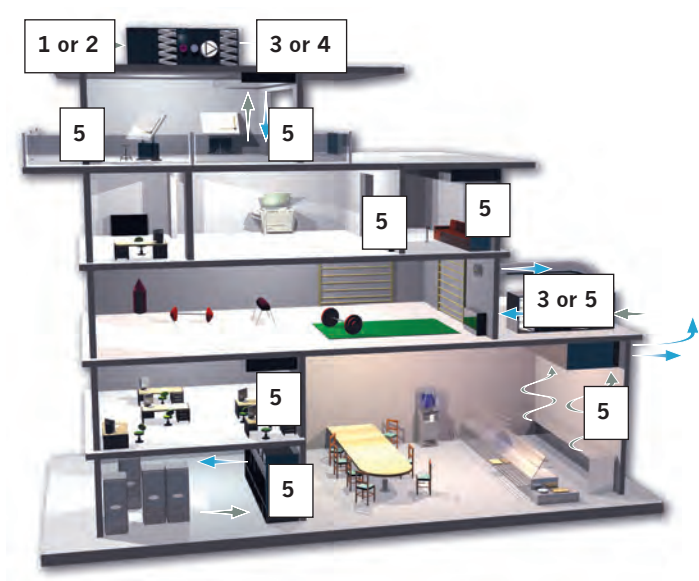
## Filter Industry Definitions

Return Air	Air which has been returned to the plenum from the building for recirculation. A return air duct will generally be found before the filter media where the return air is mixed with incoming fresh air. Also, referred to as RECIRCULATED AIR.
S.B.S. (Sick Building Syndrome)	Building related illness. Illness whose cause is related to conditions inside the building.
Scan Test	Technique for locating pinhole leaks or glue-line defects in HEPA filters by inspecting the entire leaving airside of the filter with an appropriate leak detector. Cold DOP with 0.5-micron diameter particles is used as the challenge aerosol. Cold DOP scan testing may be performed at the factory or on the job site.
Skin Loading	The condition occurring when collected particles build up on the surface of the media, plugging the spaces between fibers. Also known as blocking or surface loading. As a rule, the finer the media, the more susceptible it is to skin loading by "coarse" particles.
Sorbent	Porous medium that collects gases and vapors only.
Static Pressure	The potential pressure exerted in all directions by a fluid. For a fluid in motion, it is measured in the direction of flow.
Static Tip	Device inserted at right angles to an airstream to measure static pressure.
Steady State	A condition of equilibrium where all things are constant. Aerosol concentrations no longer change once steady-state occurs.
Stoke's Law	A physical law which approximates the velocity of a particle falling under the action of gravity through a fluid. The particles will accelerate until the frictional drag of the fluid just balances the gravitational acceleration, after which, it will continue to fall at a constant velocity, known as the terminal or free-settling velocity.
Straining	A method of filtration that removes larger particles. Straining occurs when a particle is larger than the space between fibers and cannot pass through them.
SULPA	Super low penetrating air (filter) with 99.9999% efficiency on 0.12-micron particles.
Supported Media	Filters in which the pleats are supported and separated their full length.
Surface Area (Carbon)	The surface area of granulated activated carbon is determined by the BET method, which utilizes the adsorption of nitrogen at liquid nitrogen temperatures in the calculation. Surface area is usually expressed in square meters per gram of carbon.
Tackifier Migration	The process by which the adhesive or oily substance releases itself from the media fibers, enters the airstream, and becomes a contaminant. Migration may cause clogged coils and dirty ducts as the adhesive or oil collects in the system.
Terminal Module	A sealed, mounted, ducted HEPA filter - not room side replaceable.
Ton of Refrigeration	A useful refrigerating effect equal to 3516 wafts (12,000 BTUH).
Total Pressure	Total pressure is the sum of static and velocity pressure. Not including temperature changes, it is the sum energy potential of liquid or gas.
UL Ratings	Smoke contribution ratings applied to filters by UL test standard 900 (Underwriters Laboratories).
ULPA	Ultra low penetration air (filter) with efficiency of 99.9995% on 0.12 micron particles.
Unloading	The process by which dirt, originally stopped by the filter, is released back into the air stream.
Vapor	The gaseous form of substances that are normally solid or liquid at ambient temperatures.
Vapor Pressure	Partial pressure of a liquid's vapor required to maintain the vapor in equilibrium with the condensed liquid or solid.
Velocity Pressure	Velocity pressure is the energy associated with a liquid or gas, based upon its velocity and density. Velocity pressure is proportional to the square of velocity. It is akin to the kinetic energy of a system.
Ventilation	The process of supplying or removing air by natural or mechanism means to or from any space. Such air may or may not have been conditioned.
V.O.C.'S	Volatile organic components from a variety of furniture finishes, carpets or drapes, cleaning and personal products, that evaporate at room temperatures.
w.g.	See inches water gauge.
Wet-Laid Media	An ultra-fine fiberglass media "paper" used in most mini-pleat filters and all current HEPA types.

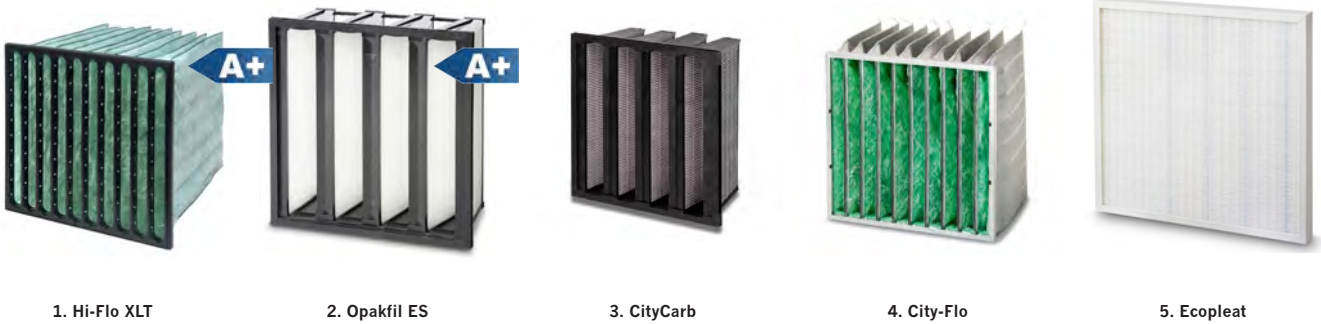
## Public buildings

Camfil ventilation filters prevent airborne particles from reducing air flow volumes in HVAC systems. During their lifetime, these filters keep air-handling systems clean so they can perform in accordance with design parameters.

These same filters also help safeguard people’s wellbeing and health. Camfil’s comfort air filters are commonly used in for example office buildings, schools, conference centres, shopping malls.

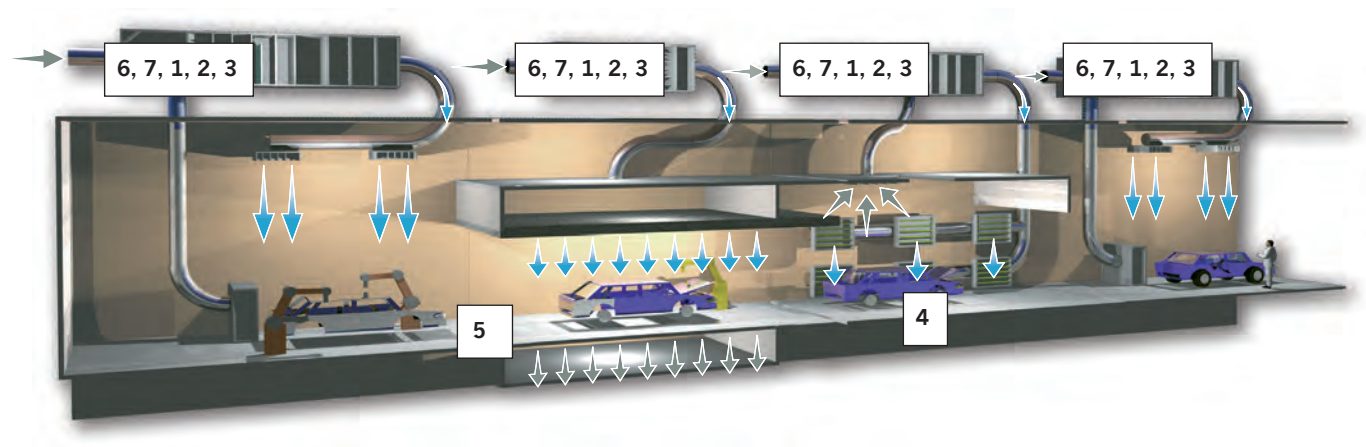


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## Automotive

Few industrial applications demand such a clean working environment as paint facilities. Paint spraying facilities require a constant supply of fresh air for hygiene and safety reasons. We currently provide clean air and services to many major automotive plants throughout the world. We provide the best possible cost effective clean air solutions, customized and performance-optimized to meet your demands. Supplied and delivered exactly according to your needs – with Camfil.



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1. Hi-Flo XLT



2. S-Flo



3. Opakfil ES



4. Airopac HT/Panolair HT



5. CDM-600



6. 30/30



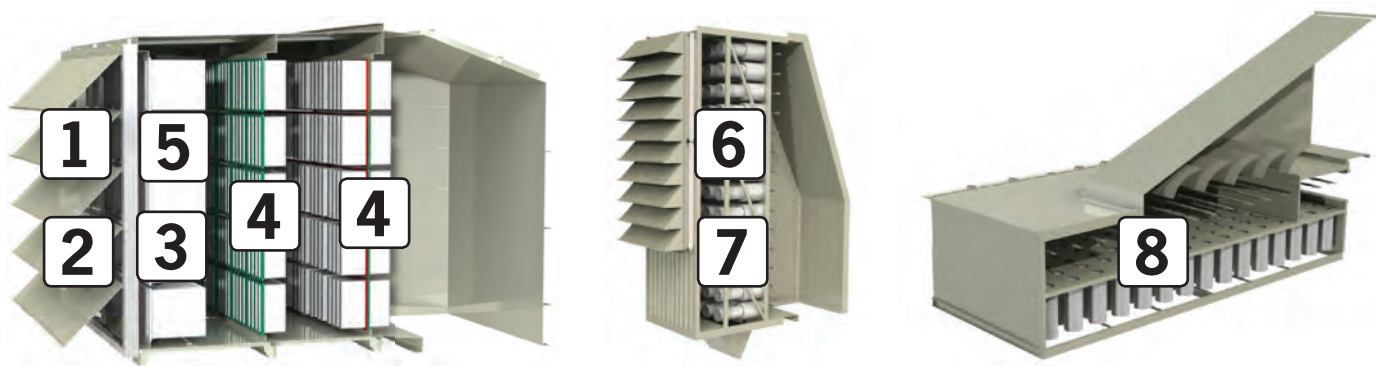
7. Hi-Cap

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

## Power systems

Clean air is vital to all combustion processes. The prime function of an inlet filter system is to protect the gas turbine from pollutants in the air, as particles entering can cause costly damages like erosion, corrosion and fouling. Erosion is a permanent degradation, mainly caused by coarse particles, while corrosion is caused by salt in combination with sulphur, and high temperatures. Smaller particles cause fouling of turbine blades, and thus affecting performance negatively. A secondary effect is an increase in temperatures, as heat transfer effectiveness is reduced, and ultimately the life of the hot section. Effective capture of particulate and airborne salt is therefore of vital importance for long and efficient operation. If not removed by the inlet system, particles will force operators to more frequently water wash the compressor, either by unnecessary on-line washing or during costly shut downs.

It is also important to understand the complexity of differentiating air filters. Most air filters remain in a system for months or even years. During this time, the filter will experience several environmental variations like changes in temperature, humidity, airflow velocity and particle load. To prevent this, and make sure our filters withstand the severe real life conditions once in operation; all GT filters are being developed and tested both at our own brand new Tech center, or at a third party company. For your best choice and solution, please contact your local Camfil-office for consultation, recommendation and calculation.



These are general recommendations for gas turbine air inlet systems. For consultation and details, please contact your nearest Camfil office.



1. CamVane 100



2. CamClose



3. Cam-Flo XMGT



4. CamGT



5. Cam-Flo GT /  
CamGuard



6. CamPulse GTC/GTD



7. CamPulse CamBrane

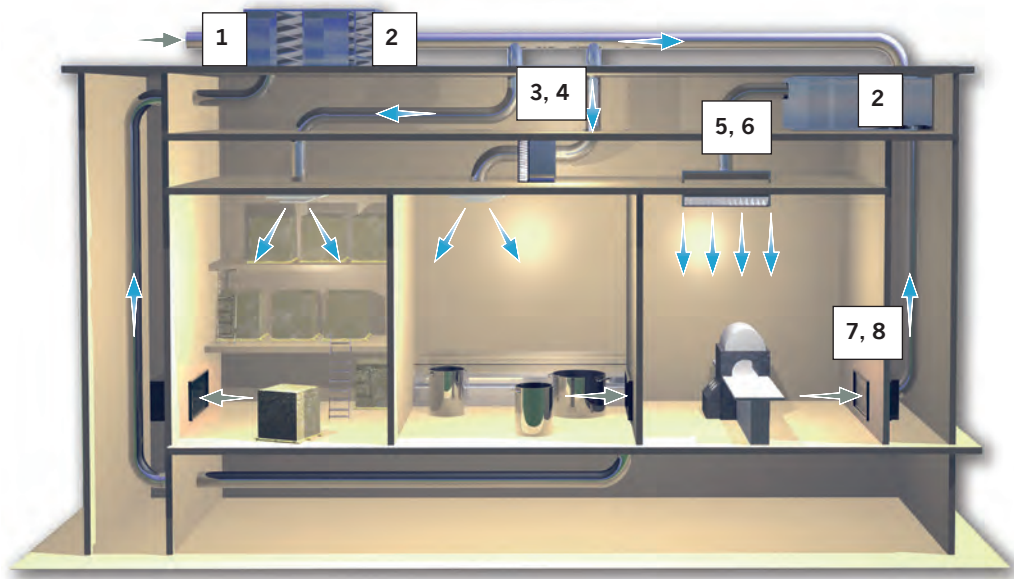


8. Tenkay



## Food and beverage

Beverages protecting human health is a major concern for governments throughout the world. In France, for instance, the National Agency for Food Health and Safety (AFSSAL) can recommend to the authorities that the requisite health policy measures be taken. To prevent the air conditioning system from becoming a microbe nest, temperature and humidity must be controlled and accumulated organic matter removed, as clogged exchangers provide good support for the development of microorganisms. Talk with the experts in Clean air solutions – Camfil.



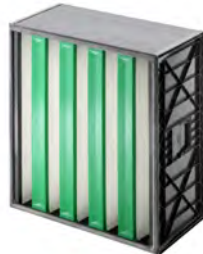
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1. Opakfil ProSafe F7



2. Opakfil ProSafe F8



3. Absolute VG



4. Slimline RSR



5. CleanSeal AP



6. Silenthood



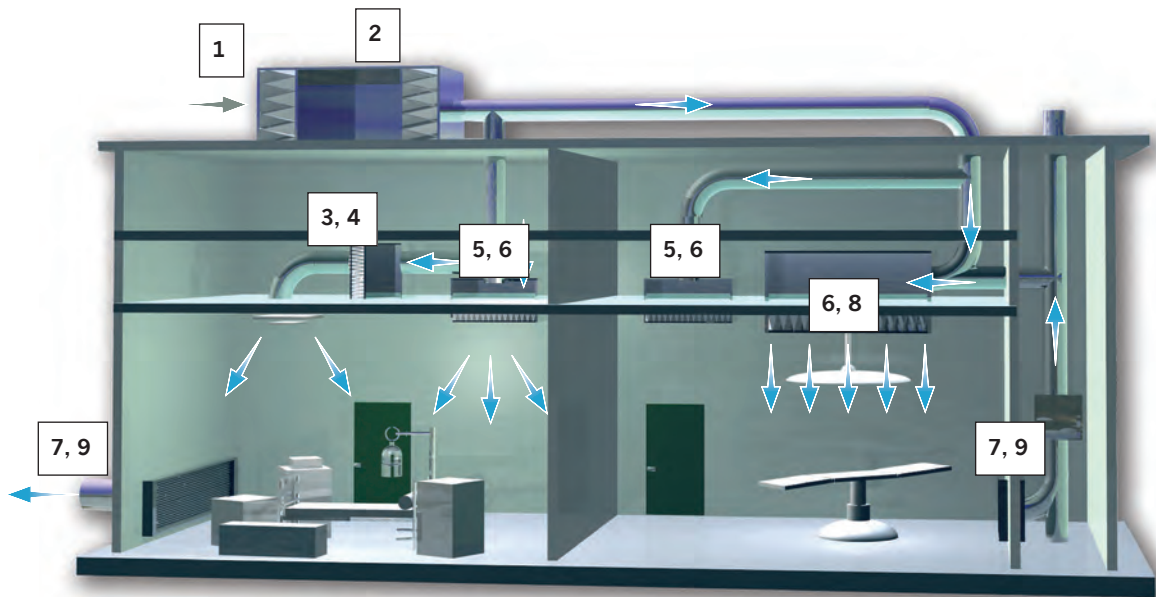
7. 30/30



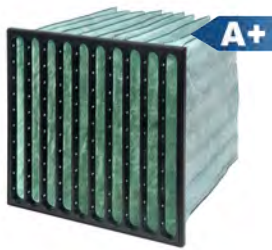
8. Ecopleat

## Hospitals

Nowhere is air filtration more important than in health care facilities. Air filters offer excellent protection from airborne diseases in health care facilities, provided they form part of an overall air quality control programme. Camfil superior components include air filters, air filter housings or holding frames, air changes supplied to the conditioned space, temperature and humidity control, outside air introduction and appropriate control of air flow to protect visitors from undue exposure.



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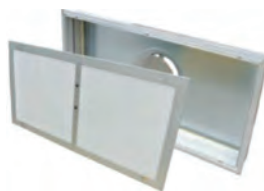
1. Hi-Flo XLT F7/F8



2. Opakfil ES



3. Absolute DG



4. Slimline RSR



5. CleanSeal



6. Megalam MD14



7. Ecopleat



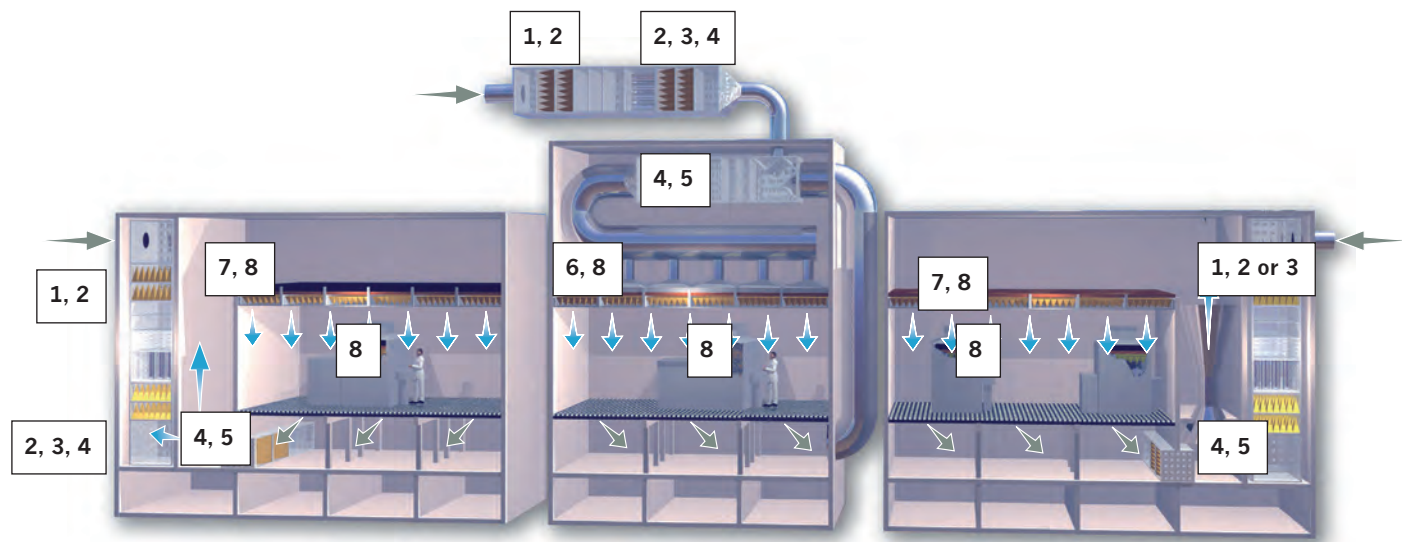
8. CleanSeal AP



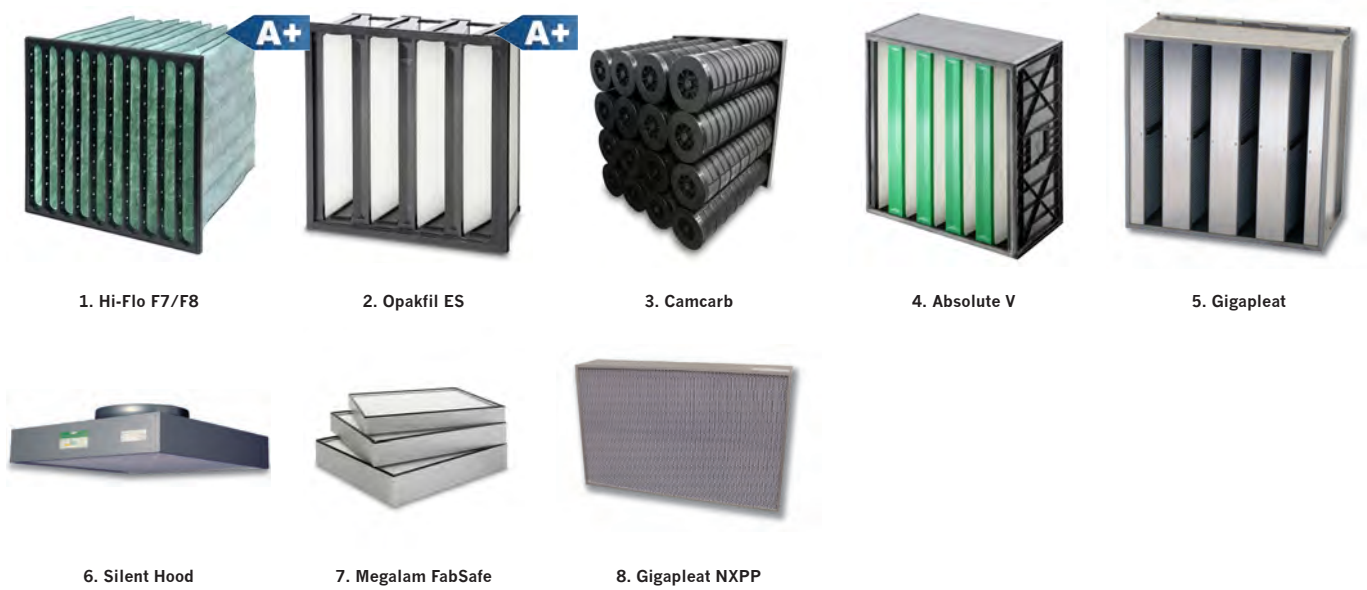
9. CamSafe 2

# Microelectronics

Advanced production methods often require very clean air, and in many cases these requirements are certain to increase. Camfil is recognized as the leading supplier of high efficiency filtration products for the microelectronics industry. HEPA/ULPA filters are produced within controlled environments in our ISO 9000-certified plants. Our large production capacity ensures the availability of our products at all times throughout the world.



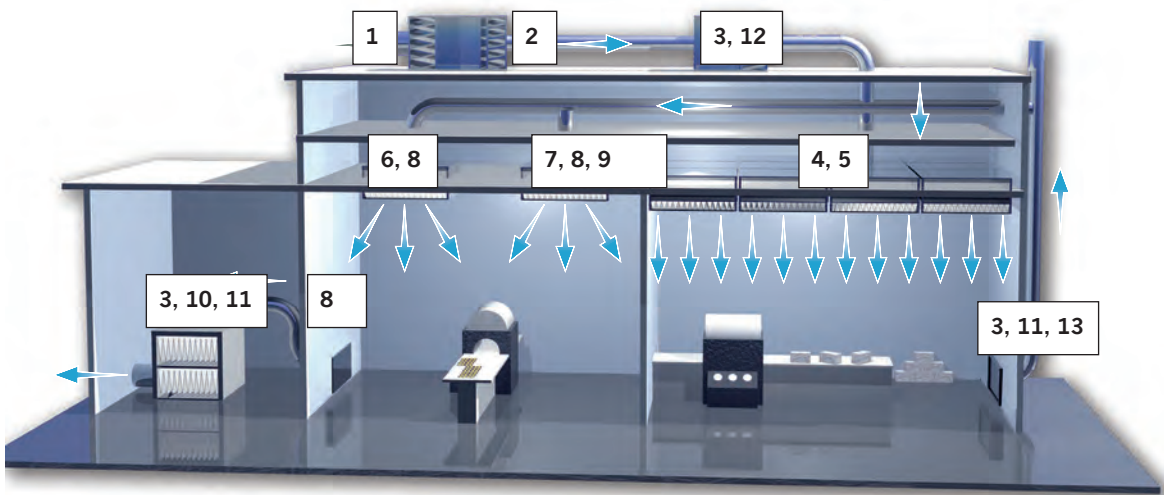
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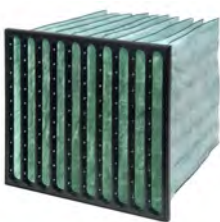


Life Science

For the past forty years we have been a leading supplier of air filtration products and services to the Bio-Pharma Industry. Many of our clients have multiple facilities located around the world. Camfil is viewed by many of the largest Pharmaceutical manufacturers as a partner and well positioned to support their air filtration demands on a local and global basis.



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1. Hi-Flo ProSafe F7



2. Opakfil ProSafe



3. Absolute VG XL



4. Absolute DG



5. Megalam MX, MG



6. CleanSeal AP



7. Pharmaseal AP



8. Pharmaseal Exhaust AP



9. CleanSeal



10. Camsafe 2



11. Airopac/Opakaire




12. FCBL-A Classe C



13. Ecopleat

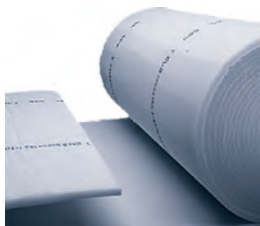


Explanation for symbols

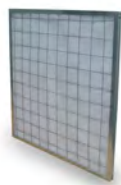
					
Molecular	2 in 1 Media	High Airflows	Low Pressure Drop	Efficiency Guarantee	
					
Test Standard EN779:2012	Test Standard EN1822	Test Standard ISO10121	Test Standard ISO16890	LCC Optimized (Lifecycle Optimized)	
					
Prosafe	Fabsafe	Haze Free	UL 900	IAQ Public Buildings	Mount with the pockets Vertical
					
Ozone 3	Ozone 5	Ozone 6	Ozone 7	Ozone 8	Ozone 9
					
CREO Approved	MagiCad Certified	Allergy friendly Quality Tested	P-Labeled	Singapore Green Building Product	A+ Eurovent Energy Classification
					
Energy Classification	Eurovent Certification	Gasket Position			

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

## Products



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**Pleated Filters**  
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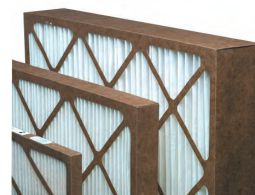
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**Primary Bag Filters**  
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**Primary Bag Filters**  
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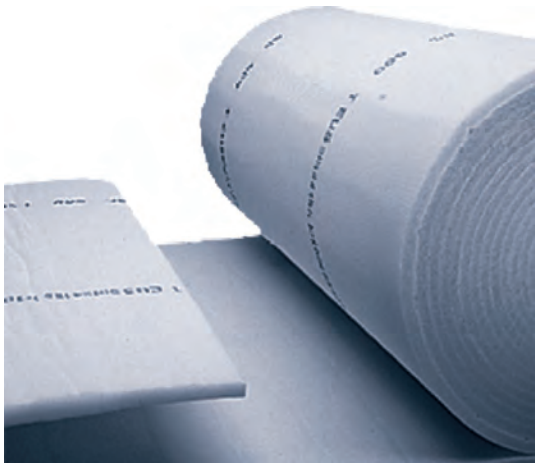


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Media Rolls



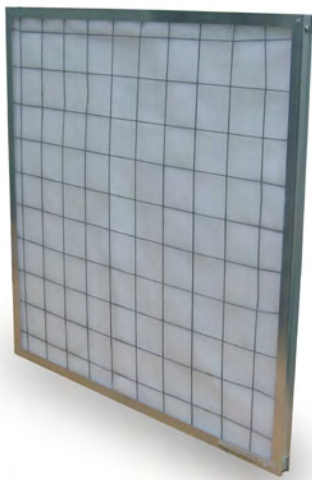
Advantages

- **CM:**
    - Smooth airflow through paint booths
    - Progressively built up thermal bonded polyester fibre
- **CDM 600:**
    - Thermal bonded polyester fibre
    - Enhances laminar air flow patterns
    - Treated with special adhesive to prevent dust loss due to vibration

**Application:** CM: For use as a prefilter in air conditioning, and spray booth ventilation  
CDM: For fine filtration in air conditioning devices and installations, particularly final filtration in Automotive spray booths and drying cabinets.  
**Type:** Media Roll  
**Media:** CM: Synthetic, CDM: Polyester fibre.  
**Temperature max:** 80°C - 100°C maximum in continuous service  
**Fire Rating:** DIN53438 class F1 for CM, UL 900 for CDM

Article Number	Type	Media	ASHRAE 52.2:2017	EN779:2012	ISO16890	Dimensions WxL (m)	Pressure drop (Pa)	Velocity (m/s)	Unit volume m³
5200003	CM-355	Synthetic	MERV 6	G3	Coarse 50%	2.0 x 20	30	1.0	0.4
5200006	CM-360	Synthetic	MERV 7	G4	Coarse 60%	2.0 x 20	45	1.0	0.4
5200013	Camtex CDM600	Polyester Fiber	MERV 10	M5	Coarse 85%	2.0 x 20	85	1.0	0.8
5200015	Camtex CDM600	Polyester Fiber	MERV 10	M5	Coarse 85%	1.7 x 20	85	1.0	0.7

## Fan Coil Filters



### Advantages

- Protection via 2 grids
- Ultra compact
- Supported media - upstream and downstream metal face grids
- Progressively built-up thermal bonded polyester fibre

**Application:** Prevention of dust and dirt build up on heating/cooling coils within ventilation systems

**Type:** Prefilter

**Frame:** Mill-finished aluminium profile

**Media:** Polyester fibre

**Temperature max:** 80°C - 100°C maximum in continuous service

**Holding Frame:** Type 8

**Fire rating:** DIN 53438 class F1



Article Number	Type	ASHRAE 52.2:2017	EN779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/Pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
5404501	FCF 24x24x1-G3	MERV 6	G3	Coarse 50%	597 x 597 x 22	3400/115	0.356	1.35
5404511	FCF 24x12x1-G3	MERV 6	G3	Coarse 50%	597 x 292 x 22	1700/144	0.174	1.57
5404001	FCF 24x24x1-G4	MERV 7	G4	Coarse 60%	597 x 597 x 22	3400/140	0.356	1.39
5404002	FCF 24x12x1-G4	MERV 7	G4	Coarse 60%	597 x 292 x 22	1700/190	0.174	1.29



Media Holding Frame (MHF)



Advantages

- Suitable for high humidity conditions
- Progressively built-up thermal bonded polyester fibre
- Replaceable filter media

**Application:** Prevention of dust and dirt build up on heating/cooling coils within ventilation systems

**Type:** Prefilter

**Frame:** Mill-finished aluminium profile

**Media:** Polyester fibre

**Temperature max:** 80°C - 100°C maximum in continuous service

**Holding Frame:** Front and side access housings and frames are available, Type 8 and FC Housings

**Fire Rating:** DIN 53438 class F1



Article Number	Type	ASHRAE 52.2:2017	EN779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/Pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
5402501	MHF 24x24x2-G3	MERV 6	G3	Coarse 50%	594 x 594 x 46	3400/100	0.57	1.17
5402502	MHF 12x24x2-G3	MERV 6	G3	Coarse 50%	289 x 594 x 46	1700/150	0.3	1.52
5402001	MHF 24x24x2-G4	MERV 7	G4	Coarse 60%	594 x 594 x 46	3400/110	0.57	1.69
5402002	MHF 12x24x2-G4	MERV 7	G4	Coarse 60%	289 x 594 x 46	1700/160	0.3	1.18

AeroPleat® III



Advantages

- Moisture resistant cardboard frame
- Robust construction
- Comprehensive range of standard and non standard sizes
- Fully supported media bonded onto a wire support grid
- Bonded into case to eliminate air by-pass

**Application:** Prevention of dust and dirt build up on heating/cooling coils within ventilation systems

**Type:** Prefilter

**Frame:** Moisture resistant cardboard

**Media:** Mixture of Polycotton and synthetic fibre

**Recommended final pressure drop:** 250 Pa

**Temperature:** 70°C maximum in continuous service

**Holding frames:** Front and side access housings and frames are available, Type 8 and FC Housings

**Fire rating:** UL 900

Article Number	Type	ASHRAE 52.2:2017	EN779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/Pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
116300001	Aeropleat III 20x16x2	MERV 8	G4	Coarse 65%	394 x 495 x 44	1887/70	0.6	0.4
116300002	Aeropleat III 20x20x2	MERV 8	G4	Coarse 65%	495 x 495 x 44	2363/70	0.8	0.5
116300003	Aeropleat III 25x20x2	MERV 8	G4	Coarse 65%	495 x 622 x 44	2950/70	1.0	0.6
116300004	Aeropleat III 25x16x2	MERV 8	G4	Coarse 65%	394 x 622 x 44	2363/70	0.73	0.5
116300005	Aeropleat III 24x24x2	MERV 8	G4	Coarse 65%	594 x 594 x 44	3400/70	1.13	0.65
116300006	Aeropleat III 24x12x2	MERV 8	G4	Coarse 65%	289 x 594 x 44	1656/70	0.57	0.35
116300007	Aeropleat III 24x20x2	MERV 8	G4	Coarse 65%	495 x 597 x 44	2839/70	0.96	0.55
116300008	Aeropleat III 24x18x2	MERV 8	G4	Coarse 65%	444 x 597 x 44	2550/70	0.85	0.5
116307001	Aeropleat III 24x24x4	MERV 8	G4	Coarse 65%	594 x 594 x 95	3400/50	2.11	1.2
116307002	Aeropleat III 24x12x4	MERV 8	G4	Coarse 65%	289 x 594 x 95	1700/50	1.05	0.65
116307003	Aeropleat III 20x20x4	MERV 8	G4	Coarse 65%	492 x 492 x 95	2336/50	1.46	0.9
116307004	Aeropleat III 20x16x4	MERV 8	G4	Coarse 65%	390 x 492 x 95	1853/50	1.17	0.75
116307005	Aeropleat III 25x16x4	MERV 8	G4	Coarse 65%	390 x 619 x 95	2332/50	1.46	0.9
116307007	Aeropleat III 24x20x4	MERV 8	G4	Coarse 65%	492 x 594 x 95	2768/50	1.76	1.05

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

30/30®



Advantages

- Water resistant cardboard frame
- Robust construction
- Bonded cross members to maintain pleat spacing
- Fully supported media bonded onto a wire support grid
- Radial pleat design for full media utilization
- Replaceable filter media

**Application:** Prevention of dust and dirt build up on heating/cooling coils within ventilation systems

**Type:** Prefilter

**Frame:** Rigid water resistant cardboard

**Media :** Blended polyester

**Recommended final pressure drop:** 250 Pa

**Temperature:** 70°C maximum in continuous service

**Holding frames:** Front and side access housings and frames are available, Type 8 and FC Housings

**Fire rating:** UL 900



Article Number	Type	ASHRAE 52.2:2017	EN779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/Pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
54862001	30/30 20x16x1	MERV A 8A	G4	Coarse 70%	394 x 495 x 22	1326/60	0.5	0.3
54862002	30/30 20x20x1	MERV A 8A	G4	Coarse 70%	495 x 495 x 22	1650/60	0.61	0.4
54862003	30/30 25x20x1	MERV A 8A	G4	Coarse 70%	495 x 622 x 22	2065/60	0.74	0.55
54862004	30/30 25x16x1	MERV A 8A	G4	Coarse 70%	394 x 622 x 22	1650/60	0.62	0.42
54862005	30/30 24x24x1	MERV A 8A	G4	Coarse 70%	594 x 594 x 22	2380/60	0.91	0.6
54862010	30/30 24x12x1	MERV A 8A	G4	Coarse 70%	292 x 594 x 22	1190/60	0.46	0.3
54862011	30/30 24x20x1	MERV A 8A	G4	Coarse 70%	495 x 594 x 22	1980/60	0.74	0.53
49880001	30/30 20x16x2	MERV A 8A	G4	Coarse 70%	394 x 495 x 44	1870/80	0.92	0.44
49880002	30/30 20x20x2	MERV A 8A	G4	Coarse 70%	495 x 495 x 44	2363/80	1.11	0.55
49880003	30/30 25x20x2	MERV A 8A	G4	Coarse 70%	495 x 622 x 44	2958/80	1.39	0.7
49880004	30/30 25x16x2	MERV A 8A	G4	Coarse 70%	394 x 622 x 44	2363/80	1.15	0.55
49880005	30/30 24x24x2	MERV A 8A	G4	Coarse 70%	594 x 594 x 44	3400/80	1.61	0.78
49880006	30/30 24x12x2	MERV A 8A	G4	Coarse 70%	289 x 594 x 44	1700/80	0.78	0.4
49880009	30/30 20x14x2	MERV A 8A	G4	Coarse 70%	343 x 495 x 44	1658/80	0.77	0.25
49880012	30/30 24x20x2	MERV A 8A	G4	Coarse 70%	495 x 594 x 44	2839/80	1.33	0.45
49880015	30/30 24x18x2	MERV A 8A	G4	Coarse 70%	444 x 594 x 44	2550/80	1.21	0.61
49880017	30/30 24x16x2	MERV A 8A	G4	Coarse 70%	394 x 594 x 44	2270/80	1.1	0.55
59413001	30/30 24x24x4	MERV A 8A	G4	Coarse 70%	594 x 594 x 95	3400/70	2.58	1.45
59413002	30/30 24x12x4	MERV A 8A	G4	Coarse 70%	289 x 594 x 95	1700/70	1.29	0.6
59413003	30/30 20x20x4	MERV A 8A	G4	Coarse 70%	492 x 492 x 95	2363/70	1.76	0.3
59413004	30/30 20x16x4	MERV A 8A	G4	Coarse 70%	390 x 492 x 95	1870/70	1.46	0.25
59413005	30/30 25x16x4	MERV A 8A	G4	Coarse 70%	390 x 619 x 95	2363/70	1.83	0.25
59413006	30/30 25x20x4	MERV A 8A	G4	Coarse 70%	492 x 619 x 95	2958/70	2.19	0.45
59413008	30/30 24x20x4	MERV A 8A	G4	Coarse 70%	492 x 594 x 95	2839/70	2.11	1.02
59413010	30/30 25x25x4	MERV A 8A	G4	Coarse 70%	619 x 619 x 95	3689/70	2.79	0.5

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Dual10



Advantages

- Moisture resistant frame board
- Diagonal Support
- Radial Pleats
- Proprietary Dual High Lofted Fibers
- Welded Steel Grid with Corrosion Inhibitor
- Built Strong

**Application:** Prevention of dust and dirt build up on heating/cooling coils within ventilation systems

**Type:** Prefilter

**Frame:** Rigid water resistant cardboard

**Media :** Dual layered, blended polyester

**Recommended final pressure drop:** 250 Pa

**Temperature:** 70°C maximum in continuous service

**Holding frames:** Front and side access housings and frames are available, Type 8 and FC Housings

**Fire rating:** UL 900



Article Number	Type	ASHRAE 52.2:2017	EN 779:2012	ISO 16890	Dimensions WxHxD (mm)	Air Flow/Pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
540F-FG406331005	Dual10 24x24x2	MERV A 9A	M5	ePM10 50%	594x594x44	3400/75	1.56	0.78
540F-FG406331012	Dual10 24x20x2	MERV A 9A	M5	ePM10 50%	495x594x44	2839/75	1.30	0.47
540F-FG406331006	Dual10 24x12x2	MERV A 9A	M5	ePM10 50%	289x594x44	1700/75	0.78	0.40
540F-FG406331002	Dual10 20x20x2	MERV A 9A	M5	ePM10 50%	495x495x44	2363/75	1.09	0.45
540F-FG406332005	Dual10 24x24x4	MERV A 9A	M5	ePM10 50%	594x594x95	3400/68	2.47	1.50
540F-FG406332012	Dual10 24x20x4	MERV A 9A	M5	ePM10 50%	492x594x95	2839/68	2.05	1.10
540F-FG406332006	Dual10 24x12x4	MERV A 9A	M5	ePM10 50%	289x594x95	1700/68	1.24	0.75
540F-FG406332002	Dual10 20x20x4	MERV A 9A	M5	ePM10 50%	492x492x95	2363/68	1.70	1.00



AP Thirteen



Advantages

- Lowest cost of ownership for a MERV 13 filter in a pleated panel design
- Water resistant cardboard frame
- Pleated panel filter for meeting LEED requirements
- Available in 2" and 4" depths

**Application:** Prevention of dust and dirt build up on heating/cooling coils within ventilation systems

**Type:** Prefilter

**Media :** Moisture resistant cardboard

**Media:** Electrostatic Synthetic

**Recommended final pressure drop:** 250 Pa

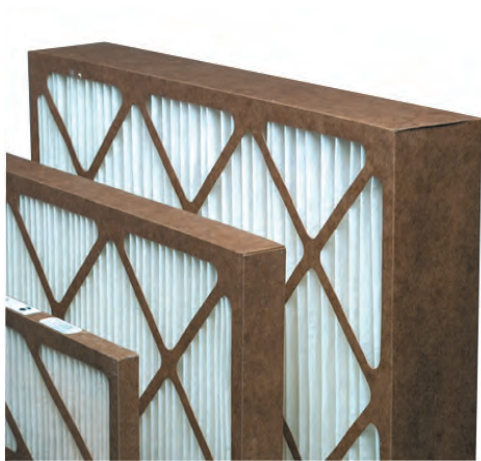
**Temperature:** Maximum continuous operating temperature of 70°C

**Holding frames:** Front and side access housings and frames are available, Type 8 and FC Housings

**Fire rating:** UL 900

Article Number	Type	ASHRAE 52.2:2017	ISO16890	Dimensions WxHxD (mm)	Air Flow/Pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
540F-FG405413005	AP-THIRTEEN 24x24x2	MERV 13	ePM10 60%	594 x 594 x 44	3400/100	1.6	0.68
540F-FG405413006	AP-THIRTEEN 24x12x2	MERV 13	ePM10 60%	289 x 594 x 44	1700/100	0.8	0.4
540F-FG405413007	AP-THIRTEEN 24x20x2	MERV 13	ePM10 60%	495 x 594 x 44	2839/100	1.3	0.58
540F-FG405414001	AP-THIRTEEN 24x24x4	MERV 13	ePM10 60%	594 x 594 x 95	3400/85	2.6	1.25
540F-FG405414002	AP-THIRTEEN 24x12x4	MERV 13	ePM10 60%	289 x 594 x 95	1700 /85	1.3	0.67
540F-FG405414007	AP-THIRTEEN 24x20x4	MERV 13	ePM10 60%	492 x 594 x 95	2839/85	2.1	1.1

30/30® WR



Advantages

- Superior moisture resistance
- A multi-layered noncellulose media, repels water, captures dust, lint, pollen and other particulate contaminants
- Bonded into case to eliminate air bypass
- Large media surface
- High media surface area

**Application:** Prevention of dust and dirt build up on heating/cooling coils within ventilation systems

**Type:** Prefilter

**Frame:** Moisture resistant masonite frame board

**Media:** Glass fibre

**Recommended final pressure drop:** 250 Pa

**Holding frames:** Front and side access housings and frames are available, Type 8 and FC Housings

**Temperature:** Maximum continuous operating temperature of 70°C

**Fire rating:** UL 900



Article Number	Type	ASHRAE 52.2:2017	EN779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/Pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
125343005	30/30 WR 24x24x2	MERV A 7A	G4	Coarse 70%	595 x 595 x 44	3400/60	2.61	0.65
125343006	30/30 WR 24x12x2	MERV A 7A	G4	Coarse 70%	289 x 595 x 44	1700/60	1.27	0.33
402137001	30/30 WR 24x24x4	MERV A 7A	G4	Coarse 70%	595 x 595 x 95	3400/55	4.24	1.2
402137002	30/30 WR 24x12x4	MERV A 7A	G4	Coarse 70%	289 x 595 x 95	1700/55	4.24	0.6

CityPleat



Advantages

- “2 in 1” filtration solution; particulate and molecular.
- Rapid Adsorption Dynamics (RAD)
- Ozone rating Oz5 or Oz6
- 100% incinerable
- Can be used to upgrade existing installations
- Lightweight and clean

**Application:** High efficiency particle filtration for deodarisation and removal of gas pollutants, used for filtration in offices, airports

**Type:** Prefilter for gas and particles removal

**Frame:** Moisture resistant cardboard

**Media:** Synthetic fibre and broad spectrum carbon

**Recommended temperature:** 0 - 40°C

**Recommended relative humidity:** 30 - 70%

**Recommended final pressure drop:** 250 Pa

**Maximum final pressure drop:** 350 Pa

**Ozone removal efficiency:** 50 - 70% depending on model and air flow. All values are  $\pm 15\%$

Article Number	Type	ASHRAE 52.2:2017	EN779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/Pressure drop (m³/hr/Pa)	Weight (kg)
5103001	CityPleat-100-594x594x44	MERV A 7A	G4	Coarse 65%	594 x 594 x 44	1900/ 135	1
5103007	CityPleat-100-289x594x44	MERV A 7A	G4	Coarse 65%	289 x 594 x 44	900/ 135	0.5
5103005	CityPleat-200-594x594x44	MERV A 7A	G4	Coarse 65%	594 x 594 x 44	3175/ 135	1.8
5103004	CityPleat-200-289x594x44	MERV A 7A	G4	Coarse 65%	289 x 594 x 44	1500/ 135	0.9
5103011	CityPleat-200-594x594x95	MERV A 7A	G4	Coarse 65%	594 x 594 x 95	3185/ 110	2
5103008	CityPleat-200-289x594x95	MERV A 7A	G4	Coarse 65%	289 x 594 x 95	1500/ 110	1
5103010	CityPleat-480-594x594x95	MERV A 7A	G4	Coarse 65%	594 x 594 x 95	3185/ 90	3.8
5103009	CityPleat-480-289x594x95	MERV A 7A	G4	Coarse 65%	289 x 594 x 95	1500/ 90	1.9

Full size test in Camfil molecular filtration test rig

Hi-Cap®



Advantages

- Optimized media surface by conical pocket shape
- Easy installation
- Robust construction
- Robust metal header frame
- High dust holding capacity

**Application:** Prevention of dust and dirt build up on heating/cooling coils within ventilation systems

**Type:** Prefilter Bag

**Frame:** Galvanised steel

**Media:** Polyester fibre

**Recommended final pressure drop:** 250 Pa

**Temperature:** 70°C maximum in continuous service

**Holding frames:** Front and side access housings and frames are available, Type 8 and FC Housings

**Fire rating:** DIN 53438 class F1



Article Number	Type	ASHRAE 52.2:2017	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/Pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)
3200005	HF 90/35-66	MERV 7	G4	Coarse 60%	592 x 592 x 360	3400/50	6	2.6	2.2
3200006	HF 90/35-56	MERV 7	G4	Coarse 60%	490 x 592 x 360	2800/50	5	2.2	2
3200007	HF 90/35-36	MERV 7	G4	Coarse 60%	287 x 592 x 360	1700/50	3	1.3	1.4
3200008	HF 90/35-55	MERV 7	G4	Coarse 60%	490 x 490 x 360	2334/50	5	1.8	1.7
3202009	HF 90/35- 592*59 2-6*580-66	MERV 7	G4	Coarse 60%	592 x 592 x 580	3400/30	6	4.2	2.6
3202033	HF 90/35- 490*592-5.580-66	MERV 7	G4	Coarse 60%	490 x 592 x 580	2800/30	5	3.5	2.2
3202016	HF 90/35-287*592-3.580-36	MERV 7	G4	Coarse 60%	287 x 592 x 580	1700/30	3	2	1.5



Hi-Cap Prosafe



Advantages

- Specially designed for Process Safety (Food and Life Science applications)
- Rigid self supported pockets
- Plastic molded frame with aerodynamic inlets
- Fully Incinerable
- Compliant to EC 1935:2004
- Compliant to VDI 6022 / ISO 846

**Application:** Prevention of dust and dirt build up on heating/cooling coils within ventilation systems

**Type:** Prefilter Bag

**Frame:** Process Safe Single Piece Polystyrene

**Media:** Polyester fiber

**Maximum flow:** 1.25 x nominal flow

**Temperature:** Max. 70°C under continuous operation

**Packing:** Hygienic packing in plastic bag. Outer packing: Environmental friendly cardboard box, easy to carry

**Prosafe certification:** All components able for Food contact according to EC1935:2004, Mircobial inertness according to ISO846, Hygienic product according to VDI6022. Full compatibility with Decontamination agents. Free of Phthalates, Bisphenol, Formaldehyde

Food and Beverage or Life-Science activities have set new standards in product quality and therefore require specific characteristics regarding process definition. Camfil, as the leader in clean air solutions and air filtration, has developed the complete ProSafe™ range of products designed for the most demanding processes, including safety, traceability and audits requirement.

Article Number	Type	ASHRAE 52.2:2017	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/Pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)
3204018-P	Hi-Cap ProSafe-G4-592x592-6x520	MERV 7	G4	Coarse 60%	592 x 592 x 520	3400/40	6	4.2	2.06
3204019-P	Hi-Cap ProSafe-G4-490x592-5x520	MERV 7	G4	Coarse 60%	490 x 592 x 520	2800/40	5	2.2	1.56
3204020-P	Hi-Cap ProSafe-G4-287x592-3x520	MERV 7	G4	Coarse 60%	287 x 592 x 520	1700/40	3	1.3	1.32
3204021-P	Hi-Cap ProSafe-G4-592x592-6x370	MERV 7	G4	Coarse 60%	592 x 592 x 370	3400/50	6	2.6	1.70
3204022-P	Hi-Cap ProSafe-G4-490x592-5x370	MERV 7	G4	Coarse 60%	490 x 592 x 370	2800/50	5	2.2	1.56
3204023-P	Hi-Cap ProSafe-G4-287x592-3x370	MERV 7	G4	Coarse 60%	287 x 592 x 370	1700/50	3	1.3	1.32

Hi-Cap XLS



Advantages

- Rigid self supporting pockets
- Plastic molded frame with aerodynamic inlets
- High mechanical strength
- Welded pocket construction

**Application:** Prevention of dust and dirt build up on heating/cooling coils within ventilation systems

**Type:** Prefilter Bag

**Frame:** Single Piece Polystyrene

**Media:** Polyester fibre.

**Recommended final pressure drop:** 250 Pa.

**Temperature:** 70°C maximum in continuous service.

**Holding frames:** Front and side access housings and frames are available, Type 8 and FC Housings.



Article Number	Type	ASHRAE 52.2:2017	EN779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/Pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)
3204001	HF XLS 90/35-66	MERV 7	G4	Coarse 60%	592 x 592 x 360	3400/45	6	2.6	1.68
3204002	HF XLS 90/35-56	MERV 7	G4	Coarse 60%	490 x 592 x 360	2800/65	5	2.2	1.56
3204003	HF XLS 90/35-36	MERV 7	G4	Coarse 60%	287 x 592 x 360	1700/65	3	1.3	1.32

# ECO<sup>®</sup> Moisture Separator



## Advantages

- Pre-drilled weeping holes for drainage or reclaim of valuable process oils
- Optional coalescer pad available for increased efficiency

**Applications:** High moisture situations in commercial or industrial processes, or oil-laden industrial applications. Includes weeping holes for drainage or reclaim of airborne oil or mists.

**Type:** Metal Prefilter

**Frame :** Galvanized steel or Stainless steel

**Efficiency:** 98%+ on droplets 20 microns and larger.

**Media:** Multi layered galvanized steel wire or stainless steel wire.

**Recommended final pressure drop:** 250 Pa when operated at 2.5 m/s. System design may dictate alternative changeout point.

**Airflow operating range:** Velocity of 2.25 m/s to 2.75 m/s, consult factory outside of this range.

Article Number	Application	Dimensions WxHxD (mm)	Actual Height (mm)	Actual Width (mm)	Rated Airflow (m/s)	Weight (kg)
Galvanized Steel						
064649-001	For built-up banks	594 x 594 x 95	593.85	593.85	3400	8.6
064649-002	For built-up banks	594 x 289 x 95	593.85	289.05	1700	4.5
064649-003	For built-up banks	289 x 594 x 95	289.05	593.85	1700	4.5
064649-004	For side access housings(includes sealing gasket on vertical side)	594 x 594 x 95	593.85	593.85	3400	8.6
064649-005	For side access housings(includes sealing gasket on vertical side)	594 x 289 x 95	593.85	289.05	1700	4.5
064649-006	For side access housings(includes sealing gasket on vertical side)	289 x 594 x 95	289.05	593.85	1700	4.5
Stainless Steel						
098512-001	For built-up banks	594 x 594 x 95	593.85	593.85	3400	8.6
098512-002	For built-up banks	289 x 594 x 95	289.05	593.85	1700	4.5
098512-003	For built-up banks	594 x 289 x 95	593.85	289.05	1700	4.5
098512-004	For side access housings(includes sealing gasket on vertical side)	594 x 594 x 95	593.85	593.85	3400	8.6
098512-005	For side access housings(includes sealing gasket on vertical side)	289 x 594 x 95	289.05	593.85	1700	4.5
098512-006	For side access housings(includes sealing gasket on vertical side)	594 x 289 x 95	593.85	289.05	1700	4.5

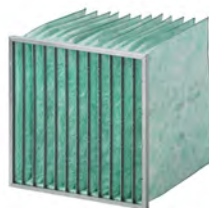
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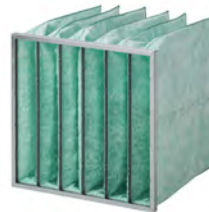
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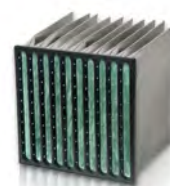
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Products



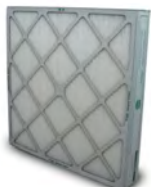
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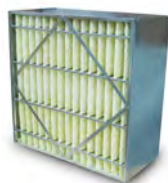
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**High Efficiency Panels**  
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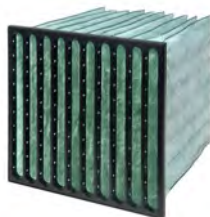
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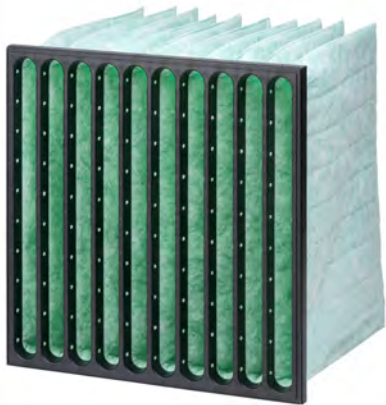


**ProSafe Selection**  
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**ProSafe Selection**  
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Hi-Flo XLT



Advantages

- The latest developed glass fiber media
- Low initial pressure drop
- Flat pressure drop curve
- New developed pocket design for the best air distribution
- Conical pockets
- Moulded, rigid and aerodynamic shaped plastic frame
- Less energy consumption

**Application:** Air conditioning applications and as pre filters for clean rooms

**Type:** Bag Filter

**Frame:** Plastic moulded

**Media:** Glass fiber

**Dimensions:** Filter front dimensions according EN 15805

**Rec. final pressure drop acc. EN 13053:** M5-F7: 200 Pa, F8-F9: 300Pa

**Maximum airflow:** 1,25 x nominal flow

**Temperature max:** 70°C

**RH. max:** 100%

**Mounting/Frames:** Front and side access housings and frames are available

**SGBP :** Applicable for F8 (✓✓ VERY GOOD) and F9 class (✓✓✓ EXCELLENT) only

Article number	Model Name	ASHRAE 52.2:2017	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/ pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy consumption	Energy class
3146001	6/520	MERV A 11A	M6	ePM2.5 50%	592x 592x 520	3400/60	10	6.1	2.26	25	23	755	B
3146002	6/520	MERV A 11A	M6	ePM2.5 50%	490x 592x 520	2700/60	8	5.2	2.03				B
3146003	6/520	MERV A 11A	M6	ePM2.5 50%	287x 592x 520	1700/60	5	3.3	1.63				B
3146017	6/640	MERV A 11A	M6	ePM2.5 50%	592x 592x 640	3400/55	10	7.5	2.3	25	23	667	B
3146018	6/640	MERV A 11A	M6	ePM2.5 50%	490x 592x 640	2700/55	8	6	1.6				B
3146019	6/640	MERV A 11A	M6	ePM2.5 50%	287x 592x 640	1700/55	5	3.7	1.4				B
3146101	7/520 50+	MERV A 13A	F7	ePM1 60%	592x 592x 520	3400/75	10	6.5	2.26	54	54	935	A
3146102	7/520 50+	MERV A 13A	F7	ePM1 60%	490x 592x 520	2700/75	8	5.2	2.03				A
3146103	7/520 50+	MERV A 13A	F7	ePM1 60%	287x 592x 520	1700/75	5	5.2	1.63				A
3146122	7/670 50+	MERV A 13A	F7	ePM1 60%	592x 592x 670	3400/65	10	7.9	2.3	54	54	780	A+
3146123	7/670 50+	MERV A 13A	F7	ePM1 60%	490x 592x 670	2700/65	8	6.3	1.6				A+
3146124	7/670 50+	MERV A 13A	F7	ePM1 60%	287x 592x 670	1700/65	5	3.8	1.4				A+
3146125	7/640 50+	MERV A 13A	F7	ePM1 60%	592x 592x 640	3400/70	10	7.5	2.3	54	54	867	A
3146126	7/640 50+	MERV A 13A	F7	ePM1 60%	490x 592x 640	2700/70	8	6	1.6				A
3146127	7/640 50+	MERV A 13A	F7	ePM1 60%	287x 592x 640	1700/70	5	3.7	1.4				A
3146202	8/520	MERV A 14A	F8	ePM1 70%	490x 592x 520	2700/180	8	5.2	2.03	80	79	1922	C
3146203	8/520	MERV A 14A	F8	ePM1 70%	287x 592x 520	1700/180	5	3.3	1.63				C
3146210	8/520	MERV A 14A	F8	ePM1 70%	592x 592x 520	3400/180	10	6.5	2.26				C
3146207	8/640	MERV A 14A	F8	ePM1 70%	592x 592x 640	3400/135	10	7.8	2.55	80	79	1538	C
3146208	8/640	MERV A 14A	F8	ePM1 70%	490x 592x 640	2815/135	8	6.3	1.8				C
3146209	8/640	MERV A 14A	F8	ePM1 70%	287x 592x 640	1650/135	5	3.9	1.75				C
3146301	9/520	MERV A 15A	F9	ePM1 85%	592x 592x 520	3400/180	10	6.5	2.26	88	83	2481	C
3146302	9/520	MERV A 15A	F9	ePM1 85%	490x 592x 520	2700/180	8	5.2	2.03				C
3146303	9/520	MERV A 15A	F9	ePM1 85%	287x 592x 520	1700/180	5	3.3	1.63				C
3146314	9/640	MERV A 15A	F9	ePM1 85%	592x 592x 640	3400/135	10	7.5	1.6	89	83	1660	B
3146315	9/640	MERV A 15A	F9	ePM1 85%	490x 592x 640	2700/135	8	6	1.6				B
3146316	9/640	MERV A 15A	F9	ePM1 85%	287x 592x 640	1700/135	5	3.7	1.4				B

Hi-Flo XLS



Advantages

- The latest developed glass fiber media
- Low initial pressure drop
- Flat pressure drop curve
- New developed pocket design for the best air distribution
- Conical pockets
- Moulded, rigid and aerodynamic shaped plastic frame
- Less energy consumption

**Application:** Air conditioning applications and as pre filters for clean rooms

**Type:** Bag Filter

**Frame:** Plastic moulded

**Media:** Glass fiber

**Dimensions:** Filter front dimensions according EN 15805

**Rec. final pressure drop acc. EN 13053:** M5-F7: 200 Pa, F8-F9: 300 Pa

**Maximum airflow:** 1,25 x nominal flow

**Temperature max:** 70°C

**RH. max:** 100%

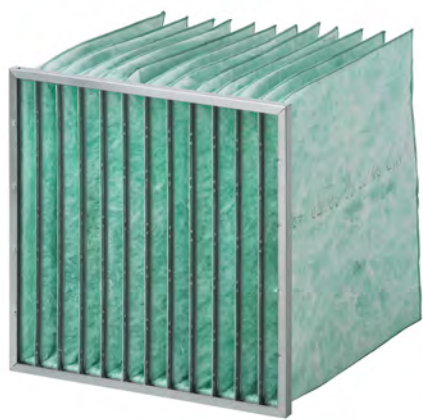
**Mounting/Frames:** Front and side access housings and frames are available

**SGBP :** Applicable for F9 class (✓✓ VERY GOOD) only

Article number	Model Name	ASHRAE 52.2:2017	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/ pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy consumption	Energy class
3146415	5/640	MERV A 10A	M5	ePM10 60%	592x 592x 640	3400/45	6	4.5	1	9	8	797	C
3146416	5/640	MERV A 10A	M5	ePM10 60%	490x 592x 640	2700/45	5	3.7	0.9				C
3146417	5/640	MERV A 10A	M5	ePM10 60%	287x 592x 640	1700/45	3	2.2	0.6				C
3146418	5/520	MERV A 10A	M5	ePM10 60%	592x 592x 520	3400/50	6	3.7	0.9	9	8	1196	D
3146419	5/520	MERV A 10A	M5	ePM10 60%	490x 592x 520	2700/50	5	3	0.8				D
3146420	5/520	MERV A 10A	M5	ePM10 60%	287x 592x 520	1700/50	3	1.8	0.6				D
3146421	5/370	MERV A 10A	M5	ePM10 60%	592x 592x 370	3400/60	6	2.6	0.8	9	8		E
3146422	5/370	MERV A 10A	M5	ePM10 60%	490x 592x 370	2700/60	5	2.2	0.7				E
3146423	5/370	MERV A 10A	M5	ePM10 60%	287x 592x 370	1700/60	3	1.3	0.5				E
3146020	6/640	MERV A 11A	M6	ePM2.5 50%	592x 592x 640	3400/60	6	4.5	1.2	23.7	23	1155	D
3146021	6/640	MERV A 11A	M6	ePM2.5 50%	490x 592x 640	2700/60	5	3.7	1				D
3146022	6/640	MERV A 11A	M6	ePM2.5 50%	287x 592x 640	1700/60	3	2.2	0.7				D
3146023	6/520	MERV A 11A	M6	ePM2.5 50%	592x 592x 520	3400/70	6	3.7	1.1	23.7	23	1541	E
3146024	6/520	MERV A 11A	M6	ePM2.5 50%	490x 592x 520	2700/70	5	3	0.9				E
3146025	6/520	MERV A 11A	M6	ePM2.5 50%	287x 592x 520	1700/70	3	1.8	0.6				E
3146026	6/370	MERV A 11A	M6	ePM2.5 50%	592x 592x 370	3400/85	6	2.6	0.9	23.7	23		E
3146027	6/370	MERV A 11A	M6	ePM2.5 50%	490x 592x 370	2700/85	5	2.2	0.8				E
3146028	6/370	MERV A 11A	M6	ePM2.5 50%	287x 592x 370	1700/85	3	1.3	0.6				E
3146128	7/640	MERV A 13A	F7	ePM1 60%	592x 592x 640	3400/85	6	4.5	0.9	54	54	1191	B
3146129	7/640	MERV A 13A	F7	ePM1 60%	490x 592x 640	2700/85	5	3.7	0.8				B
3146130	7/640	MERV A 13A	F7	ePM1 60%	287x 592x 640	1700/85	3	2.2	0.6				B
3146131	7/520	MERV A 13A	F7	ePM1 60%	592x 592x 520	3400/100	6	3.7	0.9	54	54	1860	D
3146132	7/520	MERV A 13A	F7	ePM1 60%	490x 592x 520	2700/100	5	3	0.8				D
3146133	7/520	MERV A 13A	F7	ePM1 60%	287x 592x 520	1700/100	3	1.8	0.5				D
3146134	7/370	MERV A 13A	F7	ePM1 60%	592x 592x 370	3400/165	6	2.6	0.9	54	54		E
3146135	7/370	MERV A 13A	F7	ePM1 60%	490x 592x 370	2700/165	5	2.2	0.7				E
3146136	7/370	MERV A 13A	F7	ePM1 60%	287x 592x 370	1700/165	3	1.3	0.5				E
3146317	9/640	MERV A 15A	F9	ePM1 85%	592x 592x 640	3400/240	6	4.5	1	89	86	3387	D
3146318	9/640	MERV A 15A	F9	ePM1 85%	490x 592x 640	2700/240	5	3.7	0.9				D
3146319	9/640	MERV A 15A	F9	ePM1 85%	287x 592x 640	1700/240	3	2.2	0.6				D
3146320	9/520	MERV A 15A	F9	ePM1 85%	592x 592x 520	3400/290	6	3.7	0.9	89	86	4169	E
3146321	9/520	MERV A 15A	F9	ePM1 85%	490x 592x 520	2700/290	5	3	0.8				E
3146322	9/520	MERV A 15A	F9	ePM1 85%	287x 592x 520	1700/290	3	1.8	0.5				E

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Hi-Flo M



Advantages

- Large surface area
- Save energy - optimised design (LCC)
- Comprehensive range of standard sizes
- New developed pocket design for the best air distribution
- Conical pockets
- Certified performance

**Application:** Air conditioning applications

**Type:** Bag Filter

**Frame:** Galvanised steel

**Media:** Glass fiber

**Dimensions:** Filter front dimensions according EN 15805

**Rec. final pressure drop acc. EN 13053:** M6-F7: 200 Pa, F9: 300 Pa

**Maximum airflow:** 1,25 x nominal flow

**Temperature max:** 70°C

**RH. max:** 100%

**Mounting/Frames:** Front and side access housings and frames are available

**Fire rating:** UL 900

**SGBP :** Applicable for F9 class (✓✓✓EXCELLENT) only



Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	ISO 16890	Dimensions WxHxD (mm)	Air Flow/ pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy consumption	Energy class
3140001	M6	MERV A 11A	M6	ePM2.5 50%	592x592x640	3400/50	12	9.1	2.86	24.4	23	589	A
3140002	N6	MERV A 11A	M6	ePM2.5 50%	490x592x640	2800/50	10	7.6	2.45				A
3140003	O6	MERV A 11A	M6	ePM2.5 50%	287x592x640	1700/50	6	4.6	1.59				A
3140029	M7	MERV A 13A	F7	ePM1 60%	592x592x640	3400/60	12	9.1	2.82	56	54	764	A+
3140030	N7	MERV A 13A	F7	ePM1 60%	490x592x640	2800/60	10	7.6	2.45				A+
3140031	O7	MERV A 13A	F7	ePM1 60%	287x592x640	1700/60	6	4.6	1.65				A+
3140057	M8	MERV A 14A	F8	ePM1 70%	592x592x640	3400/130	12	9.1	2.86				
3140058	N8	MERV A 14A	F8	ePM1 70%	490x592x640	2800/130	10	7.6	2.45			Eurovent not applicable	
3140059	O8	MERV A 14A	F8	ePM1 70%	287x592x640	1700/130	6	4.6	1.65				
3145006	M9	MERV A 15A	F9	ePM1 85%	592x592x640	3400/130	12	9.1	2.86	86	85	1556	B
3145009	N9	MERV A 15A	F9	ePM1 85%	490x592x640	2800/130	10	7.6	2.45				B
3145007	O9	MERV A 15A	F9	ePM1 85%	287x592x640	1700/130	6	4.6	1.65				B

\* ME%: Minimum efficiency ref. to EN779:2012

\*\* Energy Consumption, kWh/year: Calculated according to Eurovent Guideline 4/21-2014

\*\*\* Energy class: according to Eurovent RS 4/C/001-2017



Hi-Flo TM



Advantages

- Large surface area
- Ultra compact
- Low pressure drop
- New developed pocket design for the best air distribution
- Conical pockets
- High dust holding capacity

**Application:** Air conditioning applications

**Type:** Bag Filter

**Frame:** Galvanised steel

**Media:** Glass fiber

**Dimensions:** Filter front dimensions according EN 15805

**Rec. final pressure drop acc. EN 13053:** M6-F7: 200 Pa, F9: 300 Pa

**Maximum airflow:** 1,25 x nominal flow

**Temperature max:** 70°C

**RH. max:** 100%

**Mounting/Frames:** Front and side access housings and frames are available

**Fire rating:** UL 900

**SGBP :** Applicable for F9 class (✓✓ VERY GOOD) only



Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	ISO 16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy consumption	Energy class
3140025	TM6	MERV A 11A	M6	ePM2.5 50%	592x592x370	3400/60	12	5.5	2.45	23	23	1345	D
3140026	TN6	MERV A 11A	M6	ePM2.5 50%	490x592x370	2800/60	10	4.5	2.12				D
3140027	TO6	MERV A 11A	M6	ePM2.5 50%	287x592x370	1700/60	6	2.7	1.45				D
3140053	TM7	MERV A 13A	F7	ePM1 60%	592x592x370	3400/95	12	5.2	2.45	56	54	1451	C
3140054	TN7	MERV A 13A	F7	ePM1 60%	490x592x370	2800/95	10	4.3	2.12				C
3140055	TO7	MERV A 13A	F7	ePM1 60%	287x592x370	1700/95	6	2.6	1.45				C
3140081	TM8	MERV A 14A	F8	ePM1 70%	592x592x370	3400/205	12	5.5	2.45				
3140082	TN8	MERV A 14A	F8	ePM1 70%	490x592x370	2800/205	10	4.5	2.12				
3140083	TO8	MERV A 14A	F8	ePM1 70%	287x592x370	1700/205	6	2.7	1.45				

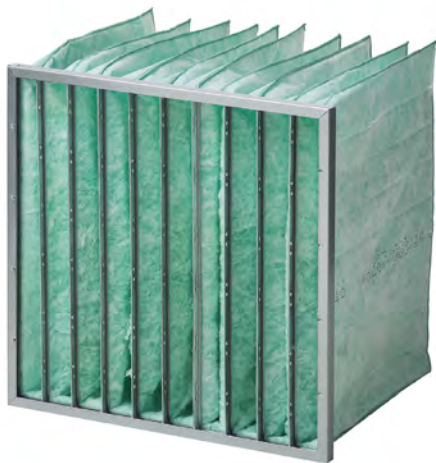
\* ME%: Minimum efficiency ref. to EN779:2012

\*\* Energy Consumption, kWh/year: Calculated according to Eurovent Guideline 4/21-2014

\*\*\* Energy class: according to Eurovent RS 4/C/001-2017

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Hi-Flo P



Advantages

- Large surface area
- Low pressure drop
- Comprehensive range of standard sizes
- Controlled media spacing (CMS)
- Certified performance

**Application:** Air conditioning applications

**Type:** Bag Filter

**Frame:** Galvanised steel

**Media:** Glass fiber

**Dimensions:** Filter front dimensions according EN 15805

**Rec. final pressure drop acc. EN 13053:** M6-F7: 200 Pa, F9: 300 Pa

**Maximum airflow:** 1,25 x nominal flow

**Temperature max:** 70°C

**RH. max:** 100%

**Mounting/Frames:** Front and side access housings and frames are available

**Fire rating:** UL 900

**SGBP :** Applicable for F9 class (✓✓ **VERY GOOD**) only

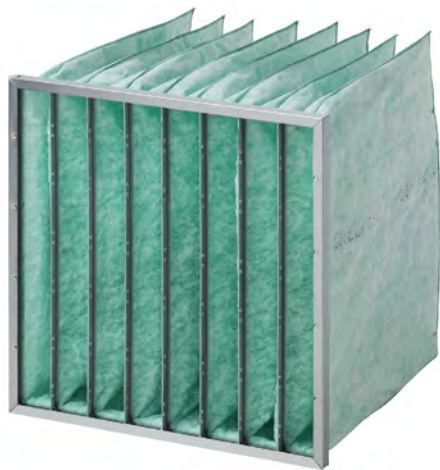


Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	ISO 16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy consumption	Energy class
3140009	P6	MERV A 11A	M6	ePM2.5 50%	592x592x520	3400/55	10	6.2	2.41	23	23	1345	D
3140010	Q6	MERV A 11A	M6	ePM2.5 50%	490x592x520	2800/55	8	5.1	2.03				D
3140011	R6	MERV A 11A	M6	ePM2.5 50%	287x592x520	1700/55	5	3.1	1.43				D
3140037	P7	MERV A 13A	F7	ePM1 60%	592x592x520	3400/75	10	6.2	2.41	56	54	1451	C
3140038	Q7	MERV A 13A	F7	ePM1 60%	490x592x520	2800/75	8	5.1	2.03				C
3140039	R7	MERV A 13A	F7	ePM1 60%	287x592x520	1700/75	5	3.1	1.43				C
3140065	P8	MERV A 14A	F8	ePM1 70%	592x592x520	3400/160	10	6.5	2.41				
3140066	Q8	MERV A 14A	F8	ePM1 70%	490x592x520	2800/160	8	5.2	2.03				
3140067	R8	MERV A 14A	F8	ePM1 70%	287x592x520	1700/160	5	3.3	1.43				
3145008	P9	MERV A 15A	F9	ePM1 85%	592x592x520	3400/160	10	6.2	2.41	87	86	2100	C
3145010	Q9	MERV A 15A	F9	ePM1 85%	490x592x520	2800/160	8	5.1	2.03				C
3145011	R9	MERV A 15A	F9	ePM1 85%	287x592x520	1700/160	5	3.1	1.43				C

\* ME%: Minimum efficiency ref. to EN779:2012  
\*\* Energy Consumption, kWh/year: Calculated according to Eurovent Guideline 4/21-2014  
\*\*\* Energy class: according to Eurovent RS 4/C/001-2017

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Hi-Flo UF



Advantages

- Comprehensive range of standard sizes
- New developed pocket design for the best air distribution
- Conical pockets
- Robust metal header frame
- High dust holding capacity

**Application:** Comfort air conditioning applications, pre filter applications

**Type:** Bag Filter

**Frame:** Galvanised steel

**Media:** Glass fiber

**Dimensions:** Filter front dimensions according EN 15805

**Rec. final pressure drop acc. EN 13053:** M5-F7: 200 Pa, F8-F9: 300 Pa

**Maximum airflow:** 1,25 x nominal flow

**Temperature max:** 70°C

**RH. max:** 100%

**Mounting/Frames:** Front and side access housings and frames are available

**Fire rating:** UL 900

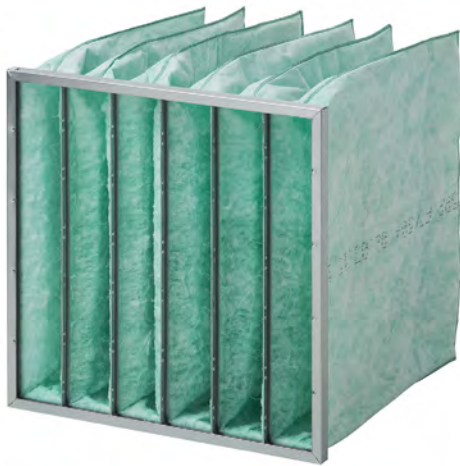
**SGBP :** Applicable for F9 class (✓✓VERY GOOD) only

Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	ISO 16890	Dimensions WxHxD (mm)	Air Flow/ pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy consumption	Energy class
3140013	UF6	MERV A 11A	M6	ePM2.5 50%	592x592x600	3400/55	8	6	2.15	26	23	708	B
3140014	UG6	MERV A 11A	M6	ePM2.5 50%	490x592x600	2800/55	6	4.5	1.8				B
3140015	UH6	MERV A 11A	M6	ePM2.5 50%	287x592x600	1700/55	4	3	1.32				B
3140016	3UF6	MERV A 11A	M6	ePM2.5 50%	490x490x600	2334/70	6	4.1	1.65				B
3140041	UF7	MERV A 13A	F7	ePM1 60%	592x592x600	3400/75	8	6	2.2	56	54	978	B
3140042	UG7	MERV A 13A	F7	ePM1 60%	490x592x600	2800/75	6	4.5	1.8				B
3140043	UH7	MERV A 13A	F7	ePM1 60%	287x592x600	1700/75	4	3	1.32				B
3140044	3UF7	MERV A 13A	F7	ePM1 70%	490x490x600	2334/115	6	4.1	1.65				B
3140069	UF8	MERV A 14A	F8	ePM1 70%	592x592x600	3400/145	8	6	2.19	Eurovent not applicable			
3140070	UG8	MERV A 14A	F8	ePM1 70%	490x592x600	2800/145	6	4.5	1.8				
3140071	UH8	MERV A 14A	F8	ePM1 70%	287x592x600	1700/145	4	3	1.32				
3140072	3UF8	MERV A 14A	F8	ePM1 70%	490x490x600	2334/145	6	4.1	1.65				
3145012	UF9	MERV A 15A	F9	ePM1 85%	592x592x600	3400/170	8	6	2.19	88	86	2134	C
3145013	UG9	MERV A 15A	F9	ePM1 85%	490x592x600	2800/170	6	4.5	1.8				C
3145014	UH9	MERV A 15A	F9	ePM1 85%	287x592x600	1700/170	4	3	1.32				C
3145015	3UF9	MERV A 15A	F9	ePM1 85%	490x490x600	2334/145	6	3.6	1.65				C

\* ME%: Minimum efficiency ref. to EN779:2012  
\*\* Energy Consumption, kWh/year: Calculated according to Eurovent Guideline 4/21-2014  
\*\*\* Energy class: according to Eurovent RS 4/C/001-2017

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Hi-Flo A



Advantages

- Comprehensive range of standard sizes
- New developed pocket design for the best air distribution
- Conical pockets
- Robust metal header frame
- High dust holding capacity

**Application:** Comfort air conditioning applications, pre filter applications

**Type:** Bag Filter

**Frame:** Galvanised steel

**Media:** Glass fiber

**Dimensions:** Filter front dimensions according EN 15805

**Rec. final pressure drop acc. EN 13053:** 200 Pa

**Maximum airflow:** 1,25 x nominal flow

**Temperature max:** 70°C

**RH. max:** 100%

**Mounting/Frames:** Front and side access housings and frames are available

**Fire rating:** UL 900



Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	ISO 16890	Dimensions WxHxD (mm)	Air Flow/ pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy consumption	Energy class
3140085	A5	MERV A 10A	M5	ePM10 60%	592x592x600	3400/45	6	4.5	2.41	9	8	829	C
3140086	B5	MERV A 10A	M5	ePM10 60%	490x592x600	2800/45	5	3.6	2.03				C
3140087	C5	MERV A 10A	M5	ePM10 60%	287x592x600	1700/45	3	2.3	1.43				C
3140017	A6	MERV A 11A	M6	ePM2.5 50%	592x592x600	3400/60	6	4.5	2.41	26	23	1269	D
3140018	B6	MERV A 11A	M6	ePM2.5 50%	490x592x600	2800/60	5	3.6	2.03				D
3140019	C6	MERV A 11A	M6	ePM2.5 50%	287x592x600	1700/60	3	2.3	1.43				D
3140045	A7	MERV A 13A	F7	ePM1 60%	592x592x600	3400/95	6	4.5	2.41	56	54	1319	C
3140046	B7	MERV A 13A	F7	ePM1 60%	490x592x600	2800/95	5	3.6	2.03				C
3140047	C7	MERV A 13A	F7	ePM1 60%	287x592x600	1700/95	3	2.3	1.43				C
3140073	A8	MERV A 14A	F8	ePM1 70%	592x592x600	3400/160	10	6.2	2.41				
3140074	B8	MERV A 14A	F8	ePM1 70%	490x592x600	2800/ 160	8	5.1	2.03				
3140075	C8	MERV A 14A	F8	ePM1 70%	287x592x600	1700/ 160	5	3.1	1.43				

Eurovent not applicable

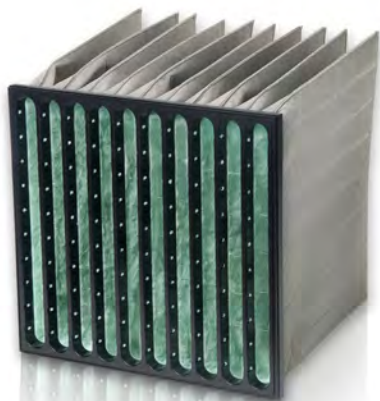
\* ME%: Minimum efficiency ref. to EN779:2012

\*\* Energy Consumption, kWh/year: Calculated according to Eurovent Guideline 4/21-2014

\*\*\* Energy class: according to Eurovent RS 4/C/001-2017



City-Flo XL



Advantages

- Combined particle and molecular filter
- Low initial pressure drop
- Conical pockets
- Moulded, rigid and aerodynamic shaped plastic frame

**Application:** Particulate and molecular filter

**Type:** Bag Filter

**Frame:** Plastic moulded

**Media:** Glass fiber/Activated carbon

**Dimensions:** Filter front dimensions according EN 15805

**Rec. final pressure drop acc. EN 13053:** 200 Pa

**Maximum airflow:** 1,25 x nominal flow

**Temperature max:** 50°C

**RH. max:** 70%

**Mounting/Frames:** Front and side access housings and frames are available



Article Number	Model Name	EN 779:2012	ISO 16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy consumption	Energy class
612754	7/640 50+	F7	ePM1 60%	592x 592x 640	3400/ 85	10	7,5	3,5	61	57	1110	B
613289	7/640 50+	F7	ePM1 60%	490x 592x 640	2700/ 85	8	6	2,8				B
612924	7/640 50+	F7	ePM1 60%	287x 592x 640	1700/ 85	5	3,7	1,8				B
613297	7/640 50+	F7	ePM1 60%	287x 287x 640	800/ 85	5	1,9	0,9				B
613295	7/640 50+	F7	ePM1 60%	592x 287x 640	1700/ 85	10	3,7	1,8				B
613293	7/640 50+	F7	ePM1 60%	592x 490x 640	2700/ 85	10	6,2	2,9				B
613291	7/640 50+	F7	ePM1 60%	490x 490x 640	2330/ 85	8	5	2,4				B
612753	7/520 50+	F7	ePM1 60%	592x 592x 520	3400/ 110	10	6,1	3,1	61	57	1382	C
613290	7/520 50+	F7	ePM1 60%	490x 592x 520	2700/ 110	8	4,9	2,5				C
612923	7/520 50+	F7	ePM1 60%	287x 592x 520	1700/ 110	5	3	1,6				C
613298	7/520 50+	F7	ePM1 60%	287x 287x 520	800/ 110	5	1,5	0,8				C
613296	7/520 50+	F7	ePM1 60%	592x 287x 520	1700/ 110	10	3	1,6				C
613294	7/520 50+	F7	ePM1 60%	592x 490x 520	2700/ 110	10	6,2	3,1				C
613292	7/520 50+	F7	ePM1 60%	490x 490x 520	2330/ 110	8	4	2				C

\* ME%: Minimum efficiency ref. to EN779:2012  
\*\* Energy Consumption, kWh/year: Calculated according to Eurovent Guideline 4/21-2014  
\*\*\* Energy class: according to Eurovent RS 4/C/001-2017

City-Flo



Advantages

- Double function: particle and molecular filtration
- Can be used to upgrade existing installations
- Ideal for filtering low concentrations of most external and internal source pollutants
- Robust metal header frame
- “2 in 1” filtration solution; particulate and molecular
- Range of standard sizes
- Rapid Adsorption Dynamics (RAD)

**Application:** Particle and odour removal in Hospitals, Offices, Airports etc

**Type:** Bag Filter

**Frame:** Galvanised steel

**Media:** Glass fiber/Activated carbon

**Dimensions:** Filter front dimensions according EN 15805

**Rec. final pressure drop acc. EN 13053:** F7: 200 Pa, F9: 300 Pa

**Maximum airflow:** 1,25 x nominal flow

**Temperature max:** 50°C

**RH. max:** 70%

**Mounting/Frames:** Front and side access housings and frames are available



The City-Flo filter utilizes a highly effective broad spectrum carbon media layer to ensure removal of a very wide range of airborne chemicals. The broad spectrum carbon operates with a Rapid Adsorption Dynamics (RAD) mechanism that is specifically designed to be highly efficient against the multiple chemicals that are typically present in low or moderate concentrations in city-centre buildings or other locations. City-Flo is a very effective ozone filter with an 80% ozone removal efficiency or Oz8 ozone removal rating according to the unique Camfil system. The City-Flo filter provides particle filtration in classes F7 or F9 according to EN 779:2012. A high media area ensures high efficiency, long life and low pressure drop.

Type	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy consumption	Energy class
HFZS-F7-592/592/534-10-25	F7	ePM1 60%	592x 592x 534	3400/ 140	10	6,2	6	62	55	1823	D
HFZS-F7-490/592/534-8-25	F7	ePM1 60%	490x 592x 534	2700/ 140	8	5	4,6				D
HFZS-F7-287/592/534-8-25	F7	ePM1 60%	287x 592x 534	1700/ 140	5	3,1	3,5				D

\* ME%: Minimum efficiency ref. to EN779:2012  
\*\* Energy Consumption, kWh/year: Calculated according to Eurovent Guideline 4/21-2014  
\*\*\* Energy class: according to Eurovent RS 4/C/001-2017

S-Flo P



Advantages

- Extended surface multi-pocket filter
- Comprehensive range of standard sizes
- Unique pocket design
- High efficiency
- Large surface area
- Controlled media spacing (CMS)

**Application:** Air conditioning applications

**Type:** Extended surface multi pocket bag filter

**Case:** Galvanised steel

**Media:** Synthetic fibre

**Recommended final pressure drop:** 450 Pa (suggested economical change point 250 Pa)

**Temperature:** 70°C maximum in continuous service

**Holding frames:** Front and side access housings and frames are available, Type 8 and FC Housings

**Fire rating:** UL 900



Article Number	Model Name	ASHRAE 52.2:2017	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)
3300009	P6	MERV 11	ePM10 70%	592x592x534	3400/90	10	6.5	2.92
3300010	Q6	MERV 11	ePM10 70%	490x592x534	2800/90	8	5.2	2.44
3300011	R6	MERV 11	ePM10 70%	287x592x534	1700/90	5	3.2	1.68
3300033	P7	MERV 13	ePM10 80%	592x592x534	3400/115	10	6.5	2.92
3300034	Q7	MERV 13	ePM10 80%	490x592x534	2800/115	8	5.2	2.44
3300035	R7	MERV 13	ePM10 80%	287x592x534	1700/115	5	3.2	1.68
3300057	PB	MERV 14	ePM10 85%	592x592x534	3400/135	10	6.5	2.92
3300058	QB	MERV 14	ePM10 85%	490x592x534	2800/135	8	5.2	2.44
3300059	RB	MERV 14	ePM10 85%	287x592x534	1700/135	5	3.2	1.68

20mm header frame is available on request

S-Flo U



Advantages

- Multi-pocket bag filter
- Comprehensive range of standard sizes
- Robust metal header frame
- Unique pocket design
- Large surface area
- Controlled media spacing (CMS)

**Application:** Air conditioning applications  
**Type:** Extended surface multi pocket bag filter  
**Case:** Galvanised steel  
**Media:** Synthetic fibre  
**Recommended final pressure drop:** 450 Pa (suggested economical change point 250 Pa)  
**Temperature:** 70°C maximum in continuous service  
**Holding frames:** Front and side access housings and frames are available, Type 8 and FC Housings  
**Fire rating:** UL 900



Article Number	Model Name	ASHRAE 52.2:2017	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)
3300013	UF6	MERV 11	ePM10 70%	592x592x600	3400/75	8	6	2.65
3300014	UG6	MERV 11	ePM10 70%	490x592x600	2800/75	6	4.5	2.14
3300015	UH6	MERV 11	ePM10 70%	287x592x600	1700/75	4	3	1.54
3300037	UF7	MERV 13	ePM10 80%	592x592x600	3400/95	8	6	2.65
3300038	UG7	MERV 13	ePM10 80%	490x592x600	2800/95	6	4.5	2.14
3300039	UH7	MERV 13	ePM10 80%	287x592x600	1700/95	4	3	1.54
3300061	UF8	MERV 14	ePM10 85%	592x592x600	3400/110	8	6	2.65
3300062	UG8	MERV 14	ePM10 85%	490x592x600	2800/110	6	4.5	2.14
3300063	UH8	MERV 14	ePM10 85%	287x592x600	1700/110	4	3	1.54
20mm header frame is available on request								



S-Flo A



Advantages

- Multi-pocket bag filter
- Comprehensive range of standard sizes
- Robust metal header frame
- Unique pocket design
- Available in a range of efficiencies

**Application:** Air conditioning applications

**Type:** Multi pocket bag filter.

**Case:** Galvanised steel

**Media:** Synthetic fibre

**Recommended final pressure drop:** 450 Pa (suggested economical change point 250 Pa)

**Temperature:** 70°C maximum in continuous service

**Holding frames:** Front and side access housings and frames are available, Type 8 and FC Housings

**Fire rating:** UL 900



Article Number	Model Name	ASHRAE 52.2:2017	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)
3300073	A5	MERV 10	ePM10 60%	592x592x600	3400/75	6	4.5	2.4
3300074	B5	MERV 10	ePM10 60%	490x592x600	2700/75	5	3.6	2
3300075	C5	MERV 10	ePM10 60%	287x592x600	1700/75	3	2.3	1.5
3300017	A6	MERV 11	ePM10 70%	592x592x600	3400/100	6	4.5	2.4
3300018	B6	MERV 11	ePM10 70%	490x592x600	2800/100	5	3.6	2
3300019	C6	MERV 11	ePM10 70%	287x592x600	1700/100	3	2.3	1.5
3300041	A7	MERV 13	ePM10 80%	592x592x600	3400/110	6	4.5	2.4
3300042	B7	MERV 13	ePM10 80%	490x592x600	2800/110	5	3.6	2
3300043	C7	MERV 13	ePM10 80%	287x592x600	1700/110	3	2.3	1.5
3300065	AB	MERV 14	ePM10 85%	592x592x600	3400/145	6	4.7	2.4
3300066	B8	MERV 14	ePM10 85%	490x592x600	2800/145	5	3.6	2
3300067	CB	MERV 14	ePM10 85%	287x592x600	1700/145	3	2.3	1.5

20mm header frame is available on request

Opakfil 2V



Advantages

- Light and robust
- Fully incinerable

**Application:** Air conditioning applications and preparatory filtration in clean rooms

**Type:** V-Bank Filter

**Frame:** ABS

**Media:** Glass fiber

**Separator:** Hot Melt

**Sealant:** Polyurethane

**Dimensions:** Filter front dimensions according EN 15805

**Rec. final pressure drop acc. EN 13053:** M6-F7: 200 Pa, F8-F9 300 Pa

**Maximum airflow:** 1,25 x nominal flow

**Temperature max:** 70°C

**RH. max:** 100%

**Mounting/Frames:** Front and side access housings and frames are available.



Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	ISO 16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy consumption	Energy class
2481001	OPGP-M6-0592/0592/0268-2V-20-00	MERV A 11A	M6	ePM10 70%	592x 592x 268	3400/ 85	8	3	23	23		E
2481002	OPGP-M6-0592/0490/0268-2V-20-00	MERV A 11A	M6	ePM10 70%	592x 490x 268	2800/ 85	7	2,5				E
2481003	OPGP-M6-0592/0287/0268-2V-20-00	MERV A 11A	M6	ePM10 70%	592x 287x 268	1700/ 85	4	2				E
2481004	OPGP-F7-0592/0592/0268-2V-20-00	MERV A 13A	F7	ePM1 55%	592x 592x 268	3400/ 100	8	3	44	44	2223	E
2481005	OPGP-F7-0592/0490/0268-2V-20-00	MERV A 13A	F7	ePM1 55%	592x 490x 268	2800/ 100	7	2,5				E
2481006	OPGP-F7-0592/0287/0268-2V-20-00	MERV A 13A	F7	ePM1 55%	592x 287x 268	1700/ 100	4	2				E
2481007	OPGP-F8-0592/0592/0268-2V-20-00	MERV A 14A	F8	ePM1 70%	592x 592x 268	3400/ 120	8	3	74	74		E
2481008	OPGP-F8-0592/0490/0268-2V-20-00	MERV A 14A	F8	ePM1 70%	592x 490x 268	2800/ 120	7	2,5				E
2481009	OPGP-F8-0592/0287/0268-2V-20-00	MERV A 14A	F8	ePM1 70%	592x 287x 268	1700/ 120	4	2				E
2481010	OPGP-F9-0592/0592/0268-2V-20-00	MERV A 15A	F9	ePM1 80%	592x 592x 268	3400/ 230	8	3	94	93		E
2481011	OPGP-F9-0592/0490/0268-2V-20-00	MERV A 15A	F9	ePM1 80%	592x 490x 268	2800/ 230	7	2,5				E
2481012	OPGP-F9-0592/0287/0268-2V-20-00	MERV A 15A	F9	ePM1 80%	592x 287x 268	1700/ 230	4	2				E

\* ME%: Minimum efficiency ref. to EN779:2012

\*\* Energy Consumption, kWh/year: Calculated according to Eurovent Guideline 4/21-2014

\*\*\* Energy class: according to Eurovent RS 4/C/001-2017



Opakfil ES



Advantages

- Long operating life
- Light and robust
- Very low Energy Consumption
- Less frequent changes
- Certified performance optimised for LCC
- Aerodynamic radial design

**Application:** Air conditioning applications and preparatory filtration in clean rooms

**Type:** V-Bank Filter

**Frame:** ABS

**Media:** Glass fiber

**Separator:** Hot Melt

**Sealant:** Polyurethane

**Dimensions:** Filter front dimensions according EN 15805

**Rec. final pressure drop acc. EN 13053:** M6-F7: 200 Pa, F8-F9 300 Pa

**Maximum airflow:** 1,25 x nominal flow

**Temperature max:** 70°C

**RH. max:** 100%

**Mounting/Frames:** Front and side access housings and frames are available

**SGBP :** Applicable for F8 (✓✓✓✓ LEADER) and F9 class (✓✓✓✓ LEADER) only



Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	ISO 16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy consumption	Energy class
2400501	OPGP-M6-0592/0592/0296-ES-00	MERV A 11A	M6	ePM10 70%	592x 592x 296	3400/ 60	17	5	23	23	900	C
2400502	OPGP-M6-0592/0490/0296-ES-00	MERV A 11A	M6	ePM10 70%	592x 490x 296	2800/ 60	14	4				C
2400503	OPGP-M6-0592/0287/0296-ES-00	MERV A 11A	M6	ePM10 70%	592x 287x 296	1700/ 60	8	3				C
2400601	OPGP-F7-0592/0592/0296-ES-00	MERV A 13A	F7	ePM1 55%	592x 592x 296	3400/ 65	17	5	44	44	782	A+
2400602	OPGP-F7-0592/0490/0296-ES-00	MERV A 13A	F7	ePM1 55%	592x 490x 296	2800/ 65	14	4				A+
2400603	OPGP-F7-0592/0287/0296-ES-00	MERV A 13A	F7	ePM1 55%	592x 287x 296	1700/ 65	8	3				A+
2400701	OPGP-F8-0592/0592/0296-ES-00	MERV A 14A	F8	ePM1 70%	592x 592x 296	3400/ 75	17	5	63	62	948	A+
2400702	OPGP-F8-0592/0490/0296-ES-00	MERV A 14A	F8	ePM1 70%	592x 490x 296	2800/ 75	14	4				A+
2400703	OPGP-F8-0592/0287/0296-ES-00	MERV A 14A	F8	ePM1 70%	592x 287x 296	1700/ 75	8	3				A+
2400801	OPGP-F9-0592/0592/0296-ES-00	MERV A 15A	F9	ePM1 80%	592x 592x 296	3400/ 90	17	5	79	78	1163	A+
2400802	OPGP-F9-0592/0490/0296-ES-00	MERV A 15A	F9	ePM1 80%	592x 490x 296	2800/ 90	14	4				A+
2400803	OPGP-F9-0592/0287/0296-ES-00	MERV A 15A	F9	ePM1 80%	592x 287x 296	1700/ 90	8	3				A+

\* ME%: Minimum efficiency ref. to EN779:2012

\*\* Energy Consumption, kWh/year: Calculated according to Eurovent Guideline 4/21-2014

\*\*\* Energy class: according to Eurovent RS 4/C/001-2017



## Durafil® ESB



### Advantages

- Dual headers for front loading filter installations
- Lowest Life-Cycle Cost (LCC) filter available
- Fine fiber ensures that the filter will maintain efficiency throughout its life in the system
- Lowest initial pressure drop of any dual header box style air filter
- Built-in spacer for pleated prefilters

**Description:** High capacity, high efficiency, V-style air filter in an all plastic enclosing frame. Typical applications: Built-up filter banks, rooftops, split systems, free-standing units, package systems and air handlers that require a filter with dual headers

**Media:** Microfine glass media in a mini-pleat design formed into multiple V-bank media packs

**Recommended final pressure drop:** 450 Pa (suggested economical change point 250 Pa)

**Temperature:** Maximum continuous operating temperature of 70° C

**Fire rating:** UL 900

Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
2495001	DU4V-ESB-242412-M6	MERV 11	M6	ePM10 70%	592x592x315	3400/65	18.3	4.97
2495002	DU4V-ESB-242012-M6	MERV 11	M6	ePM10 70%	592x492x315	2550/65	15	3.96
2495003	DU4V-ESB-241212-M6	MERV 11	M6	ePM10 70%	592x289x315	1700/65	8.3	2.6
2495004	DU4V-ESB-242412-F7	MERV 13	F7	ePM1 55%	592x592x315	3400/80	18.3	6.62
2495005	DU4V-ESB-242012-F7	MERV 13	F7	ePM1 55%	592x492x315	2550/80	15	3.96
2495006	DU4V-ESB-241212-F7	MERV 13	F7	ePM1 55%	592x289x315	1700/80	8.3	2.6
2495007	DU4V-ESB-242412-F8	MERV 14	F8	ePM1 70%	592x592x315	3400/85	18.3	5.71
2495008	DU4V-ESB-242012-F8	MERV 14	F8	ePM1 70%	592x492x315	2550/85	15	3.96
2495009	DU4V-ESB-241212-F8	MERV 14	F8	ePM1 70%	592x289x315	1700/85	8.3	2.6
2495010	DU4V-ESB-242412-F9	MERV 15	F9	ePM1 80%	592x592x315	3400/115	18.3	6.49
2495011	DU4V-ESB-242012-F9	MERV 15	F9	ePM1 80%	592x492x315	2550/115	15	3.96
2495012	DU4V-ESB-241212-F9	MERV 15	F9	ePM1 80%	592x289x315	1700/115	8.3	2.6

Opakair



Advantages

- Large surface area
- Up to 6000 m3/hr air flow
- Less frequent changes
- Low pressure drop

**Application:** High air flow air conditioning and process air applications

**Type:** High capacity compact filter

**Case:** Galvanised steel.

**Gasket:** Endless polyurethane.

**Media:** Glass fibre

**Separator:** Hot-melt beads

**Sealant:** Polyurethane

**Recommended final pressure drop:** 450 Pa (suggested economical change point 250 Pa)

**Temperature:** 70°C maximum in continuous service

**Mounting System:** Front and side access housings and safechange systems are available

**Fire rating:** DIN 53438 Class F1



Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
2420003	Opakair-90	MERV A 13A	F7	ePM1 55%	610x 610x 292	4500/105	21.4	21
2420004	Opakair-90	MERV A 13A	F7	ePM1 55%	305x 610x 292	2250/105	14	12
2420005	Opakair-95	MERV A 14A	F8	ePM1 70%	610x 610x 292	4500/130	21.4	21
2420006	Opakair-95	MERV A 14A	F8	ePM1 70%	305x 610x 292	2250/130	8.6	12

# CityCarb I



## Advantages

- Compact “2 in 1” filtration solution; particulate and molecular
  - Ideal for filtering low concentrations of most external and internal source pollutants
  - 100% incinerable
- Can be used to upgrade existing installations
  - Range of standard sizes
  - Rapid Adsorption Dynamics (RAD)
  - Filter class F7 acc. EN 779:2012

**Application:** Particle and odour removal in offices, hospitals, airports etc

**Type:** V-Bank Filter

**Frame:** Polypropylene

**Media:** Sintetico/Carbone attivo

**Dimensions:** Filter front dimensions according EN 15805

**Maximum airflow:** 1,25 x nominal flow

**Temperature max:** 50°C

**RH. max:** 70%

**Mounting/Frames:** Front and side access housings and frames are available

A compact filter with an additional molecular filtration media layer to provide enhanced IAQ through combined particle filtration and gas filtration.

CityCarb is the ultimate solution when a high performance compact filter and a high performance molecular (gas, odour) filter must be installed in a single location. CityCarb filter can easily be fitted into new or existing standard filter frames. Particle filtration media is combined with an exclusive “Broad Spectrum” carbon media that exploits the benefits of “Rapid Adsorption Dynamics” (RAD) to remove a very wide range of VOCs and odours. Molecular pollutants are released from both external sources (traffic fumes, power generation , industry) and internal sources (building construction and finish materials, wooden materials, carpets, cleaning agents etc).

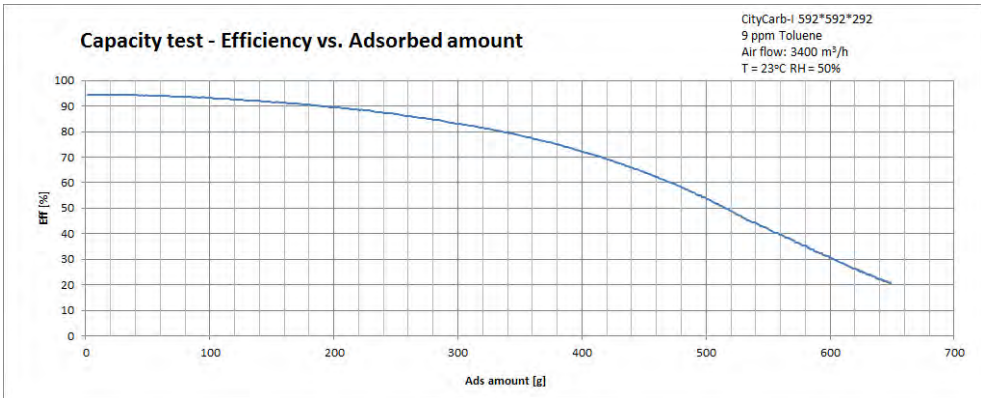
The filter should be replaced when the pressure loss exceeds the maximum allowable value for the ventilation system or after a maximum of one year. In accordance with good practice, used CityCarb filters should be bagged immediately after removal and disposed of by the appropriate route.

Model Name	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/ pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy class
CIZP-7I-0592/0592/0292-4V-25-B0P	F7	ePM1 70%	592x592x292	3400/130	8	9,3	80	44	E
CIZP-7I-0592/0490/0292-4V-25-B0P	F7	ePM1 70%	592x490x292	2800/130	6,6	6,8			E
CIZP-7I-0592/0287/0292-4V-25-B0P	F7	ePM1 70%	592x287x292	1500/130	3,8	4,8			E

\* ME%: Minimum efficiency ref. to EN779:2012

\*\* Energy Consumption, kWh/year: Calculated according to Eurovent Guideline 4/21-2014

\*\*\* Energy class: according to Eurovent RS 4/C/001-2017



## CitySorb



### Advantages

- Ideal for filtering low concentrations of most molecular pollutants from external and internal sources
- 100% incinerable
- Compact filtration solution
- Range of standard sizes
- High efficiency
- Large air flow capacity

**Application:** Adsorption of odours and gases in air conditioning applications

**Type:** V-Bank Filter

**Frame:** Polypropylene

**Gasket:** One piece PU gasket (O1 in the standard version)

**Media:** Activated Carbon

**Separator:** Hot Melt

**Sealant:** Polyurethane

**Dimensions:** Filter front dimensions according EN 15805

**Temperature max:** 40°C

**RH. max:** 70%

**Mounting/Frames:** Front and side access housings and frames are available

The CitySorb filter utilizes a highly effective broad spectrum carbon media to ensure removal of a very wide range of airborne chemicals.

The broad spectrum carbon operates with a Rapid Adsorption Dynamics (RAD) mechanism that is specifically designed to be highly efficient against the multiple chemicals that are typically present in low or moderate concentrations in city-centre buildings or other locations.

CitySorb is an effective ozone filter with a 70% ozone removal efficiency or Oz7 ozone removal rating according to the unique Camfil system.

Article Number	Model Name	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
56700003	CitySorb 242412-01PU	592x 592x 292	3400/ 80	8	10.8
56700004	CitySorb 242012-01PU	592x 490x 292	2800/ 80	6.6	9.2
56700005	CitySorb 241212-01PU	592x 287x 292	1500/ 80	3.5	5.4



## CitySorb DP



### Advantages

- Standard design for removal of acids, alkalines, organic smells and condensable organics.
- Compact solution with low pressure dropFrame is also available in box type other than single / double header.

**Application:** Remove of diverse gaseous contaminant

**Type:** Disposable carbon filter.

**Frame:** Galvanised steel (other on request). BH: Double Header, PH: Single Header, DH: Box Type

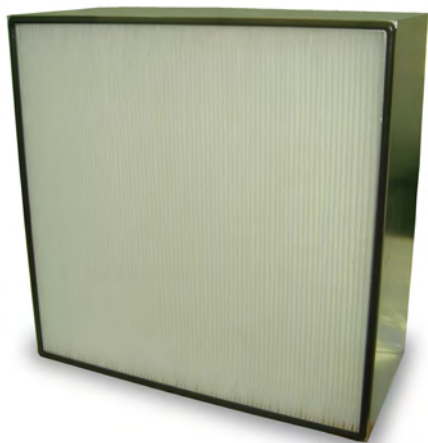
**Media:** Type 201: nonwoven fiber material with carbon for removal of organic smells and condensable organics. Type 202: nonwoven fiber material with impregnated carbon for removal of acids. Type 204: nonwoven fiber material with impregnated carbon for removal of alkalines

**Recommended temperature:** 0 - 40°C

**Recommended relative humidity:** 30 - 70%

Article Number	Model Name	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
5640018	CitySorb-DP-201-242412-BH	592x592x292	3400/75	6	15
5642000	CitySorb-DP-201-241212-BH	287x592x292	1700/75	3.2	8
5640024	CitySorb-DP-201-242412-PH	592x592x292	3400/75	6	15
5645000	CitySorb-DP-201-241212-PH	287x592x292	1700/75	3.2	8
5640001	CitySorb-DP-202-242412-BH	592x592x292	3400/75	6	15
5640010	CitySorb-DP-202-241212-BH	287x592x292	1700/75	3.2	8
5640006	CitySorb-DP-202-242412-PH	592x592x292	3400/75	6	15
5640004	CitySorb-DP-202-241212-PH	287x592x292	1700/75	3.2	8
5640002	CitySorb-DP-204-242412-BH	592x592x292	3400/75	6	15
5640012	CilySorb-DP-204-241212-BH	287x592x292	1700/75	3.2	8
5640011	CitySorb-DP-204- 242412 -PH	592x592x292	3400/75	6	15
5640005	CitySorb-DP-204-2 41212-PH	287x592x292	1700/75	3.2	8

Airopac® 3GGM



Advantages

- Large surface area
- Savings in operating costs
- Ultra compact
- High dust holding capacity

**Application:** Air conditioning or industrial processing systems and for mini air conditioning systems, individual modules.

**Type:** High efficiency compact filter.

**Frame:** Galvanised steel.

**Media:** Glass fibre.

**Separator:** Hot-melt beads.

**Recommended final pressure drop:** 450 Pa (suggested economical change point 250 Pa).

**Temperature:** 70°C maximum in continuous service.

**Fire rating:** DIN 53438 Class F1 .



Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
2100001	3GGM-24246-60	MERV A 11A	M6	ePM10 70%	610x610x150	3400/65	12.3	6.8
2100002	3GGM-20246-60	MERV A 11A	M6	ePM10 70%	508x610x150	2850/65	10.3	5.7
2100003	3GGM-12246-60	MERV A 11A	M6	ePM10 70%	305x610x150	1700/65	6.1	4
2100004	3GGM-20206-60	MERV A 11A	M6	ePM10 70%	508x508x150	2375/65	8.6	5
2100009	3GGM-24246-90	MERV A 13A	F7	ePM1 55%	610x610x150	3400/100	12.3	6.8
2100010	3GGM-20246-90	MERV A 13A	F7	ePM1 55%	508x610x150	2850/100	10.3	5.7
2100011	3GGM-12246-90	MERV A 13A	F7	ePM1 55%	305x610x150	1700/100	6.1	4
2100012	3GGM-20206-90	MERV A 13A	F7	ePM1 55%	508x508x150	2375/100	8.6	5
2100017	3GGM-24246-95	MERV A 14A	F8	ePM1 70%	610x610x150	3400/130	12.3	6.8
2100018	3GGM-20246-95	MERV A 14A	F8	ePM1 70%	508x610x150	2850/130	10.3	5.7
2100019	3GGM-12246-95	MERV A 14A	F8	ePM1 70%	305x610x150	1700/130	6.1	4
2100020	3GGM-20206-95	MERV A 14A	F8	ePM1 70%	508x508x150	2375/130	8.6	5

Airopac® 3GGMHF



Advantages

- Large surface area
- Savings in operating costs
- Less frequent changes
- Ultra compact
- High dust holding capacity

**Application:** Air conditioning or industrial processing systems and for mini air conditioning systems, individual modules.

**Type:** High efficiency compact filter.

**Frame:** Galvanised steel.

**Media:** Glass fibre.

**Separator:** Hot-melt beads.

**Recommended final pressure drop:** 450 Pa (suggested economical change point 250 Pa).

**Temperature:** 70°C maximum in continuous service.

**Fire rating:** DIN 53438 Class F1.



Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
2120001	3GGMHF-24245-60	MERV A 11A	M6	ePM10 70%	592x592x135	3400/85	6.8	0.07
2120002	3GGMHF-20245-60	MERV A 11A	M6	ePM10 70%	490x592x135	2850/90	5.7	0.07
2120003	3GGMHF-12245-60	MERV A 11A	M6	ePM10 70%	287x592x135	1700/105	3.8	0.04
2120004	3GGMHF-20205-60	MERV A 11A	M6	ePM10 70%	490x490x135	2375/90	5	0.07
2120005	3GGMHF-24245-90	MERV A 13A	F7	ePM1 55%	592x592x135	3400/125	6.8	0.07
2120006	3GGMHF-20245-90	MERV A 13A	F7	ePM1 55%	490x592x135	2850/130	5.7	0.07
2120007	3GGMHF-12245-90	MERV A 13A	F7	ePM1 55%	287x592x135	1700/145	3.8	0.04
2120008	3GGMHF-20205-90	MERV A 13A	F7	ePM1 55%	490x490x135	2375/135	5	0.07
2120009	3GGMHF-24245-95	MERV A 14A	F8	ePM1 70%	592x592x135	3400/160	6.8	0.07
2120010	3GGMHF-20245-95	MERV A 14A	F8	ePM1 70%	490x592x135	2850/170	5.7	0.07
2120011	3GGMHF-12245-95	MERV A 14A	F8	ePM1 70%	287x592x135	1700/195	3.8	0.04
2120012	3GGMHF-20205-95	MERV A 14A	F8	ePM1 70%	490x490x135	2375/175	5	0.07

EcoPleat Green



Advantages

- Large surface area
- Long operating life
- Ultra compact
- High dust holding capacity
- Less frequent changes

**Application:** Air conditioning or industrial processing systems and for mini air conditioning systems, individual modules, ventilation equipment

**Type:** High efficiency compact filter

**Frame:** Plastic frame.

**Media:** Glass fibre.

**Separator:** Hot melt glue.

**Sealant:** Polyurethane

**Recommended final pressure drop:** 350 Pa

**Temperature:** 70°C

**Relative humidity:** 100% RH



Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
2715001	3GPPS-12242-M6	MERV A 11A	M6	ePM10 70%	287x592x48	950/65	2.9	2
2715002	3GPPS-20242-M6	MERV A 11A	M6	ePM10 70%	490x592x48	1500/65	4.9	2.5
2715003	3GPPS-24242-M6	MERV A 11A	M6	ePM10 70%	592x592x48	1900/60	5.9	3
2715004	3GPPS-12242-F7	MERV A 13A	F7	ePM1 55%	287x592x48	950/90	2.9	2
2715005	3GPPS-20242-F7	MERV A 13A	F7	ePM1 55%	490x592x48	1500/90	4.9	2.5
2715006	3GPPS-24242-F7	MERV A 13A	F7	ePM1 55%	592x592x48	1900/90	5.9	3
2715007	3GPPS-12242-F8	MERV A 14A	F8	ePM1 70%	287x592x48	950/120	2.9	2
2715008	3GPPS-20242-F8	MERV A 14A	F8	ePM1 70%	490x592x48	1500/120	4.9	2.5
2715009	3GPPS-24242-F8	MERV A 14A	F8	ePM1 70%	592x592x48	1900/110	5.9	3
2714001	3GPPS-12244-M6	MERV A 11A	M6	ePM10 70%	287x592x96	1700/90	4.8	3
2714002	3GPPS-20244-M6	MERV A 11A	M6	ePM10 70%	490x592x96	2800/90	9.9	3.5
2714003	3GPPS-24244-M6	MERV A 11A	M6	ePM10 70%	592x592x96	3400/90	11.9	4
2714004	3GPPS-12244-F7	MERV A 13A	F7	ePM1 55%	287x592x96	1700/110	5.8	3
2714005	3GPPS-20244-F7	MERV A 13A	F7	ePM1 55%	490x592x96	2800/110	9.9	3.5
2714006	3GPPS-24244-F7	MERV A 13A	F7	ePM1 55%	592x592x96	3400/110	11.9	4
2714007	3GPPS-12244-F8	MERV A 14A	F8	ePM1 70%	287x592x96	1700/150	5.8	3
2714008	3GPPS-20244-F8	MERV A 14A	F8	ePM1 70%	490x592x96	2800/150	9.9	3.5
2714009	3GPPS-24244-F8	MERV A 14A	F8	ePM1 70%	592x592x96	3400/150	11.9	4

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.



## Airopac Green



### Advantages

- Low pressure drop
  - Water resistant beverage board
  - Large surface area
- Incinerable
  - Rigid design concept
  - High dust holding capacity

**Application:** Air conditioning applications and preparatory filtration in clean rooms

**Type:** High efficiency compact filter

**Frame:** Rigid water resistance beverage cardboard

**Media:** Glass fibre

**Separator:** Hot-melt beads

**Sealant:** Polyurethane

**Recommended final pressure drop:** 450 Pa (suggested economical change point 250 Pa)

**Temperature:** 70°C maximum in continuous service

**Mounting system:** Front and side access housing and frames are available

**Holding frames:** Type 8 and FC Housings

Article Number	Type	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
2700001	3GP-24244-60	M6	ePM10 70%	594x594x95	3400/70	11.8	3
2700002	3GP-20244-60	M6	ePM10 70%	492x594x95	2810/70	9.7	2.5
2700003	3GP-12244-60	M6	ePM10 70%	289x594x95	1645/80	5.7	1.6
2700004	3GP-20204-60	M6	ePM10 70%	492x492x95	2325/75	8	2.1
2700013	3GP-24244-90	F7	ePM1 55%	594x594x95	3400/130	11.8	3.1
2700014	3GP-20244-90	F7	ePM1 55%	492x594x95	2810/130	9.7	2.5
2700015	3GP-12244-90	F7	ePM1 55%	289x594x95	1645/155	5.7	1.6
2700016	3GP-20204-90	F7	ePM1 55%	492x492x95	2325/140	8	2.1
2700025	3GP-24244-95	F8	ePM1 70%	594x594x95	3400/150	11.8	3.1
2700026	3GP-20244-95	F8	ePM1 70%	492x594x95	2810/155	9.7	2.5
2700027	3GP-12244-95	F8	ePM1 70%	289x594x95	1645/175	5.7	1.6
2700028	3GP-20204-95	F8	ePM1 70%	492x492x95	2325/160	8	2.1

Riga-Flo



Advantages

- Range of standard sizes
- High efficiency
- Rigid design concept
- Suitable for turbulent airflow

**Application:** Air conditioning applications  
**Type:** Rigid pleated filter  
**Case:** Galvanised steel  
**Media:** Glass fibre  
**Recommended final pressure drop:** 450 Pa (suggested economical change point 250 Pa)  
**Temperature:** 70°C maximum in continuous service  
**Holding frames:** Front and side access housings and frames are available  
**Fire rating:** UL 900



Article Number	Type	ASHRAE 52.2:2017	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
96026001	RF15 CL2 24x24x12	MERV A 11A	M6	ePM10 70%	594x594x292	3400/70	5.39	5.5
96026005	RF15 CL2 24x12x12	MERV A 11A	M6	ePM10 70%	289x594x292	1700/70	2.69	5
97293001	RF15 CL2 24x24x6	MERV A 11A	M6	ePM10 70%	594x594x149	2040/60	2.69	5.5
97293005	RF15 CL2 24x12x6	MERV A 11A	M6	ePM10 70%	289x594x149	1020/60	1.3	3.5
96026002	RF100 CL2 24x24x12	MERV A 13A	F7	ePM1 55%	594x594x292	3400/125	5.39	5.5
96026006	RF100 CL2 24x12x12	MERV A 13A	F7	ePM1 55%	289x594x292	1700/125	2.69	3.5
97293002	RF100 CL2 24x24x6	MERV A 13A	F7	ePM1 55%	594x594x149	2040/100	2.69	5.5
97293015	RF 100 CL2 24x12x6	MERV A 13A	F7	ePM1 55%	289x594x149	1020/100	2.69	5.5
96026003	RF200 CL2 24x24x12	MERV A 14A	F8	ePM1 70%	594x594x292	3400/170	5.39	5.5
96026007	RF200 CL2 24x12x12	MERV A 14A	F8	ePM1 70%	289x594x292	1700/170	2.69	3.5
97293003	RF200 CL2 24x24x6	MERV A 14A	F8	ePM1 70%	594x594x149	2040/140	2.69	5.5
97293007	RF200 CL2 24x12x6	MERV A 14A	F8	ePM1 70%	289x594x149	1020/140	1.3	3.5

Riga-Flo P



Advantages

- Range of standard sizes
- Rigid design concept
- High efficiency
- Suitable for turbulent airflow

**Application:** Air conditioning applications

**Type:** Rigid pleated filter

**Case:** Galvanised steel

**Media:** Synthetic

**Recommended final pressure drop:** 450 Pa (suggested economical change point 250 Pa)

**Temperature:** 70°C maximum in continuous service

**Holding frames:** Front and side access housings and frames are available

**Fire rating:** UL 900



Article Number	Type	ASHRAE 52.2:2017	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
122556004	RFP95 CL2 24x24x12	MERV A 14A	F8	ePM10 85%	594x594x292	3400/90	5.39	7.7
122556014	RFP95 CL2 24x12x12	MERV A 14A	F8	ePM10 85%	289x594x292	1700/90	2.6	4.55
122556024	RFP95 CL2 24x20x12	MERV A 14A	F8	ePM10 85%	492x594x292	2822/90	4.37	5.77
122556034	RFP95 CL2 20x20x12	MERV A 14A	F8	ePM10 85%	492x492x292	2380/90	3.62	5.77

3CPM Aeropac



Advantages

- Fine fibre ensures that filter maintains its efficiency throughout its life in the system
- Robust design
- Large dust holding capacity
- Suitable for variable airflow

**Description:** High efficiency box style air filter with wet aid paper style media in an all-metal enclosing frame

**Applications:** Built-up filter banks, rooftops, split systems, free-standing units, package systems and air handlers

**Type:** Rigid pleated filter

**Frame:** Galvanised steel

**Media:** Microfine glass media formed into full pack depth pleats separated by corrugated aluminum separators

**Recommended final pressure drop:** 450 Pa (suggested economical change point 250Pa)

**Temperature:** 70°C

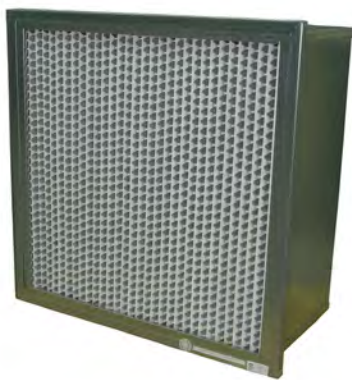
**Fire rating:** UL 900



Article Number	Type	ASHRAE 52.2:2017	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
2155001	3CPM-65-242412	MERV 11	M6	ePM10 70%	592x592x292	3400/110	12.3	8.6
2155002	3CPM-65-241212	MERV 11	M6	ePM10 70%	287x592x292	1700/110	5.8	6.4
2156001	3CPM-85-242412	MERV 13	F7	ePM1 55%	592x592x292	3400/145	12.3	8.6
2156002	3CPM-85-241212	MERV 13	F7	ePM1 55%	287x592x292	1700/145	5.8	6.4
2157003	3CPM-95-242412	MERV 14	F8	ePM1 70%	592x592x292	3400/160	12.3	8.6
2157002	3CPM-95-241212	MERV 14	F8	ePM1 70%	287x592x292	1700/160	5.8	6.4
2150002	3CPM-242412-60	MERV 11	M6	ePM10 70%	610x610x292	3400/75	15.7	8.6
2150001	3CPM-122412-60	MERV 11	M6	ePM10 70%	305x610x292	1700/75	7.8	6.4
2151007	3CPM-242412-90	MERV 13	F7	ePM1 55%	610x610x292	3400/110	15.7	8.6
2151008	3CPM-122412-90	MERV 13	F7	ePM1 55%	305x610x292	1700/110	7.8	6.4
2152003	3CPM-242412-95	MERV 14	F8	ePM1 70%	610x610x292	3400/135	15.7	8.6
2152004	3CPM-122412-95	MERV 14	F8	ePM1 70%	305x610x292	1700/135	7.8	6.4



3HCP8 Aeropac



Advantages

- Fine fibre ensures that filter maintains its efficiency throughout its life in the system
- Suitable for variable airflow
- High dust holding capacity
- Robust design

**Description:** High efficiency box style air filter with wet-laid paper style media in an all-metal enclosing frame

**Applications:** Built-up filter banks, rooftops, split systems, free-standing units, package systems and air handlers

**Type:** Rigid pleated filter

**Frame:** Galvanised steel

**Media:** Microfine glass media formed into full pack depth pleats separated by corrugated aluminum

**Recommended final pressure drop:** 450 Pa (suggested economical change point 250Pa)

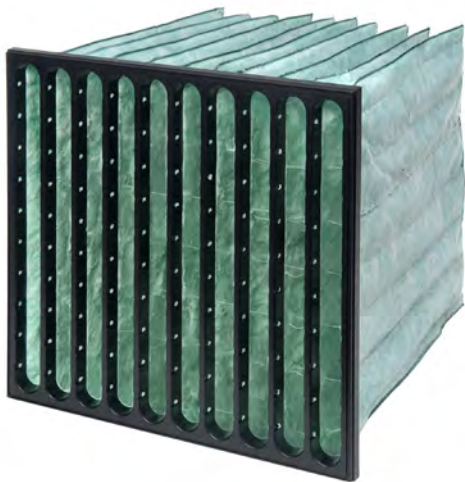
**Temperature:** Maximum continuous operating temperature of 90° C

**Fire Rating:** UL 900



Article Number	Type	ASHRAE 52.2:2017	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
2135001	3HCP8-65-242412 AEROPAC	MERV 11	M6	ePM10 70%	592x592x292	3400/110	10.8	8.6
2135002	3HCP8-65-122412 AEROPAC	MERV 11	M6	ePM10 70%	287x592x292	1700/110	5	6.4
2136001	3HCP8-85-242412 AEROPAC	MERV 13	F7	ePM1 55%	592x592x292	3400/150	10.8	8.6
2136002	3HCP8-85-241212 AEROPAC	MERV 13	F7	ePM1 55%	287x592x292	1700/150	5	6.4
2137001	3HCP8-95-242412 AEROPAC	MERV 14	F8	ePM1 70%	592x592x292	3400/160	10.8	8.6
2137002	3HCP8-95-241212 AEROPAC	MERV 14	F8	ePM1 70%	287x592x292	1700/160	5	6.4
2130002	3CPMHF-122412-60	MERV 11	M6	ePM10 70%	287x592x292	1700/95	5.6	6.4
2130003	3CPMHF-242412-60	MERV 11	M6	ePM10 70%	592x592x292	3400/95	13.1	8.6
2131001	3CPMHF-242412-90	MERV 13	F7	ePM1 55%	592x592x292	3400/130	13.1	8.6
2131002	3CPMHF-122412-90	MERV 13	F7	ePM1 55%	287x592x292	1700/130	5.6	6.4
2132001	3CPMHF-242412-95	MERV 14	F8	ePM1 70%	592x592x292	3400/155	13.1	8.6
2132002	3CPMHF-122412-95	MERV 14	F8	ePM1 70%	287x592x292	1700/155	5.6	6.4

Hi-Flo ProSafe



Advantages

- Specially designed for Process Safety (Food Life Science applications)
- The latest developed glass fibre media
- Low initial pressure drop
- Flat pressure drop curve
- New developed pocket design for the best air distribution
- Conical pockets
- Moulded, rigid and aerodynamic shaped plastic frame
- Less energy consumption
- Compliant to EC 1935:2004
- Compliant to VDI 6022 / ISO 846

**Application:** Air conditioning applications and as pre filters for clean rooms

**Type:** Bag Filter

**Frame:** Plastic moulded

**Media:** Glass fiber

**Dimensions:** Filter front dimensions according EN 15805

**Rec. final pressure drop acc. EN 13053:** M6-F7: 200 Pa, F9: 300 Pa

**Maximum airflow:** 1,25 x nominal flow

**Temperature max:** 70°C

**RH. max:** 100%

**Mounting/Frames:** Front and side access housings and frames are available

Model Name	EN 779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/ pressure drop (m³/ hr/Pa)	Bags	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy consumption	Energy class
6/640	M6	ePM2.5 50%	592x 592x 640	3400/ 55	10	7,5	2,3	25	23	667	B
6/640	M6	ePM2.5 50%	490x 592x 640	2700/ 55	8	6	1,6				B
6/640	M6	ePM2.5 50%	287x 592x 640	1700/ 55	5	3,7	1,4				B
6/640	M6	ePM2.5 50%	287x 287x 640	800/ 55	5	1,9	0,8				B
6/640	M6	ePM2.5 50%	592x 287x 640	1700/ 55	10	3,7	1,4				B
6/640	M6	ePM2.5 50%	592x 490x 640	2700/ 55	10	6,2	1,6				B
6/640	M6	ePM2.5 50%	490x 490x 640	2330/ 55	8	5	1,3				B
6/520	M6	ePM2.5 50%	592x 592x 520	3400/ 60	10	6,1	2,2	25	23	755	B
6/520	M6	ePM2.5 50%	490x 592x 520	2700/ 60	8	4,9	1,4				B
6/520	M6	ePM2.5 50%	287x 592x 520	1700/ 60	5	3	1,3				B
6/520	M6	ePM2.5 50%	287x 287x 520	800/ 60	5	1,5	0,7				B
6/520	M6	ePM2.5 50%	592x 287x 520	1700/ 60	10	3	1,3				B
6/520	M6	ePM2.5 50%	592x 490x 520	2700/ 60	10	5	1,4				B
6/520	M6	ePM2.5 50%	490x 490x 520	2330/ 60	8	4	1,2				B
6/370	M6	ePM2.5 50%	592x 592x 370	3400/ 80	10	4,3	2	26	23	1371	D
6/370	M6	ePM2.5 50%	490x 592x 370	2700/ 80	8	3,5	1,3				D
6/370	M6	ePM2.5 50%	287x 592x 370	1700/ 80	5	2,2	1,2				D
6/370	M6	ePM2.5 50%	287x 287x 370	800/ 80	5	1,1	0,7				D
6/370	M6	ePM2.5 50%	592x 287x 370	1700/ 80	10	2,1	1,2				D
6/370	M6	ePM2.5 50%	592x 490x 370	2700/ 80	10	3,6	1,2				D
6/370	M6	ePM2.5 50%	490x 490x 370	2330/ 80	8	2,9	1				D
7/670 50+	F7	ePM1 60%	592x 592x 670	3400/ 65	10	7,9	2,3	54	54	780	A+
7/670 50+	F7	ePM1 60%	490x 592x 670	2700/ 65	8	6,3	1,6				A+
7/670 50+	F7	ePM1 60%	287x 592x 670	1700/ 65	5	3,8	1,4				A+
7/670 50+	F7	ePM1 60%	287x 287x 670	800/ 65	5	1,9	0,8				A+
7/670 50+	F7	ePM1 60%	592x 287x 670	1700/ 65	10	3,8	1,4				A+
7/670 50+	F7	ePM1 60%	592x 490x 670	2700/ 65	10	6,5	1,6				A+
7/670 50+	F7	ePM1 60%	490x 490x 670	2330/ 65	8	7,5	1,3				A+

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Modal Name	EN779	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy consumption	Energy class
7/640 50+	F7	ePM1 60%	592x 592x 640	3400/70	10	7,5	2,3	54	54	867	A
7/640 50+	F7	ePM1 60%	490x 592x 640	2700/70	8	6	1,6				A
7/640 50+	F7	ePM1 60%	287x 592x 640	1700/70	5	3,7	1,4				A
7/640 50+	F7	ePM1 60%	287x 287x 640	800/70	5	1,9	0,8				A
7/640 50+	F7	ePM1 60%	592x 287x 640	1700/70	10	3,7	1,4				A
7/640 50+	F7	ePM1 60%	592x 490x 640	2700/70	10	6,2	1,6				A
7/640 50+	F7	ePM1 60%	490x 490x 640	2330/70	8	5	1,3				A
7/520 50+	F7	ePM1 60%	592x 592x 520	3400/75	10	10	2,2	54	54	935	A
7/520 50+	F7	ePM1 60%	490x 592x 520	2700/75	8	8	1,4				A
7/520 50+	F7	ePM1 60%	287x 592x 520	1700/75	5	3	1,3				A
7/520 50+	F7	ePM1 60%	287x 287x 520	800/75	5	1,5	0,7				A
7/520 50+	F7	ePM1 60%	592x 287x 520	1700/75	10	3	1,3				A
7/520 50+	F7	ePM1 60%	592x 490x 520	2700/75	10	5	1,4				A
7/520 50+	F7	ePM1 60%	490x 490x 520	2330/75	8	4	1,2				A
7/370 50+	F7	ePM1 60%	592x 592x 370	3400/90	10	4,3	2	54	54	1569	C
7/370 50+	F7	ePM1 60%	490x 592x 370	2700/90	8	3,5	1,3				C
7/370 50+	F7	ePM1 60%	287x 592x 370	1700/90	5	2,2	1,2				C
7/370 50+	F7	ePM1 60%	287x 287x 370	800/90	5	1,1	0,7				C
7/370 50+	F7	ePM1 60%	592x 287x 370	1700/90	10	2,1	1,2				C
7/370 50+	F7	ePM1 60%	592x 490x 370	2700/90	10	2,9	1,2				C
7/370 50+	F7	ePM1 60%	490x 490x 370	2330/90	8	2,9	1				C
9/640 80+	F9	ePM1 85%	592x 592x 640	3400/150	10	7,5	1,6	89	83	1660	B
9/640 80+	F9	ePM1 85%	490x 592x 640	2700/150	8	6	1,6				B
9/640 80+	F9	ePM1 85%	287x 592x 640	1700/150	5	3,7	1,4				B
9/640 80+	F9	ePM1 85%	287x 287x 640	800/150	5	1,9	0,8				B
9/640 80+	F9	ePM1 85%	592x 287x 640	1700/150	10	3,7	1,4				B
9/640 80+	F9	ePM1 85%	592x 490x 640	2700/150	10	6,2	1,6				B
9/640 80+	F9	ePM1 85%	490x 490x 640	2330/150	8	5	1,3				B
9/520 80+	F9	ePM1 85%	592x 592x 520	3400/180	10	6,1	2,2	88	83	2481	C
9/520 80+	F9	ePM1 85%	490x 592x 520	2700/180	8	4,9	1,4				C
9/520 80+	F9	ePM1 85%	287x 592x 520	1700/180	5	3	1,3				C
9/520 80+	F9	ePM1 85%	287x 287x 520	800/180	5	1,5	0,7				C
9/520 80+	F9	ePM1 85%	592x 287x 520	1700/180	10	3	1,3				C
9/520 80+	F9	ePM1 85%	592x 490x 520	2700/180	10	5	1,4				C
9/520 80+	F9	ePM1 85%	490x 490x 520	2330/180	8	4	1,2				C
* ME%: Minimum efficiency ref. to EN779:2012											
** Energy Consumption, kWh/year: Calculated according to Eurovent Guideline 4/21-2014											
*** Energy class: according to Eurovent RS 4/C/001-2015											

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Opakfil ProSafe ES



Advantages

- Specially designed for Process Safety (Food Life Science application)
- Food compliant -EC1935:2004
- Anti-microbial growth certified (ISO846 - VDI6022)
- Sealed bag for transport through clean room
- The latest developed glass fiber media with high water repelancy
- QR code for a quick access to information and certificates
- Lower energy costs
- Light and easy maintenance through handles
- Delivered in standard with continuous PU gasket for efficiency warranty

**Application:** Air conditioning applications and preparatory filtration in clean rooms

**Type:** V-Bank Filter

**Frame:** ABS

**Media:** Glass fiber

**Separator:** Hot Melt

**Sealant:** Polyurethane

**Dimensions:** Filter front dimensions according EN 15805

**Rec. final pressure drop acc. EN 13053:** M5-F7: 200 Pa, F8-F9: 300 Pa

**Maximum airflow:** 1,25 x nominal flow

**Temperature max:** 70°C

**RH. max:** 100%

**Mounting/Frames:** Front and side access housings and frames are available

Food and Beverage or Life-Science activities have set new standards in product quality and therefore require specific characteristics regarding process definition. Camfil, as the leader in clean air solutions and air filtration, has developed the complete ProSafe™ range of products designed for the most demanding processes, including safety, traceability and audits requirement.

Model Name	EN779	EN1822	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy consumption	Energy class
PS6	M6		ePM10 70%	592x 592x 296	3400/ 60	17	5	23	23	900	C
PS6	M6		ePM10 70%	592x 490x 296	2800/ 60	14	4				C
PS6	M6		ePM10 70%	592x 287x 296	1700/ 60	8	3				C
PS7	F7		ePM1 55%	592x 592x 296	3400/ 65	17	5	44	44	782	A+
PS7	F7		ePM1 55%	592x 490x 296	2800/ 65	14	4				A+
PS7	F7		ePM1 55%	592x 287x 296	1700/ 65	8	3				A+
PS8	F8		ePM1 70%	592x 592x 296	3400/ 75	17	5	63	62	948	A+
PS8	F8		ePM1 70%	592x 490x 296	2800/ 75	14	4				A+
PS8	F8		ePM1 70%	592x 287x 296	1700/ 75	8	3				A+
PS9	F9		ePM1 80%	592x 592x 296	3400/ 90	17	5	79	78	1163	A+
PS9	F9		ePM1 80%	592x 490x 296	2800/ 90	14	4				A+
PS9	F9		ePM1 80%	592x 287x 296	1700/ 90	8	3				A+
PS10		E10		592x 592x 296	4000/ 250	17	6				
PS10		E10		592x 490x 296	3100/ 250	14	5				
PS10		E10		592x 287x 296	1700/ 250	8	3,3				

\* ME%: Minimum efficiency ref. to EN779:2012

\*\* Energy Consumption, kWh/year: Calculated according to Eurovent Guideline 4/21-2014

\*\*\* Energy class: according to Eurovent RS 4/C/001-2017

Products



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**HEPA filters for high airflows**  
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**HEPA filters for high airflows**  
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**HEPA filters for high airflows**  
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**HEPA filters for high airflows**  
Absolute VE XL, XXL  
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**HEPA filters for high airflows**  
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**HEPA filters for high airflows**  
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**HEPA/ULPA Panels**  
Megalam MD13 - Prosafe  
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**HEPA/ULPA Panels**  
Megalam MD15, MX15, MG15  
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**HEPA/ULPA Panels**  
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**HEPA/ULPA Panels**  
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Products



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**Filter for High Temperature**  
Termikfil 2000  
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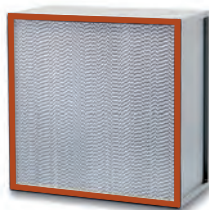
**Filter for High Temperature**  
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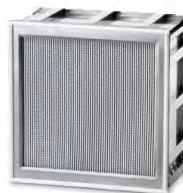
**Filter for High Temperature**  
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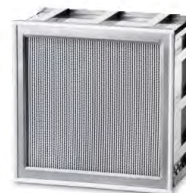
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**Filter for High Temperature**  
Absolute™ D-Pyro H13  
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**Filter for High Temperature**  
Absolute™ D-Pyro H14  
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Absolute CE



Advantages

- Range of standard sizes
  - Compact design
- Very high efficiency
  - H13 are individually tested

**Application:** Very high efficiency final filtration in air conditioning systems housings-ducts or diffusers

**Type:** Close pleated very high efficiency filter

**Frame:** Electro Zinc

**Gasket:** Polyurethane, endless foamed

**Media:** Glass fibre

**Separator:** Hot melt beads

**Sealant:** Polyurethane

**MPPS efficiency:** E11: ≥ 95%, H13: ≥ 99.95%

**DOP efficiency:** ≥ 99%

**Recommended final pressure drop:** 500 Pa

**Maximum flow rate:** Nominal flow rate, otherwise reduction in efficiency

**Temperature:** 70°C maximum in continuous service

**Mounting systems:** FCB Housings, Ducts, Diffusers, CAMSAFE

**Fire rating:** DIN 53438 Class FI

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
1400508	CED11-305x305x150-P0	E11	305x305x150	290/125	2.2	4
1400506	CED11-457x457x150-P0	E11	457x457x150	660/125	4.9	10
1400505	CED11-575x575x150-P0	E11	575x575x150	1055/125	7.8	11
1400507	CED11-305x610x150-P0	E11	305x610x150	590/125	4.4	6
1400504	CED11-610x610x150-P0	E11	610x610x150	1190/125	8.9	12
1400503	CED11-762x610x150-P0	E11	762x610x150	1490/125	11.1	13.5
1400502	CED11-914x610x150-P0	E11	914x610x150	1790/125	13.3	15
1400501	CED11-1219x610x150-P0	E11	1219x610x150	2380/125	17.7	18
1400558	CEX11-305x305x150-P0	E11	305x305x150	380/125	3	4
1400556	CEX11-457x457x150-P0	E11	457x457x150	865/125	6.9	10
1400555	CEX11-575x575x150-P0	E11	575x575x150	1385/125	11	11
1400557	CEX11-305x610x150-P0	E11	305x610x150	770/125	6.1	6
1400554	CEX11-610x610x150-P0	E11	610x610x150	1560/125	12.4	12
1400553	CEX11-762x610x150-P0	E11	762x610x150	1950/125	15.5	13.5
1400552	CEX11-914x610x150-P0	E11	914x610x150	2335/125	18.6	15
1400551	CEX11-1219x610x150-P0	E11	1219x610x150	3120/125	24.8	18
1400654	CEG11-305x610x292-P0	E11	305x610x292	950/125	7.2	7.2
1400653	CEG11-457x610x292-P0	E11	457x610x292	1420/125	10.8	9.9
1400652	CEG11-610x610x292-P0	E11	610x610x292	1900/125	14.4	12.5
1400651	CEG11-762x610x292-P0	E11	762x610x292	2380/125	18	16
1400704	CET11-305x610x292-P0	E11	305x610x292	1190/125	10.9	7.2
1400703	CET11-457x610x292-P0	E11	457x610x292	1780/125	16.4	10
1400702	CET11-610x610x292-P0	E11	610x610x292	2380/125	21.8	13
1400701	CET11-762x610x292-P0	E11	762x610x292	2975/125	27	16.2

\*Other sizes are available on request

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Clean Process Filters: E10 to U17 | HEPA Filters for high airflow

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
1400008	CED13-305x305x150-P0	H13	305x305x150	317/250	2.4	4
1400006	CED13-457x457x150-P0-S	H13	457x457x150	726/250	5.5	10
1400005	CED13-575x575x150-P0-S	H13	575x575x150	1161/250	8.7	11
1400007	CED13-305x610x150-P0-S	H13	305x610x150	645/250	4.9	6
1400004	CED13-610x610x150-P0-S	H13	610x610x150	1305/250	9.8	12
1400003	CED13-762x610x150-P0-S	H13	762x610x150	1635/250	12.3	13.5
1400002	CED13-914x610x150-P0-S	H13	914x610x150	1958/250	14.7	15
1400001	CED13-1219x610x150-P0-S	H13	1219x610x150	2618/250	19.7	18
1400058	CEX13-305x305x150-P0	H13	305x305x150	380/250	3.2	4
1400056	CEX13-457x457x150-P0-S	H13	457x457x150	867/250	7.4	10
1400055	CEX13-575x575x150-P0-S	H13	575x575x150	1384/250	12	11
1400057	CEX13-305x610x150-P0-S	H13	305x610x150	773/250	6.6	6
1400054	CEX13-610x610x150-P0-S	H13	610x610x150	1565/250	13.4	12
1400053	CEX13-762x610x150-P0-S	H13	762x610x150	1957/250	16.7	13.5
1400052	CEX13-914x610x150-P0-S	H13	914x610x150	2348/250	20.1	15
1400051	CEX13-1219x610x150-P0-S	H13	1219x610x150	3131/250	27.1	18
1400154	CEG13-305x610x292-P0-S	H13	305x610x292	893/250	7.8	7
1400153	CEG13-457x610x292-P0-S	H13	457x610x292	1340/250	11.7	9.9
1400152	CEG13-610x610x292-P0-S	H13	610x610x292	1804/250	15.7	12.5
1400151	CEG13-762x610x292-P0-S	H13	762x610x292	2251/250	19.6	16
1400204	CET13-305x610x292-P0-S	H13	305x610x292	1230/250	11.7	7
1400203	CET13-457x610x292-P0-S	H13	457x610x292	1850/250	17.5	9.9
1400202	CET13-610x610x292-P0-S	H13	610x610x292	2485/250	23.5	12.5
1400201	CET13-762x610x292-P0-S	H13	762x610x292	3100/250	29.4	16
*Other sizes are available on request						

Absolute CM



Advantages

- Compact design concept
- Very high efficiency
- Incinerable
- Scannable

**Application:** HEPA filter for standard applications

**Type:** Box Filter

**Frame:** MDF

**Gasket:** Polyurethane, endless foamed

**Media:** Glass fiber

**Separator:** Hot melt beads

**Sealant:** Polyurethane

**EN 1822 (Efficiency @ MPPS):** E11: ≥ 95% ;H13(≥99,95%)

**Rec. final pressure drop:** 2x Initial pressure drop

**Max. final pressure drop:** 800 Pa

**Maximum airflow:** Nominal flow rate (if not, efficiency drops)

**Temperature max:** 70°C

**Remarks:** All filters scan tested acc. EN 1822

**Other options available:** Galvanized frame

**Fire rating:** DIN 53438 Class FI

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
1400758	CMD11-305x305x150-P0	E11	305x305x150	236/125	1.8	4
1400756	CMD11-457x457x150-P0	E11	457x457x150	580/125	4.3	10
1400755	CMD11-575x575x150-P0	E11	575x575x150	950/125	7.1	11
1400757	CMD11-305x610x150-P0	E11	305x610x150	505/125	3.8	6
1400754	CMD11-610x610x150-P0	E11	610x610x150	1080/125	8	12
1400753	CMD11-762x610x150-P0	E11	762x610x150	1370/125	10.1	13.5
1400752	CMD11-914x610x150-P0	E11	914x610x150	1650/125	12.3	15
1400751	CMD11-1219x610x150-P0	E11	1219x610x150	2220/125	16.5	18
1400808	CMX11-305x305x150-P0	E11	305x305x150	310/125	2.5	4
1400806	CMX11-457x457x150-P0	E11	457x457x150	760/125	6	10
1400805	CMX11-575x575x150-P0	E11	575x575x150	1245/125	9.9	11
1400807	CMX11-305x610x150-P0	E11	305x610x150	668/125	5.3	6
1400804	CMX11-610x610x150-P0	E11	610x610x150	1410/125	11.2	12
1400803	CMX11-762x610x150-P0	E11	762x610x150	1788/125	14.2	12
1400802	CMX11-914x610x150-P0	E11	914x610x150	2150/125	17.1	15
1400801	CMX11-1219x610x150-P0	E11	1219x610x150	2900/125	23	18
1400904	CMG11-305x610x292-P0	E11	305x610x292	815/125	6.2	7.2
1400903	CMG11-457x610x292-P0	E11	457x610x292	1265/125	9.6	9.6
1400902	CMG11-610x610x292-P0	E11	610x610x292	1735/125	13.1	13
1400901	CMG11-762x610x292-P0	E11	762x610x292	2180/125	16.6	16.5
1400954	CMT11-305x610x292-P0	E11	305x610x292	1015/125	9.2	7.2
1400953	CMT11-457x610x292-P0	E11	457x610x292	1585/125	14.4	10
1400952	CMT11-610x610x292-P0	E11	610x610x292	2170/125	19.8	13
1400951	CMT11-762x610x292-P0	E11	762x610x292	2725/125	25	16.2

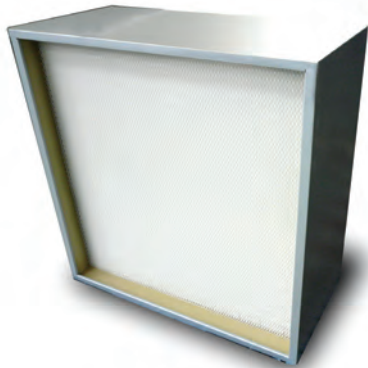
\*Other sizes are available on request

Clean Process Filters: E10 to U17 | HEPA Filters for high airflow

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
1400258	CMD13-305x305x150-P0	H13	305x305x150	258/250	1.9	4
1400256	CMD13-457x457x150-P0-S	H13	457x457x150	636/250	4.8	10
1400255	CMD13-575x575x150-P0-S	H13	575x575x150	1046/250	7.9	11
1400257	CMD13-305x610x150-P0-S	H13	305x610x150	553/250	4.2	6
1400254	CMD13-610x610x150-P0-S	H13	610x610x150	1183/250	8.9	12
1400253	CMD13-762x610x150-P0-S	H13	762x610x150	1497/250	11.3	13.5
1400252	CMD13-914x610x150-P0-S	H13	914x610x150	1805/250	13.6	15
1400251	CMD13-1219x610x150-P0-S	H13	1219x610x150	2434/250	18.3	18
1400308	CMX13-305x305x150-P0	H13	305x305x150	310/250	2.7	4
1400306	CMX13-457x457x150-P0-S	H13	457x457x150	760/250	6.5	8
1400305	CMX13-575x575x150-P0-S	H13	575x575x150	1247/250	10.7	10
1400307	CMX13-305x610x150-P0-S	H13	305x610x150	664/250	5.7	6
1400304	CMX13-610x610x150-P0-S	H13	610x610x150	1419/250	12.1	12
1400303	CMX13-762x610x150-P0-S	H13	762x610x150	1793/250	15.3	13.5
1400302	CMX13-914x610x150-P0-S	H13	914x610x150	2166/250	18.5	15
1400301	CMX13-1219x610x150-P0-S	H13	1219x610x150	2912/250	24.9	18
1400404	CMG13-305x610x292-P0-S	H13	305x610x292	770/250	6.7	7
1400403	CMG13-457x610x292-P0-S	H13	457x610x292	1210/250	10.5	9.9
1400402	CMG13-610x610x292-P0-S	H13	610x610x292	1635/250	14.2	12.5
1400401	CMG13-762x610x292-P0-S	H13	762x610x292	2075/250	18.1	16
1400454	CMT13-305x610x292-P0-S	H13	305x610x292	1060/250	10.1	7.2
1400453	CMT13-457x610x292-P0-S	H13	457x610x292	1670/250	15.8	10
1400452	CMT13-610x610x292-P0-S	H13	610x610x292	2250/250	21.3	13
1400451	CMT13-762x610x292-P0-S	H13	762x610x292	2855/250	27.1	16.2
*Other sizes are available on request						



# Absolute DE



## Advantages

- High air flow applications
  - High quality glass fibre media
  - High efficiency
- Flexibility in size
  - H13 & H14 are individually tested

**Application:** HEPA-filter for high air flows

**Type:** HEPA-Filter

**Frame:** Electro zinc

**Gasket:** Polyurethane, endless foamed

**Media:** Glass fibre

**Separators:** Hot melt beads

**Sealant:** Polyurethane

**EN 1822:**2009 filter class: H13, H14

**MPPS Efficiency:** H13:≥99.95%, H14:≥99.995%

**DOP efficiency:** ≥99.99%

**Recommended final pressure drop:** 500 Pa

**Temperature/ Humidity:** 70° C / 100% RH

**Fire rating:** DIN 53438 Class FI

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
1408031	DE13-305x610x292-P0-S	H13	305x610x292	1500/250	19.8	13
1408032	DE13-610x610x292-P0-S	H13	610x610x292	3000/250	39.9	16
1408033	DE13-762x610x292-P0-S	H13	762x610x292	3750/250	50.1	20
1408034	DE14-305x610x292-P0-S	H14	305x610x292	1300/250	19.8	13
1408035	DE14-610x610x292-P0-S	H14	610x610x292	2600/250	39.9	16
1408036	DE14-762x610x292-P0-S	H14	762x610x292	3300/250	50.1	20

\*Other sizes are available on request

Absolute DG



Advantages

- Rated airflow capacity of up to 3400 m³/h 610x610 (H13)
  - Halogen free
  - Low outgassing
  - Flexible in the dimensions
- Lightweight and installation friendly
  - VDI 6022
  - Scannable

**Application:** HEPA-Filter for high air flows

**Type:** Box Filter

**Frame:** ABS

**Gasket:** Polyurethane, endless foamed

**Media:** Glass fiber

**Separator:** Hot melt beads

**Sealant:** Polyurethane

**EN 1822 (Efficiency @ MPPS):** H13(≥99,95%), H14(≥99,995%)

**Rec. final pressure drop:** 2x Initial pressure drop

**Max. final pressure drop:** 1000 Pa

**Temperature max:** 70°C

**Remarks:** All filters scan-tested acc. EN 1822:2009

**Fire rating:** DIN 53438 Class F1

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
1408037	DG13-305x610x292-P0-OW-V	H13	305x610x292	1500/250	19.8	8.5
1408038	DG13-610x610x292-P0-OW-V	H13	610x610x292	3000/250	39.9	12
1408039	DG 13-762x610x292-P0-OW -V	H13	762x610x292	3750/250	50.1	15.5
1408040	DG14-305x610x292-P0-OW-V	H14	305x610x292	1300/250	19.8	8.5
1408041	DG14-610x610x292-P0-OW-V	H14	610x610x292	2600/250	39.9	12
1408042	DG14-762x610x292-P0-OW-V	H14	762x610x292	3300/250	50.1	15.5

*\*Other sizes are available on request*

## Absolute VE XL, XXL



### Advantages

- High air flow rates, up to 5000 m3/ hr
  - Tested in accordance with EN1822
  - Handle to assist with filter changes
- High filter surface area offers low pressure drop for energy savings and longer life
  - H13 and H14 are individually tested

**Application:** Very high efficiency final filtration in air conditioning systems, housings and diffusers  
**Type:** High air flow HEPA filter  
**Frame:** Galvanised steel  
**Media:** Glass fibre  
**Separator:** Hot-melt beads  
**Sealant:** Polyurethane  
**Gasket:** Polyurethane, endless foamed  
**EN 1822:2009 filter class:** E11, H13 and H14  
**MPPS efficiency:** E11:≥95%, H13:≥99.95%, H14:≥99.995%  
**DOP efficiency:** ≥99%  
**Recommended final pressure drop:** 600 Pa  
**Maximum air flow rate:** See table, use nominal values otherwise a reduction in efficiency may occur  
**Temperature:** 70°C maximum in continuous service  
**Mounting systems:** Front and side access filter frames, FC Housings, terminal housings and safe change systems  
**Fire rating:** DIN 53438 class FI

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
1700010	VELL11-289x595x292-PR	E11	289x595x292	1700/250	16	13
1700009	VELL11-595x595x292-PR	E11	595x595x292	4200/250	38	22
1700007	VELL11-610x610x292-PR	E11	610x610x292	4000/250	21	13
1700008	VELL11-305x610x292-PR	E11	305x610x292	2000/250	14	9
1700006	VELL11-610x610x292-PR	E11	610x610x292	5000/250	35	16.5
1700002	VELL13-610x610x292-PR-S	H13	610x610x292	3400/250	33	16.5
1700005	VELL13-289x595x292-PR-S	H13	289x595x292	1300/250	16	8.5
1700003	VELL13-305x610x292-PR-S	H13	305x610x292	1700/250	16	9
1700004	VELL13-595x595x292-PR-S	H13	595x595x292	3200/250	38	15.5
1700001	VELL13-610x610x292-PR-S	H13	610x610x292	4000/250	40	16.5
1700013	VELL14-305x610x292-PR-S	H14	305x610x292	1500/250	16	9
1700011	VELL14-610x610x292-PR-S	H14	610x610x292	3000/250	40	16.5
1700018	VELL14-305x610x292-PR-S	H14	305x610x292	1700/250	16	13
1700016	VELL14-610x610x292-PR-S	H14	610x610x292	3400/250	40	16.5

*\*Other sizes, stainless steel or aluminium frames are available on request*

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Absolute VG XL, XXL



Advantages

- High air flow
  - Low pressure drop
  - Optimized, compact construction
  - High efficiency
- Halogen free
  - VDI 6022
  - Applicable up to 6000 m³/h air flow

**Application:** Efficiency final filtration in air conditioning systems, housings and diffusers

**Type:** V-Bank Box Filter

**Frame:** ABS

**Gasket:** Polyurethane, endless foamed

**Media:** Glass fiber

**Separator:** Hot melt beads

**Sealant:** Polyurethane

**EN 1822 (Efficiency @ MPPS):** E11(≥95%),H13(≥99,95%), H14(≥99,995%)

**Rec. final pressure drop:** 2x Initial pressure drop

**Max. final pressure drop:** 600 Pa

**Maximum airflow:** Nominal flow rate (if not, efficiency drops)

**Temperature max:** 70°C

**Mounting/Frames:** FKB, 4N, CamSafe2

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
1705008	VGXL11-610x610x292-PR	E11	610x610x290	4000/250	21	10
1705009	VGXXL11-305x610x292-PR	E11	305x610x292	2000/250	14	5
1705007	VGXXL11-610x610x292-PR	E11	610x610x292	5000/250	35	11
1705002	VGL13-610x610x292-PR-S	H13	610x610x292	3400/250	33	11
1705003	VGXL13-305x610x292-PR-S	H13	305x610x292	1700/250	16	5
1705001	VGXL13-610x610x292-PR-S	H13	610x610x292	4000/250	40	11
1705006	VGXL13-762x610x292-PR-S	H13	762x610x292	6000/380	46	14
1705014	VGXL14-305x610x292-PR-S	H14	305x610x292	1500/250	16	5
1705013	VGXL14-610x610x292-PR-S	H14	610x610x292	3000/250	40	11
1705016	VGXL14-305x610x292-PR-S	H14	305x610x292	1700/250	16	5
1705015	VGXL14-305x610x292-PR-S	H14	610x610x292	3400/250	40	11

*\*Other sizes, stainless steel or aluminium frames are available on request*

Absolute VGHF



Advantages

- Compact HEPA filter with header frame
- Incinerable

**Application:** High efficiency final filtration in air conditioning systems and industrial processes

**Type:** V-Bank Filter

**Frame:** Polypropylene, ABS

**Media:** Glass fiber

**Separator:** Hot melt beads

**Sealant:** Polyurethane

**EN 1822 (Efficiency @ MPPS):** E10(≥85%), H13(≥99,95%)

**Rec. final pressure drop:** 2x Initial pressure drop

**Max. final pressure drop:** 500 Pa

**Temperature max:** 70°C

**Remarks:** All filter scan-tested acc. EN 1822:2009 and individually packed in PE-foil. Other editions on request

**Holding Frames:** Front and side access housings and frames are available. Type 8 and FC housings.

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
2430003	VGHF10-592x287x292	E10	592x287x292	1700/250	8.4	3
2430002	VGHF10-592x490x292	E10	592x490x292	2850/250	15.2	4
2430001	VGHF10-592x592x292	E10	592x592x292	4000/250	18.5	5
2440002	VGHF13-592x287x292-0P-S	H13	592x287x292	1350/250	13.1	3
2440003	VGHF13-592x490x292-0P-S	H13	592x490x292	2450/250	24.2	4
2440001	VGHF13-592x592x292-0P-S	H13	592x592x292	3000/250	29.6	5

\*Gasket available on request



**Life Science industries** demand more than Clean Air. It's not enough that the filter protects your products from undesirable particles. The filter must also be manufactured from materials that are proven not to contaminate the sensitive process. **Camfil Prosafe** offers various relevant compliances as microbial inertness acc. to ISO 846 / VDI6022 and food contact acc. to EC1935/2004 and 10/2011 as well as absence of harmful chemicals such as Phthalates, Formaldehyde. Camfil's material components have been tested to prove their resistance to decontamination agents over time.

**Food safety compliant**

ProSafe series is fully compliant with EC1935:2004.

**Decontamination Agent resistance**

Qualified resistance to most common agents like Hydrogen Peroxyde, Peracetic Acid.



**Fully compliant with VDI6022 (German Hygienic Standard)**



**Free of harmful chemicals**

ProSafe range is guaranteed free from Bisphenol A, Phthalates or Formaldehyde.

**Microbial Inertness**

Materials cannot be nutrient substrates for viables.

**Camfil Fabsafe** air filters have been developed specifically for the most demanding high efficiency filtration needs for **optical and microelectronic applications** such as hard disk drives, semiconductor or flat panel manufacturing.

**Ultra Low Outgassing Components**

Fabsafe products are phosphorous free, refractory compounds free and without organic additives. Boron-free filters are available when dopants are a concern.

**Nanoparticle filtration for advanced processes**

The Fabsafe range was designed to remove nanoparticles (<100 nm) and Camfil is able to demonstrate Fabsafe performances down to 10 nm.



**Clean aerosol scan test**

All Fabsafe products are individually tested with a solid PSL aerosol to avoid release of VOC from oil based aerosols after filter installation.



**Zero leak guarantee with 100% QA**

Fabsafe products are guaranteed leak-free and local efficiency values are provided with individual test reports according to EN1822, IEST or relevant customer standards. This is important as microelectronic facilities are not allowed to inject aerosols inside clean-room and potential leaks are therefore very difficult to measure in-situ.

**Energy efficiency**

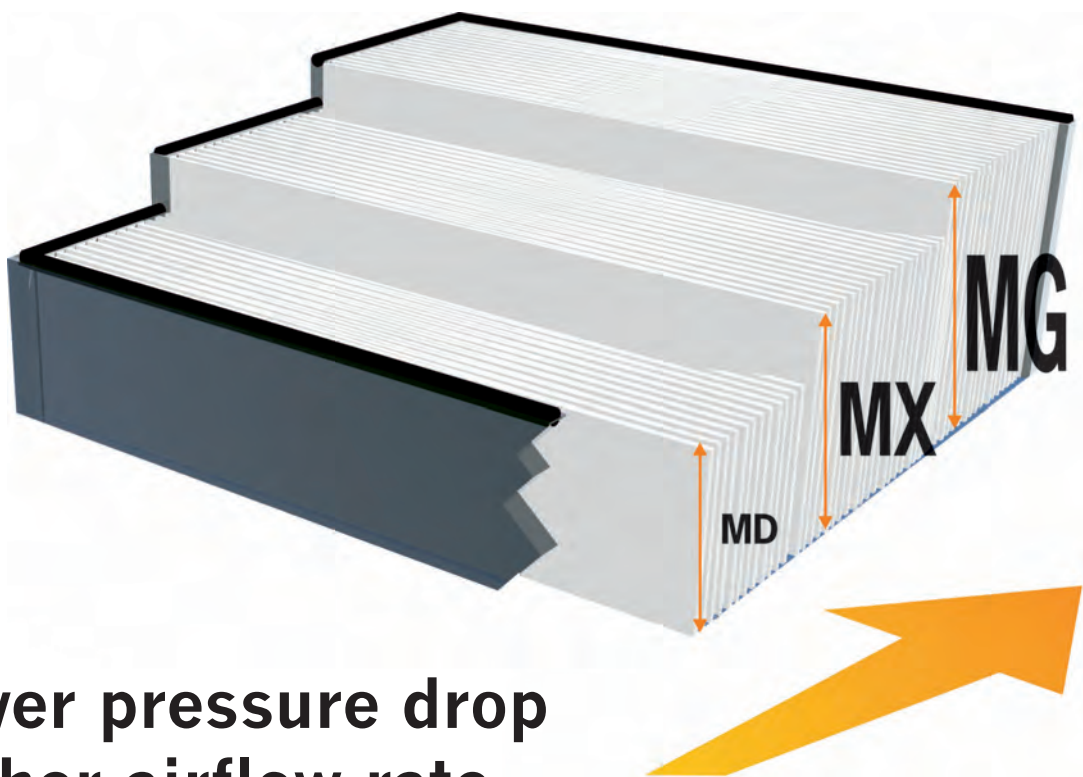
Membrane media or optimized glass fibre products allow for reduced energy cost and safe operation of fan filter units.



Advantages

- Low pressure drop
- Low noise
- Higher flow rate
- Longer operating life

Example : Megalam H14/610x610mm	MD	MX	MG
Pressure drop at 0.45 m/s	140Pa	95 Pa (-32%)	65 Pa (-54%)
Maximum airflow	900 m3/h	1300 m3/h	2000 m3/h
Energy		-32%	-54%
Lifespan	(-)	x1.5	x2.5






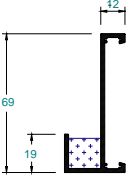
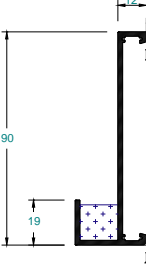
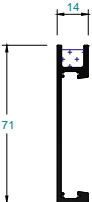


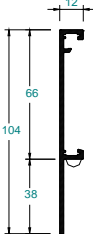
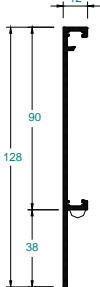
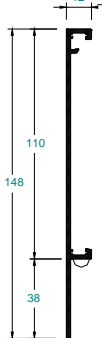
Lower pressure drop  
Higher airflow rate  
More energy savings  
Longer operating life

We have included a range of standard configurations in this catalogue, but the Megalam series of clean room panels can be configured with a wide range of options to meet your requirement. Options include (first item denotes the standard product):

Element	Options
Gasket	<ul style="list-style-type: none"> <li>· Endless Polyurethane</li> <li>· Poron (FabSafe)</li> <li>· Neoprene</li> <li>· EPDM (FabSafe)</li> <li>· PU Sel</li> <li>· Silicone Gel</li> <li>· None</li> </ul>
Faceguard	<ul style="list-style-type: none"> <li>· RAL 9016 powder coated hot dip galvanized iron</li> <li>· Custom color powder coated hot dip galvanized</li> <li>· Iron</li> <li>· Stainless steel</li> <li>· Anodized aluminium</li> <li>· None</li> </ul>
Frame type	<ul style="list-style-type: none"> <li>· Anodized aluminium</li> <li>· Anodized aluminium knife type</li> </ul>
High performance airflow distribution	<ul style="list-style-type: none"> <li>· Glass fibre screen</li> <li>· Synthetic screen</li> </ul>
Filter efficiency	<ul style="list-style-type: none"> <li>· E10 - U17 according to EN1822</li> <li>· Rating at 0.3µm or 0.12µm</li> </ul>
Test Aerosol	<ul style="list-style-type: none"> <li>· DEHS test aerosol</li> <li>· PSL (FabSafe)</li> <li>· None</li> </ul>
Fire Rating	<ul style="list-style-type: none"> <li>· DIN 53438</li> <li>· UL 900</li> </ul>
Media Options	<ul style="list-style-type: none"> <li>· Glass fibre media</li> <li>· Boron-free glass fibre media</li> <li>· Membrane media</li> </ul>



**Extruded aluminium frames for megalam filters**  
This overview shows the different standard frame profile available.

Frame			
Seal	Filter Type:MD	MX	MG
GASKET			
LIQUID SEAL			
LIQUID SEAL			
KNIFE EDGE			

\* Other profile configurations are available upon request.

Megalam (Gel) - Prosafe



Advantages

- Compliant to VDI 6022
- Microbial inert components acc. to ISO 846
- Tested for Food Contact acc. to EC 1935:2004
- Free of bisphenol-A, phthalate and formaldehyde
- Chemically resistant to inactivation and cleaning procedures

**Application:** HEPA filter for clean rooms and LAF benches

**Type:** Pleated Panel

**Frame:** Extruded and anodized aluminium

**Gasket:** Polyurethane, endless foamed , Gel

**Media:** Glass fiber

**Separator:** Hot melt beads

**Sealant:** Polyurethane

**Faceguard:** Expanded metal at inlet side

**EN 1822 (Efficiency @ MPPS):** H13(≥99.95%)

**Rec. final pressure drop:** 2x Initial pressure drop

**Max. final pressure drop:** 500 Pa

**Maximum airflow:** Nominal flow rate (if not, efficiency drops)

**Temperature max:** 70°C

**Remarks:** Individually scan-tested acc. EN 1822:2009 with protocol and packed in PE-foil. Compliant with ProSafe\*\* requirements. Other editions on request

**Fire rating:** UL 900

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
15210093	Megalam MD13LS-305x610x71-10/22	H13	305x610x71	301/116	4.8	3.09
15210094	Megalam MD13LS-610x610x71-10/22	H13	610x610x71	603/115	9.7	5.17
15210095	Megalam MD13LS-914x610x71-10/22	H13	914x610x71	903/114	14.6	7.24
15210096	Megalam MD13LS-1219x610x71-10/22	H13	1219x610x71	1205/114	19.5	9.32



## Megalam MD13 - Prosafe



### Advantages

- Compliant to VDI 6022
  - Microbial inert components acc. to ISO 846
  - Tested for Food Contact acc. to EC 1935:2004
- Free of bisphenol-A, phthalate and formaldehyde
  - Chemically resistant to inactivation and cleaning procedures

**Application:** HEPA filter for clean rooms and LAF benches

**Type:** Pleated Panel

**Frame:** Anodized aluminium

**Gasket:** Polyurethane, endless foamed

**Media:** Glass fiber

**Separator:** Hot melt beads

**Sealant:** Polyurethane

**Faceguard:** Expanded metal on both sides, painted (RAL 9010)

**EN 1822 (Efficiency @ MPPS):** H13(≥99.95%)

**Rec. final pressure drop:** 2x Initial pressure drop

**Max. final pressure drop:** MD: 500 Pa

**Maximum airflow:** Nominal flow rate (if not, efficiency drops)

**Temperature max:** 70°C

**Remarks:** Individually scan-tested acc. EN 1822:2009 with protocol and packed in PE-foil. Compliant with ProSafe\*\* requirements. Other editions on request

**Fire rating:** UL 900

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
15002002	MD13- 305x610-10/22	H13	305x610x66	301/116	4.8	2.75
15002003	MD13- 610x610-10/22	H13	610x610x66	603/115	9.7	4.66
15002005	MD13- 914x610-10/22	H13	914x610x66	903/114	14.6	6.56
15002006	MD13- 1219x610-10/22	H13	1219x610x66	1205/114	19.5	8.47
15041190	MD13- 610x610x76-11/22	H13	610x610x76	603/118	9.7	10.38

\*Other sizes are available on request

## Megalam MD14, MX14, MG14 - Prosafe



### Advantages

- Compliant to VDI 6022
- Microbial inert components acc. to ISO 846
- Tested for Food Contact acc. to EC 1935:2004
- Free of bisphenol-A, phthalate and formaldehyde
- Chemically resistant to inactivation and cleaning procedures

**Application:** ULPA filter for clean rooms and LAF benches

**Type:** Pleated Panel

**Frame:** Anodized aluminium

**Gasket:** Polyurethane, endless foamed

**Media:** Glass fiber

**Separator:** Hot melt beads

**Sealant:** Polyurethane

**Faceguard:** Expanded metal on both side, painted (RAL 9010)

**EN 1822 (Efficiency @ MPPS):** H14(≥99.995%)

**Rec. final pressure drop:** 2x Initial pressure drop

**Max. final pressure drop:** MD: 500 Pa, MX: 600 Pa, MG: 800 Pa

**Maximum airflow:** Nominal flow rate (if not, efficiency drops)

**Temperature max:** 70°C

**Remarks:** Individually scan-tested acc. EN 1822:2009 with protocol and packed in PE-foil. Compliant with ProSafe\*\* requirements. Other editions on request

**Fire rating:** UL 900



Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
15002202	Megalam MD14-305x610-10/22	H14	305x610x66	301/142	4.8	2.68
15002203	Megalam MD14-610x610-10/22	H14	610x610x66	603/141	9.7	4.52
15002205	Megalam MD14-914x610-10/22	H14	914x610x66	903/140	14.6	6.36
15002206	Megalam MD14-1219x610-10/22	H14	1219x610x66	1205/140	19.5	8.2
15002802	Megalam MX14-305x610-10/22	H14	305x610x90	301/96	6.6	3.21
15002803	Megalam MX14-610x610-10/22	H14	610x610x90	603/96	13.2	5.42
15002805	Megalam MX14-914x610-10/22	H14	914x610x90	903/95	19.9	7.62
15002806	Megalam MX14-1219x610-10/22	H14	1219x610x90	1205/95	26.6	9.83
15003402	Megalam MG14-305x610-10/22	H14	305x610x110	301/65	8.7	3.98
15003403	Megalam MG14-610x610-10/22	H14	610x610x110	603/65	17.5	6.84
15003405	Megalam MG14-914x610-10/22	H14	914x610x110	903/64	26.3	9.69
15003406	Megalam MG14-1219x610-10/22	H14	1219x610x110	1205/64	35.2	12.55
*Other sizes are available on request						

Megalam MD15, MX15, MG15 - Prosafe



Advantages

- Compliant to VDI 6022
- Microbial inert components acc. to ISO 846
- Tested for Food Contact acc. to EC 1935:2004
- Free of bisphenol-A, phthalate and formaldehyde
- Chemically resistant to inactivation and cleaning procedures

**Application:** ULPA filter for clean rooms and LAF benches

**Type:** Pleated Panel

**Frame:** Anodized aluminium

**Gasket:** Polyurethane, endless foamed

**Media:** Glass fiber

**Separator:** Hot melt beads

**Sealant:** Polyurethane

**Faceguard:** Expanded metal on both side, painted (RAL 9010)

**EN 1822 (Efficiency @ MPPS):** U15(≥99.9995%)

**Rec. final pressure drop:** 2x Initial pressure drop

**Max. final pressure drop:** MD: 500 Pa, MX: 600 Pa, MG: 800 Pa

**Maximum airflow:** Nominal flow rate (if not, efficiency drops)

**Temperature max:** 70°C

**Remarks:** Individually scan-tested acc. EN 1822:2009 with protocol and packed in PE-foil. Compliant with ProSafe\*\* requirements. Other editions on request

**Fire rating:** UL 900

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
15002402	Megalam MD15-305x610-10/22	U15	305x610x66	301/146	5.6	2.86
15002403	Megalam MD15-610x610-10/22	U15	610x610x66	603/146	11.3	4.88
15002405	Megalam MD15-914x610-10/22	U15	914x610x66	903/145	17.1	6.9
15002406	Megalam MD15-1219x610-10/22	U15	1219x610x66	1205/145	22.7	8.92
15003002	Megalam MX15-305x610-10/22	U15	305x610x90	301/116	7.5	3.41
15003003	Megalam MX15-610x610-10/22	U15	610x610x90	603/115	15.2	5.82
15003005	Megalam MX15-914x610-10/22	U15	914x610x90	903/115	22.8	8.23
15003006	Megalam MX15-1219x610-10/22	U15	1219x610x90	1205/115	30.5	10.65
15003602	Megalam MG15-305x610-10/22	U15	305x610x110	301/81	9.3	3.89
15003603	Megalam MG15-610x610-10/22	U15	610x610x110	603/81	18.8	6.66
15003605	Megalam MG15-914x610-10/22	U15	914x610x110	903/80	28.2	9.42
15003606	Megalam MG15-1219x610-10/22	U15	1219x610x110	1205/80	37.8	12.19
Other sizes are available on request						

Megalam Fabsafe MD, MX, MG



Advantages

- Developed for safe use in microelectronic cleanrooms and equipment
- Ideal for nanoparticle filtration (100 nm)
- High dust holding capacity
- 100% filter scan test for guaranteed performance
- Filter scanned according to EN1822, IEST or other required standards
- Individual efficiency test reports
- Zero leak guarantee
- No organic outgassing from test aerosol
- Low outgassing adhesives and gasket (no organic flame retardant)
- Manufactured and packed in cleanroom environment

**Application:** Microelectronic cleanrooms and equipment.  
Nanoparticle filtration

**Type:** HEPA & ULPA filters

**Frame:** Extruded and anodised aluminium

**Gasket:** Low outgassing EPDM. Other on request

**Media:** Glass fibre, Boron-free glass fibre

**Separator:** Low outgassing hotmelt

**Sealant:** Low outgassing polyurethane

**Faceguard:** Powder coated expanded metal

**Temperature/Humidity:** Maximum 70°C / 100% RH

**Test:** 100% individual scan test according to EN1822, IEST RP-CC007 or required standard

**Test aerosol:** PSL. Oil free

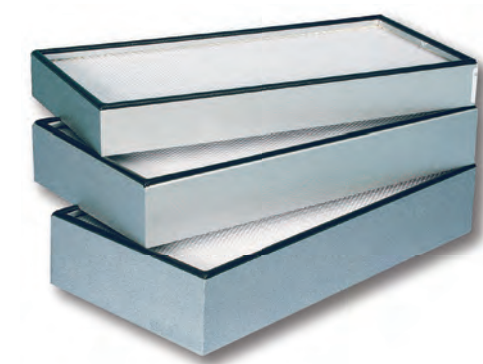
**Fire rating:** UL900

**Remarks:** Many frame options and dimensions are available on request

Model Name	EN1822	Dimensions WxHxD (mm)	Pressure drop (Pa)	Filter Efficiency Particle d=20nm	Filter Efficiency Particle d=100-200nm	Filter Efficiency Particle d=300nm
Fabsafe MD H13	H13	1170x 1170x 66	110	≥99.999999%	≥99.95%	≥99.97%
Fabsafe MD H13	H13	1170x 570x 66	110	≥99.999999%	≥99.95%	≥99.97%
Fabsafe MD H14	H14	1170x 1170x 66	130	≥99.999999%	≥99.995%	≥99.997%
Fabsafe MD H14	H14	1170x 570x 66	130	≥99.999999%	≥99.995%	≥99.997%
Fabsafe MX H14	H14	1170x 1170x 90	90	≥99.999999%	≥99.995%	≥99.997%
Fabsafe MX H14	H14	1170x 570x 90	90	≥99.999999%	≥99.995%	≥99.997%
Fabsafe MG H14	H14	1170x 1170x 110	60	≥99.999999%	≥99.995%	≥99.999%
Fabsafe MG H14	H14	1170x 570x 110	60	≥99.999999%	≥99.995%	≥99.999%
Fabsafe MD U15	U15	1170x 1170x 66	140	≥99.9999999%	≥99.9995%	≥99.9997%
Fabsafe MD U15	U15	1170x 570x 66	140	≥99.9999999%	≥99.9995%	≥99.9997%
Fabsafe MX U15	U15	1170x 1170x 90	110	≥99.9999999%	≥99.9995%	≥99.9997%
Fabsafe MX U15	U15	1170x 570x 90	110	≥99.9999999%	≥99.9995%	≥99.9997%
Fabsafe MG U15	U15	1170x 1170x 110	80	≥99.9999999%	≥99.9995%	≥99.9999%
Fabsafe MG U15	U15	1170x 570x 110	80	≥99.9999999%	≥99.9995%	≥99.9999%
Fabsafe MX U16	U16	1170x 1170x 90	130	≥99.99999999%	≥99.99995%	≥99.99997%
Fabsafe MX U16	U16	1170x 570x 90	130	≥99.99999999%	≥99.99995%	≥99.99997%
Fabsafe MG U16	U16	1170x 1170x 110	90	≥99.99999999%	≥99.99995%	≥99.99999%
Fabsafe MG U16	U16	1170x 570x 110	90	≥99.99999999%	≥99.99995%	≥99.99999%
*Other sizes available on request						

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

## Megalam ES Fabsafe MD, MX, MG



### Advantages

- Developed for safe use in microelectronic cleanrooms and equipment
- Energy savings through use of synthetic PTFE membrane technology
- Compact solution
- 100% filter scan test for guaranteed performance
- Filter scanned according to EN1822, IEST or other required standards
- Zero leak guarantee
- Individual efficiency test reports
- No organic outgassing from test aerosol
- Low outgassing adhesives and gasket (no organic flame retardant)
- Dopant free components
- Manufactured and packed in cleanroom environment

**Application:** Microelectronic cleanrooms and equipment. Low energy usage

**Frame:** Extruded and anodised aluminium

**Gasket:** Low outgassing EPDM. Other on request

**Media:** PTFE, dopant free

**Separator:** Low outgassing hotmelt

**Sealant:** Low outgassing polyurethane

**Faceguard:** Powder coated expanded metal

**Temperature/Humidity:** Maximum 70° C / 100% RH

**Test:** 100% individual scan test according to EN1822, IEST RP-CC007 or required standard

**Test aerosol:** PSL. Oil free

**Fire rating:** UL900

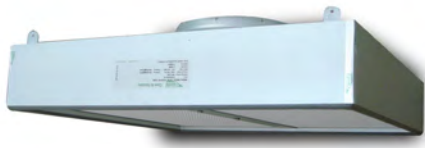
**Remarks:** Many frame options and dimensions are available on request

Model Name	EN1822	Dimensions WxHxD (mm)	Pressure drop (Pa)	Filter Efficiency Particle d=20nm	Filter Efficiency Particle d=100-200nm	Filter Efficiency Particle d=300nm
ES Fabsafe MD H14	H14	1170x 1170x 50	75	≥99.995%	≥99.995%	≥99.995%
ES Fabsafe MD H14	H14	1170x 570x 50	75	≥99.995%	≥99.995%	≥99.995%
ES Fabsafe MD H14	H14	1170x 1170x 66	60	≥99.995%	≥99.995%	≥99.995%
ES Fabsafe MD H14	H14	1170x 570x 66	60	≥99.995%	≥99.995%	≥99.995%
ES Fabsafe MX H14	H14	1170x 1170x 90	50	≥99.995%	≥99.995%	≥99.995%
ES Fabsafe MX H14	H14	1170x 570x 90	50	≥99.995%	≥99.995%	≥99.995%
ES Fabsafe MD U15	U15	1170x 1170x 50	90	≥99.9995%	≥99.9995%	≥99.9995%
ES Fabsafe MD U15	U15	1170x 570x 50	90	≥99.9995%	≥99.9995%	≥99.9995%
ES Fabsafe MD U15	U15	1170x 1170x 66	75	≥99.9995%	≥99.9995%	≥99.9995%
ES Fabsafe MD U15	U15	1170x 570x 66	75	≥99.9995%	≥99.9995%	≥99.9995%
ES Fabsafe MX U15	U15	1170x 1170x 90	65	≥99.9995%	≥99.9995%	≥99.9995%
ES Fabsafe MX U15	U15	1170x 570x 90	65	≥99.9995%	≥99.9995%	≥99.9995%
ES Fabsafe MD U16	U16	1170x 1170x 66	105	≥99.99995%	≥99.99995%	≥99.99995%
ES Fabsafe MD U16	U16	1170x 570x 66	105	≥99.99995%	≥99.99995%	≥99.99995%
ES Fabsafe MX U16	U16	1170x 1170x 90	85	≥99.99995%	≥99.99995%	≥99.99995%
ES Fabsafe MX U16	U16	1170x 570x 90	85	≥99.99995%	≥99.99995%	≥99.99995%

\*Other sizes available on request



Silent Hood HD - H13



Advantages

- Compact filter-diffuser for clean room
- Quiet: LW = 35 dB
- Ready to install
- Laminarity +/- 20%

**Application:** Final filtration for clean rooms  
**Type:** Ready to install HEPA/ULPA filter diffuser  
**Frame:** Extruded and anodised aluminium, galvanised steel cover  
**Gasket:** Polyurethane, endless foamed  
**Media:** Glass fibre  
**Separator:** Hot melt beads  
**Sealant:** Polyurethane  
**Terminal:** Collar with outer dia. 305 mm (12in) or 250 mm (10in) depending on the model  
**Diffuser disc:** Perforated aluminium  
**Faceguard:** Expanded metal on outlet, powder coated RAL 9016  
**EN 1822 (Efficiency @ MPPS):** H13(≥99.95%)  
**Rec. final pressure drop:** 500 Pa  
**Maximum airflow:** Nominal flow rate (if not, efficiency drops)  
**Temperature max:** 70°C  
**Test:** 100% individually scanned in accordance with EN 1822.  
**Mounting system:** Integrated suspension eyes  
**Fire rating:** UL 900

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
15300001	Megalam MD13-HD10-610x610-01/02	H13	610x610x110	603/115	9.7	9.28
15300002	Megalam MD13-HD10-914x610-01/02	H13	914x610x110	903/114	14.6	12.9
15300003	Megalam MD13-HD10-1219x610-01/02	H13	1219x610x110	1205/114	19.5	16.53
15301001	Megalam MD13-HD12-610x610-01/02	H13	610x610x110	603/115	9.7	8.42
15301002	Megalam MD13-HD12-914x610-01/02	H13	914x610x110	903/114	14.6	12.03
15301003	Megalam MD13-HD12-1219x610-01/02	H13	1219x610x110	1205/114	19.5	15.66

\*Other sizes are available on request

Silent Hood HD - H14



Advantages

- Compact filter-diffuser for clean room
- Ready to install
- Quiet: LW = 35 dB
- Laminarity +/- 20%

**Application:** Final filtration for clean rooms  
**Type:** Ready to install HEPA/ULPA filter diffuser  
**Frame:** Extruded and anodised aluminium, galvanised steel cover  
**Gasket:** Polyurethane, endless foamed  
**Media:** Glass fibre  
**Separator:** Hot melt beads  
**Sealant:** Polyurethane  
**Terminal:** Collar with outer dia. 305 mm (12in) or 250 mm (10in) depending on the model  
**Diffuser disc:** Perforated aluminium  
**Faceguard:** Expanded metal on outlet, powder coated RAL 9016  
**EN 1822 (Efficiency @ MPPS):** H14(≥99.995%)  
**Rec. final pressure drop:** 500 Pa  
**Maximum airflow:** Nominal flow rate (if not, efficiency drops)  
**Temperature max:** 70°C  
**Test:** 100% individually scanned in accordance with EN 1822.  
**Mounting system:** Integrated suspension eyes  
**Fire rating:** UL 900

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
15300101	Megalam MD14-HD10-610x610-01/02	H14	610x610x110	603/141	9.7	9.28
15300102	Megalam MD14-HD10-914x610-01/02	H14	914x610x110	903/140	14.6	12.9
15300103	Megalam MD14-HD10-1219x610-01/02	H14	1219x610x110	1205/140	19.5	16.53
15300401	Megalam MX14-HD10-610x610-01/02	H14	610x610x133	603/96	13.2	10.55
15300402	Megalam MX14-HD10-914x610-01/02	H14	914x610x133	903/95	19.9	14.56
15300403	Megalam MX14-HD10-1219x610-01/02	H14	1219x610x133	1205/95	26.6	18.59
15300701	Megalam MG14-HD10-610x610-01/02	H14	610x610x155	603/66	17.1	12.16
15300703	Megalam MG14-HD10-1219x610-01/02	H14	1219x610x155	1205/65	34.7	21.42
15301101	Megalam MD14-HD12-610x610-01/02	H14	610x610x110	603/141	9.7	8.42
15301102	Megalam MD14-HD12-914x610-01/02	H14	914x610x110	903/140	14.6	12.03
15301103	Megalam MD14-HD12-1219x610-01/02	H14	1219x610x110	1205/140	19.5	15.66
15301401	Megalam MX14-HD12-610x610-01/02	H14	610x610x133	603/96	13.2	9.69
15301402	Megalam MX14-HD12-914x610-01/02	H14	914x610x133	903/95	19.9	13.7
15301403	Megalam MX14-HD12-1219x610-01/02	H14	1219x610x133	1205/95	26.6	17.72
15301701	Megalam MG14-HD12-610x610-01/02	H14	610x610x155	603/66	17.1	11.29
15301703	Megalam MG14-HD12-1219x610-01/02	H14	1219x610x155	1205/65	34.7	20.55

\*Other sizes are available on request

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Silent Hood HL - H13



Advantages

- Compact filter-diffuser for clean room
- Ready to install
- Quiet: LW = 35 dB
- Laminarity +/- 20%

**Application:** Final filtration for clean rooms  
**Type:** Ready to install HEPA/ULPA filter diffuser  
**Frame:** Extruded and anodised aluminium, galvanised steel cover  
**Gasket:** Polyurethane, endless foamed  
**Media:** Glass fibre  
**Separator:** Hot melt beads  
**Sealant:** Polyurethane  
**Terminal:** Collar with outer dia. 305 mm (12in) or 250 mm (10in) depending on the model  
**Diffuser disc:** Perforated aluminium  
**Faceguard:** Expanded metal on outlet, powder coated RAL 9016  
**EN 1822 (Efficiency @ MPPS):** H13(≥99.95%)  
**Rec. final pressure drop:** 500 Pa  
**Maximum airflow:** Nominal flow rate (if not, efficiency drops)  
**Temperature max:** 70°C  
**Test:** 100% individually scanned in accordance with EN 1822.  
**Mounting system:** Integrated suspension eyes  
**Fire rating:** UL 900

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
15401001	Megalam MD13-HL10-610x610-01/02	H13	610x610x110	603/115	9.7	8.25
15401002	Megalam MD13-HL10-914x610-01/02	H13	914x610x110	903/114	14.6	11.87
15401003	Megalam MD13-HL10-1219x610-01/02	H13	1219x610x110	1205/114	19.5	15.5
15403001	Megalam MD13-HL12-610x610-01/02	H13	610x610x133	603/115	9.7	7.38
15403002	Megalam MD13-HL12-914x610-01/02	H13	914x610x133	903/114	14.6	11
15403003	Megalam MD13-HL12-1219x610-01/02	H13	1219x610x133	1205/114	19.5	14.63

*\*Other sizes are available on request*

## Silent Hood HL - H14



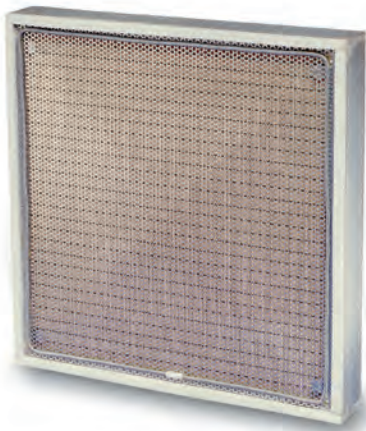
### Advantages

- Compact filter-diffuser for clean room
- Ready to install
- Quiet: LW = 35 dB
- Laminarity +/- 20%

**Application:** Final filtration for clean rooms  
**Type:** Ready to install HEPA/ULPA filter diffuser  
**Frame:** Extruded and anodised aluminium, galvanised steel cover  
**Gasket:** Polyurethane, endless foamed  
**Media:** Glass fibre  
**Separator:** Hot melt beads  
**Sealant:** Polyurethane  
**Terminal:** Collar with outer dia. 305 mm (12in) or 250 mm (10in) depending on the model  
**Diffuser disc:** Perforated aluminium  
**Faceguard:** Expanded metal on outlet, powder coated RAL 9016  
**EN 1822 (Efficiency @ MPPS):** H14(≥99.995%)  
**Rec. final pressure drop:** 500 Pa  
**Maximum airflow:** Nominal flow rate (if not, efficiency drops)  
**Temperature max:** 70°C  
**Test:** 100% individually scanned in accordance with EN 1822.  
**Mounting system:** Integrated suspension eyes  
**Fire rating:** UL 900

Article Number	Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
15401101	Megalam MD14-HL10-610*610-01/02	H14	610x610x110	603/141	9.7	8.25
15401102	Megalam MD14-HL10-914*610-01/02	H14	914x610x110	903/140	14.6	11.87
15401103	Megalam MD14-HL10-1219*610-01/02	H14	1219x610x110	1205/140	19.5	15.5
15401401	Megalam MX14-HL10-610*610-01/02	H14	610x610x133	603/96	13.2	9.18
15401402	Megalam MX14-HL10-914*610-01/02	H14	914x610x133	903/95	19.9	13.19
15401403	Megalam MX14-HL10-1219*610-01/02	H14	1219x610x133	1205/95	26.6	17.22
15403101	Megalam MD14-HL12-610*610-01/02	H14	610x610x110	603/141	9.7	7.38
15403102	Megalam MD14-HL12-914*610-01/02	H14	914x610x110	903/140	14.6	11
15403103	Megalam MD14-HL12-1219*610-01/02	H14	1219x610x110	1205/140	19.5	14.63
15403401	Megalam MX14-HL12-610*610-01/02	H14	610x610x133	603/96	13.2	8.32
15403402	Megalam MX14-HL12-914*610-01/02	H14	914x610x133	903/95	19.9	12.33
15403403	Megalam MX14-HL12-1219*610-01/02	H14	1219x610x133	1205/95	26.6	16.35

# Termikfil 2000



## Advantages

- Meets FDA requirements
  - Maximum continuous operating temperature 350°C, efficiency 99,99% at 0,3 1,1m
  - Ceramic frame
- Efficiency tested after precuring
  - Exclusive precuring process at 300°C carried out in the plant

**Application:** Protection of ultra-clean processes at high temperature, sterilisation tunnels in the pharmaceutical industry

**Type:** Very high efficiency panel resistant to 350°C in continuous service

**Frame:** Composite ceramic

**Gasket:** Rolled glass fibre paper + 6mm dia glass braid

**Media:** Glass fibre

**Separator:** Glass strands

**Sealant:** Ceramic

**Faceguard:** Upstream and downstream in stainless steel

**DOP efficiency:** 99.99%

**Maximum local penetration:** 0.01% conforming to FDA requirements

**Recommended final pressure drop:** 350 Pa

**Temperature:** Up to 350°C in continous service

**Test:** 100% after thermal treatment at 300°C

**Mounting:** A stainless steel adabtor frame can be supplied to reach the thickness of 150mm or 292mm

**NB:** To reduce fume emission when starting up, TERMIKFIL undergoes a specific precuring cycle in the factory at 300°C using an exclusive CAMFIL process

Article Number	Model	Dimension (WxHxD) (mm)	Efficiency at 0.30µm %	Media area (m²)	Air flow/pressure drop (m³/h/Pa)	Weight (kg)
3415.07.00	4P4	457x457x84	99.9	5	675/250	3
3415.06.00	3P3	305x305x84	99.9	2.9	300/250	2
3415.01.00	3P6	305x610x84	99.9	5.9	600/250	4
3415.02.00	6P6	610x610x84	99.9	12.1	1200/250	5
3415.05.00	4P6	457x610x84	99.9	8.9	900/250	4
3415.03.00	7P6	762x610x84	99.9	15.3	1500/250	6
3415.04.00	9P6	915x610x84	99.9	18.5	1800/250	8



Sofilair HT 120-H13



Advantages

- High air flow rates
- With stand high temperature up to 120°C
- High filter surface area offers low pressure drop for energy savings and longer life
- Large media area

**Applications:** Industry and hospitals

**Type:** HEPA filter with high airflow

**Frame:** Galvanized steel with handle

**Media:** Glass fiber

**Separator:** Glass fiber threads

**Sealant:** Polyurethane

**Gasket:** Half-round neoprene Ø 15 mm moulded in one piece, 99.995% MPPS (H13 according to EN 1822), 99.99 % 0.3µ

**Temperature:** 120°C maximum continuous

**Mounting systems:** FCBL-A housing

Article Number	Model	Dimension (WxHxD) (mm)	Media area (m²)	Air flow/pressure drop (m³/h/Pa)	Weight (kg)
1561.02.00	SFR120-E-4000-H13	610x610x292	40	4000/250	23
1561.01.00	SFR120-E-3400-H13	610x610x292	33	3400/250	20
1564.01.00	SFR120-E-2500-H13	610x610x292	24	2500/25	19
1566.01.00	SFR120-E-1500-H13	305x610x292	16	1500/250	13
1567.01.50	SFR120-E-3200-H13	595x595x292	38	3200/250	22
1568.01.50	SFR120-E-1300-H13	289x595x292	16	1300/250	12

Airopac® HT-HF



Advantages

- High efficiency
- 260°C/385°C max operating temperature
- Silicon free construction
- Compact design

**Application:** Paint bake ovens and other high temperature applications

**Type:** High efficiency, high temperature, silicon free compact filter

**Frame:** Galvanised steel

**Gasket:** Glass fibre

**Media:** Glass fibre

**Separator:** Corrugated aluminium

**Sealant:** Glass fibre

**Grille:** Galvanised steel upstream and downstream

**EN779:2012 filter class:** M6, F8

**ASHRAE 52.2:2007 filter class:** MERV 11, MERV 14

**Recommended final pressure drop:** 250 Pa

**Temperature:** 260°C maximum continuous, 385°C peak during 1 hour

Article Number	Model	MERV (A)	EN779	Dimension (WxHxD) (mm)	Media area (m²)	Air flow/pressure drop (m³/h/Pa)	Weight (kg)
2180001	3CPM-HT-122412-60	MERV 11(A)	M6	305x610x292	7.7	1700/80	5.6
2180002	3CPM-HT-242412-60	MERV 11(A)	M6	610x610x292	15.9	3400/75	9.5
2180004	3CPM-HT-242406-60	MERV 11(A)	M6	610x610x150	7.8	1700/30	5.6
2180005	3CPM-HT-122403-60	MERV 11(A)	M6	305x610x78	2.4	750/30	2
2180006	3CPM-HT-242403-60	MERV 11(A)	M6	610x610x78	4.9	1500/30	4
2181001	3CPM-HT-122412-90	MERV 14(A)	F8	305x610x292	7.7	1700/120	5.6
2181002	3CPM-HT-242412-90	MERV 14(A)	F8	610x610x292	15.9	3400/110	9.5
2181004	3CPM-HT-242406-90	MERV 14(A)	F8	610x610x150	7.8	1700/65	5.6
2181005	3CPM-HT-122403-90	MERV 14(A)	F8	305x610x78	2.4	750/80	2
2181006	3CPM-HT-242403-90	MERV 14(A)	F8	610x610x78	4.9	1500/80	4
2181007	3CPM-HT-305*610*52-90	MERV 14(A)	F8	305x610x52	2.7	750/90	1.8
2181008	3CPM-HT-610*610*52-90	MERV 14(A)	F8	610x610x52	5.4	1500/90	3.6
2181009	3CPM-HT-480*480*78-90	MERV 14(A)	F8	480x480x78	2.3	800/80	2.1
2181010	3CPM-HT-915*457*78-90	MERV 14(A)	F8	915x457x78	5.7	2000/100	4.5
2181011	3CPM-HT-762 *457*78-90	MERV 14(A)	F8	762x457x78	3.6	1250/80	3.8
2190001	3CPM-HT-HF-242412-60	MERV 11(A)	M6	592x592x292	13.3	3000/105	8.3
2191001	3CPM-HT-HF-242412-90	MERV 14(A)	F8	592x592x292	13.3	3000/150	8.3

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

# Absolute™ 1FRK-V



## Advantages

- ≥99,95% at MPPS with DEHS
  - Temperature resistant up to 350°C
- High efficiency
  - High mechanical strength
  - High air flow

**Application:** Protection for clean processes at high temperature

**Type:** High temperature filter

**Frame:** Reinforced stainless steel

**Gasket:** Glass Fiber

**Media:** Glass fiber

**Separator:** Aluminium

**Sealant:** Ceramic

**EN 1822 (Efficiency @ MPPS):** H13(≥99,95%)

**Rec. final pressure drop:** 500 Pa

**Rec. final pressure drop:** 2x Initial pressure drop

**Temperature max:** 350°C

**RH. max:** 100%

**Remarks:** Please note installation and assembly instructions! Due to the different thermal expansion coefficients of the individual filter components the ceramic potting may form cracks during the tempering process. At operating temperature (350 °C) these filters have an overall efficiency of 99,97% at 0,3 µm, leakages are possible

Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
1FRKV- 220-1W	H13	305x 610x 150	540/ 250	5	10,3
1FRKV- 300-1W	H13	457x 457x 150	620/ 250	5,9	11,2
1FRKV- 600-1W	H13	610x 610x 150	1180/ 250	11	13,52
1FRKV- 980-1W	H13	915x 610x 150	1780/ 250	16,8	18,3
1FRKV- 450-1W	H13	305x 610x 292	900/ 250	10,4	18
1FRKV- 725-1W	H13	457x 610x 292	1420/ 250	16,3	21,4
1FRKV-1000-1W	H13	610x 610x 292	1960/ 250	22,5	23,4
1FRKV-1250-1W	H13	762x 610x 292	2480/ 250	28,4	25,92

Modell -1W = Gasket upstream (standard)

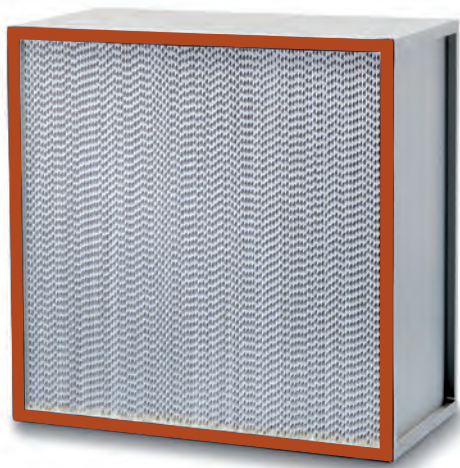
Modell -01W = Gasket downstream

Modell -2W = Gasket both sides

Modell -0 = no gasket

Other editions on request

Absolute™ 1FRSI



Advantages

- ≥99,95% at MPPS with DEHS
- Temperature resistant up to 250°C
- Constant efficiency
- High mechanical strength
- High air flow

**Application:** Protection for clean processes at high temperatures

**Type:** High temperature filter

**Frame:** Stainless steel

**Gasket:** Silicone

**Media:** Glass fiber

**Separator:** Aluminium

**Sealant:** Silicon HT

**EN 1822 (Efficiency @ MPPS):** H13(≥99,95%)

**Rec. final pressure drop:** 500 Pa

**Rec. final pressure drop:** 2x Initial pressure drop

**Temperature max:** 250°C

**RH. max:** 100%

**Remarks:** Please note the installation and assembly instructions!

Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
1FRSI-25-1SIHT	H13	203x 203x 78	50/ 250	0.5	2.5
1FRSI-50-1SIHT	H13	203x 203x 150	90/ 250	0.9	3.1
1FRSI-110-1SIHT	H13	305x 305x 150	250/ 250	2.4	4
1FRSI- 200-1SIHT	H13	305x 305x 292	410/ 250	5.1	5.1
1FRSI- 220-1SIHT	H13	305x 610x 150	540/ 250	5	7.9
1FRSI- 300-1SIHT	H13	457x 457x 150	620/ 250	5.9	8.46
1FRSI- 450-1SIHT	H13	305x 610x 292	900/ 250	10.4	15.6
1FRSI- 600-1SIHT	H13	610x 610x 150	1180/ 250	10.9	11.36
1FRSI- 725-1SIHT	H13	457x 610x 292	1420/ 250	16.3	18
1FRSI- 830-1SIHT	H13	762x 610x 150	1500/ 250	13.7	13.5
1FRSI- 980-1SIHT	H13	915x 610x 150	1800/ 250	16.8	15.8
1FRSI-1000-1SIHT	H13	610x 610x 292	1960/ 250	22.5	16.5
1FRSI-1250-1SIHT	H13	762x 610x 292	2500/ 250	28.4	23.52
1FRSI-610x457x150-1SIHT	H13	610x 457x 150	860/ 250	7.8	8.4
1FRSI-457x457x292-1SIHT	H13	457x 457x 292	1030/ 250	12.8	10.5
1FRSI-610x762x292-1SIHT	H13	610x 762x 292	2500/ 250	22.7	21.5

Type -1SIHT = gasket upstream (standard)

Type -01SIHT = gasket downstream

Type -2SIHT = gasket both sides

Type -0 = without gasket

Other dimensions on request

# Absolute™ D-Pyro H13



### Advantages

- H13 in all Temp.ranges  
≥99,95% at MPPS with DEHS
  - Temperature resistant up to 350°C
  - Patented construction
- Zero tempering
  - Zero Emission
  - Zero Outgasing
  - ProSafe + REACH compliance

**Application:** HEPA filter protection for clean processes at high temperature, especially for Life Science (depyrogenation tunnels, ovens)  
**Type:** High temperature filter  
**Frame:** Stainless steel  
**Media:** Glass fiber  
**Separator:** Stainless steel  
**Sealant:** Inorganic polymer  
**EN 1822 (Efficiency @ MPPS):** ≥99,997% at 0,3µm, ≥99,995% at MPPS, H13, even after heating cycles, leakfree ≥ 200 cycles  
**Max. final pressure drop:** 700Pa  
**Temperature max. (peak):** 350°C (400°C)  
**Remarks:** ISO 5 under all production steps. Please note installation and assembly instructions! Other editions on request (with gasket, or sizes)

Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
DHT13-305x610x150-0-SP	H13	305x 610x 150	460/ 290	4.8	8.0
DHT13-457x457x150-0-SP	H13	457x 457x 150	510/ 290	4.8	9.0
DHT13-457x610x150-0-SP	H13	457x 610x 150	690/ 290	7.3	12.0
DHT13-610x610x150-0-SP	H13	610x 610x 150	990/ 290	10.4	16.0
DHT13-762x610x150-0-SP	H13	762x 610x 150	1260/ 290	13.1	34.0
DHT13-305x610x292-0-SP	H13	305x 610x 292	840/ 290	9.7	13.0
DHT13-457x610x292-0-SP	H13	457x 610x 292	1310/ 290	14.6	19.5
DHT13-610x610x292-0-SP	H13	610x 610x 292	1850/ 290	20.7	26.0
DHT13-762x610x292-0-SP	H13	762x 610x 292	2250/ 290	25.9	44.0
* Pressure drop: ±10%					



# Absolute™ D-Pyro H14



### Advantages

- H14 in all Temp.ranges
  - Temperature resistant up to 350°C
  - Patented construction
- Zero tempering
  - Zero Emission
  - Zero Outgasing
  - ProSafe + REACH compliance

**Application:** HEPA filter protection for clean processes at high temperature, especially for Life Science (depyrogenation tunnels, ovens)

**Type:** High temperature filter

**Frame:** Stainless steel

**Media:** Glass fiber

**Separator:** Stainless steel

**Sealant:** Inorganic polymer

**EN 1822 (Efficiency @ MPPS):** ≥99,997% at 0,3µm, ≥99,995% at MPPS, H14, even after heating cycle, leakfree ≥ 200 cycles

**Max. final pressure drop:** 700Pa

**Temperature max. (peak):** 350°C (400°C)

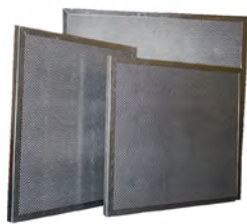
**Remarks:** ISO 5 under all production steps. Please note installation and assembly instructions! Other editions on request (with gasket, or sizes)

Type	EN1822	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
DHT14-305x610x150-0-SP	H14	305x 610x 150	420/ 290	4.8	8.0
DHT14-457x457x150-0-SP	H14	457x 457x 150	450/ 290	5.3	9.0
DHT14-457x610x150-0-SP	H14	457x 610x 150	610/ 290	7.3	12.0
DHT14-610x610x150-0-SP	H14	610x 610x 150	840/ 290	10.4	16.0
DHT14-762x610x150-0-SP	H14	762x 610x 150	1040/ 290	13.1	34.0
DHT14-305x610x292-0-SP	H14	305x 610x 292	670/ 290	9.7	13.0
DHT14-457x610x292-0-SP	H14	457x 610x 292	1000/ 290	14.6	19.5
DHT14-610x610x292-0-SP	H14	610x 610x 292	1340/ 290	20.7	26.0
DHT14-762x610x292-0-SP	H14	762x 610x 292	1675/ 290	25.9	44.0
* Pressure drop: ±10%					

## Products



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**Loose-filled panels**  
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**AMC control**  
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**AMC control**  
GigaPleat NXPC  
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**AMC control**  
GigaPleat NXDP  
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Application matrix

DUTY	VERY LIGHT	LIGHT	MODERATE	MODERATE	MODERATE	HEAVY	HEAVY	VERY HEAVY
SEGMENT	IAQ	COMFORT	SENSITIVE ENVIRONMENT	CLEAN ROOMS	LIGHT PROCESS	CORROSION CONTROL	INDUSTRIAL EXHAUST	EMERGENCY PROTECTION
EXAMPLE	CITY CENTRE OFFICE	AIRPORT	MUSEUM AND IVF CLINIC	SEMI-CONDUCTOR	SMALL FACTORY	PETROCHEM. PULP & PAPER	WASTE HANDLING	MINE REFUGE
CUSTOMER PROBLEM	NON-SPECIFIC	SPECIFIC	SPECIFIC	SPECIFIC	SPECIFIC	SPECIFIC	VERY SPECIFIC	VERY SPECIFIC
MAKE-UP AIR	CITY FAMILY / CAMCARB	CAMCARB	CAMCARB	CAMCARB / GIGAPLEAT	CAMCARB	PROCARB		PROCARB
RECIRC. (RETURN) AIR	CITY FAMILY	CITY FAMILY	CITY FAMILY / GIGAPLEAT	GIGAPLEAT	CAMCARB	CAMCARB		PROCARB
EXHAUST AIR					CAMCARB		PROCARB	



Molecular filter test equipment according to ISO 10121

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.



## Why molecular filtration?

Air pollution caused by traffic, manufacturing, power plants, agriculture and even forest fires is a growing problem in our industrialized world.

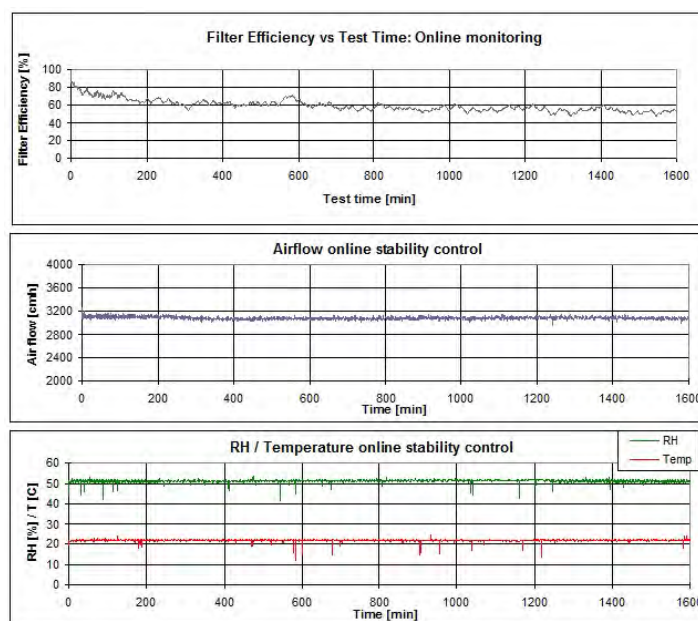
Molecular gaseous compounds are invisible and all around us. Some of these compounds are so toxic, and yet so hard for us to detect, that they can do us harm without even realizing we have been exposed.

Unfortunately we are routinely being subjected to such hazardous compounds in our offices, our homes, our cities and even during our leisure time.

The impact of such exposure can be significant. High ozone or volatile organic compound (VOC) levels represent a serious health threat for all of us. At the same time air pollution can damage everything from valuable artifacts in museums to exposed surfaces in our homes and offices.

In manufacturing environments Airborne Molecular Contamination (AMC) can cause a variety of problems. In semiconductor manufacturing, for example, AMC can reduce product yield, corrode valuable optical components and damage a wide range of process equipment.

In other industries, as products and processes become more complex and more sensitive to all types of contamination, the control of AMC will become an ever more critical part of ensuring product quality and improving process yield rates.



Test according to ISO 10121

## Additional services

Camfil offers a wide range of AMC focused services that allow our customers to remain focused on their core business. These service include filter life time analysis, real time online measurement of contaminants and passive sampling to precisely determine the type and concentration of the problem compounds.

Once local analysis has been completed our AMC experts can propose comprehensive AMC solutions based on the minimum possible Life Cycle Cost available to meet customer needs.

Camfil is the only filter company equipped with a full size filter test facility designed to performance test not just filter media samples but also full size filters under precisely simulated conditions. This full size filter testing is the basis for all our published technical data and can be used to test filter performance against wide and varied range of AMC challenges under precise temperature, humidity and air flow conditions.

This type of performance data can be invaluable when it comes to determining the optimal solution for any specific AMC challenge.

## Molecular filtration technical services

### Beyond Filtration

Camfil provides a comprehensive range of measurement services to complement their range of air filtration products. The services are used to assist in product selection, product validation and optimization of product performance.

Where possible we base our testing on international standards to ensure comparability and repeatability of results.

All our testing facilities are ISO 9001 : 2000 certified and measuring equipment is calibrated traceable to national standard.



### Campure Coupons

Campure or reactivity coupons are an economical and simple way to assess the corrosive potential of an environment.

The coupons comprise of a pair of copper and silver foil strips which are exposed to the environment. After a given period, the coupons are returned to the laboratory where the surface corrosion is determined. The types and relative amounts of corrosion on each metal are indicative of the corrosive agents in the air.

Coupons may be used to assess an environment prior to selection and installation of a molecular filtration system and to validate the ongoing performance after installation.

Atmospheres may be classified according to the Instrument Society of America standard ISA-S71.04. Categories include Mild (G1), Moderate (G2), Harsh (G3) and Severe (GX).

### Residual Life Analysis / Gigamonitor

It is important to be able to predict the impending failure of a molecular filter due to saturation of the media. This may be achieved through a programme of residual life analyses.

In this laboratory technique, a sample of media returned from the field is analysed for the residual content of the impregnation or chemical agent system.

A series of measurements made at 3 or 6 month interval allow the eventual deterioration in the condition of the media to be anticipated and plans put in place for a replacement.

### Gas challenges

Camfil have a unique test facility that allows full scale molecular filters to be tested under conditions which precisely replicate those experienced in actual applications.

The molecular filtration test rig allows filters to be exposed to airflows with a wide variety of temperatures and relative humidities.

### Site services

Camfil have the possibility to offer on-site support services. These may include:

- Supply and fit of filters.
- Removal and disposal of waste material
- Supply and fill of new media and in site performance validation.



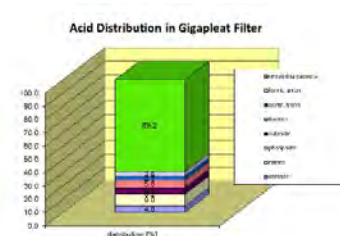
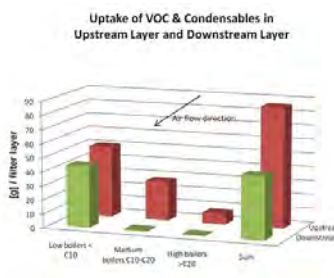
### On-line corrosion monitoring

#### (ISA Check II)

The Camfil ISA-Check II is a highly sensitive second-generation instrument for measuring the corrosivity of air in real time. It is a vital tool for protecting valuable electronic equipment and other objects from corrosion caused by airborne acidic gases.

ISA-Check II measures and registers the change over time in the electrical resistance (ER) of a thin metal track applied on an insulating substrate.

If the metal corrodes, the cross sectional area of the track decreases and the ER increases. The changes in ER can be directly translated into corrosion depth and corrosion rate. ISA-Check II measures loss of metal thickness and therefore the technique provides a direct correlation to corrosivity.





### Molecular filtration technical services

#### Gigacheck™

The Camfil Gigacheck™ is a passive analytical system to selectively measure airborne molecular contaminants (AMC) in cleanrooms and accompanying air handling systems used for microelectronics and integrated circuit manufacture.

Other possible applications include museums, airports, hospitals and oil and gas industries.

Common contaminants of analysis include acids, acid precursors, bases and ozone.

The kit and the samplers are supplied in a case and sealed plastic bags.

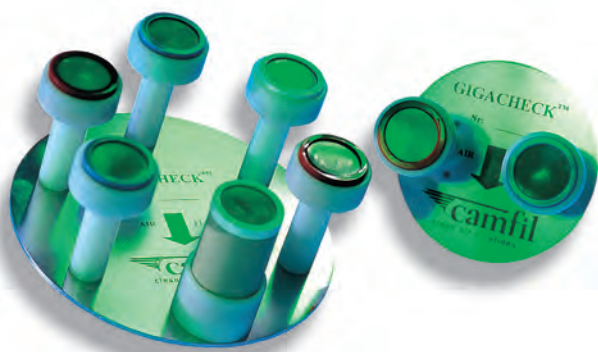
The Gigacheck™ can be located inside the cleanroom, in a ventilation duct, inside make-up air systems, or in a mini environment. A proven tool, it is small, light weight, cost effective, and does not require any electrical connections or field calibration.

The only requirements are ambient temperature and normal airflow.

Sampling time is 1 day – 1 month depending on the application. The Gigacheck™ provides average concentrations of AMC over the sampling period.

The Gigacheck™ is sealed and returned to our laboratory at the end of the exposure period.

The resulting data and information about the ventilation system and the process being protected allows us to design an optimized molecular filtration system based on your specific site condition.



#### Advanced Online Gas Monitoring

If you need to understand the short term variation of airborne molecular contaminant (AMC) concentrations in your cleanroom for an extended period of time, Camfil online monitoring equipment will be the perfect solution. Equipped with 8 sampling ports, our system is able to measure the concentrations of Ammonia ( $\text{NH}_3$ ), Nitrogen Oxides ( $\text{NO}_x$ ), Sulfur Dioxide ( $\text{SO}_2$ ), Hydrogen Sulfide ( $\text{H}_2\text{S}$ ) or total reduced Sulfur compounds (TRS), down to a detection limit of 0.5 ppb(v). Data are recorded and can be plotted into graphs showing concentration changes over time in different location of your cleanroom or process equipments.

Our technology follows the recommendations of the International Technology Roadmap for Semiconductors (ITRS) for advanced air monitoring applications, using chemiluminescence technology for  $\text{NO}_x$  and  $\text{NH}_3$ , UV fluorescence detectors for  $\text{SO}_2$  and  $\text{H}_2\text{S}$ ,  $\text{NH}_3$  and Sulfur compounds are the most critical contaminants in semiconductor and microelectronic applications, resulting in serious yield losses and product quality issues, even when present at trace levels. Please contact our local Camfil team of experts to assist you with your advanced online AMC measurements.



# Activated Carbon and CamPure Media

## Effective molecular filtration media

A comprehensive range of molecular filtration medias for the control of corrosive gases, toxic gases, odours and other gaseous pollutants. The medias may be used as part of original equipment packages or as replacement for spent media.

The CamPure media range comprises chemically impregnated adsorbents based on activated alumina which may be use on their own or blended with activated carbon.



## Demanding applications

CamPure medias are designed for the most difficult and demanding applications in industrial and commercial environments. The principal areas of use include the control of acidic gases in pulp and paper, oil refining, and steel production industries. If left untreated, acidic gases such as hydrogen sulphide, sulphur dioxide, chlorine and oxides of nitrogen may cause serious damage to key electrical equipment essential to process management. Other applications include the control of acidic and odourous gases in waste water treatment applications and the protection of sensitive artefacts in museums and art galleries.

## Flexible filtration solutions and support services

Activated carbon and CamPure medias may be deployed in a range of Camfil hardware systems. These allow standard and custom, solutions for all industrial and commercial applications using various media amounts and bed depths. Activated carbon and CamPure medias may be re-filled directly into other manufacturers hardware.

These medias are supported by a comprehensive range of technical support services including: media life analysis, corrosion monitoring coupons, on-line monitoring and media handling.

Media	Target gases	Media type
CEX003 CEX004	VOCs, hydrocarbons, general odours	Extruded activated carbon, 3 and 4mm diameter (coal based).
LGS036 LGS048	Light VOCs, hydrocarbons, general odours	Granular activated carbon (coconut shell based).
Impregnated Carbon	Acids, Alkalines, etc.	A wide range of impregnation is available.
CamPure 4	H <sub>2</sub> S, SO <sub>2</sub> , formaldehyde, ethylene, low mol. wt. aldehydes.	Activated alumina with chemical impregnation.
CamPure 8	High capacity for H <sub>2</sub> S, SO <sub>2</sub> formaldehyde, ethylene, low mol. wt. aldehydes.	Activated alumina with chemical impregnation.
CamPure 9	High capacity for H <sub>2</sub> S, SO <sub>2</sub> formaldehyde, ethylene, low mol. wt. aldehydes.	Activated alumina with chemical impregnation.
CamPure 10	High capacity for H <sub>2</sub> S, SO <sub>2</sub> formaldehyde, ethylene, low mol. wt. aldehydes	Activated alumina with chemical impregnation.
CamPure 15	High capacity for acids	Activated alumina with chemical impregnation.
Blends	Any of the CamPure medias may be blended with either of the activated carbon based medias to provide an adsorption system that combines broad spectrum and highly specific characteristics.The usual blend ratio is 50/50 by volume.	CP83 (CamPure 8 + CEX003) CP43 (CamPure 4 + CEX003) CP84 (CamPure 8 + CEX004) CP44 (CamPure 4 + CEX004)

## AMC filter media for pleated filters

AMC removal vs filter model	L	B	A	C
Acids				P
Bases		P	P	
Condensables (B.Pt > 150 deg. C)	P		S	S
Dopants (Organophosphates)	P		S	S
Dopants (BF3)				P
Organics (B.Pt < 150 deg. C)	P			
Ozone	P		S	S
*P - Primary Target, S - Secondary Target For specific contaminants, please contact Camfil				

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Applicable Standards for Corrosion Control

Common Reference Standards

There are two commonly referenced standards that categorise environmental conditions in relation to the deployment and reliability of electronic equipment:

1. IEC 60721-3-3

2. ANSI/ISA-71.04-2013.

IEC 60721-3-3 categorises environmental conditions based on several parameters such as climatic conditions, biological and chemical contaminants and mechanical effects.

ANSI/ISA-71.04-2013

ANSI/ISA-71.04-2013 is the most popular and focuses on airborne contaminants and observed rates of corrosion for copper and silver metals.

ANSI/ISA-71.04-2013 defines 4 classes of air quality that relate to different rates of reactivity or corrosion of copper and silver. These are; G1 Mild, G2 Moderate, G3 Harsh and GX Severe.

For reference, the standard tabulates concentrations of different gases that approximately correspond to the 4 categories of copper reactivity. It is worth noting that extremely low concentrations of some agents are required to achieve G1 Mild conditions.

Most original equipment manufacturers require provision of G1 Mild conditions as part of their warranty conditions since the standard states for class G1 that “Corrosion is not a factor in determining equipment reliability”. The external ambient air at some heavy process industries will routinely be classified as GX Severe.

ISA Classification of reactive environments (ANSI/ISA 71.04-2013)

	Environment sufficiently well controlled such that corrosion is not a factor in determining equipment reliability	Environment in which the effects of corrosion are measurable and may be a factor in determining equipment reliability	Environment in which there is a high possibility that corrosive attack will occur. These harsh levels should prompt further evaluation resulting in environmental controls	Environment in which only specially designed and packaged equipment would be expected to survive
Security level	G1 (MILD)	G2 (MODERATE)	G3 (HARSH)	GX (SEVERE)
Copper reactivity level *	<300	<1000	<2000	≥2000
Silver reactivity level *	<200	<1000	<2000	≥2000

\* In angstroms, normalized to a 30-day exposure

COPPER REACTIVITY LEVELS (A/month)		G1 (MILD)	G2 (MODERATE)	G3 (HARSH)	GX (SEVERE)
GROUP	GAS	GAS CONCENTRATION (parts per billion)			
A	Hydrogen sulfide (H <sub>2</sub> S)	< 3	< 10	< 50	50
	Sulfur dioxide (SO <sub>2</sub> )	< 10	< 100	< 300	300
	Sulfur trioxide (SO <sub>3</sub> )				
	Chlorine (Cl <sub>2</sub> )	< 1	< 2	< 10	10
	Nitrogen oxides (NOx)	< 50	< 125	< 1,250	1,250
B*	Hydrogen fluoride (HF)	< 1	< 2	< 10	10
	Ammonia (NH <sub>3</sub> )	< 500	< 10,000	< 25,000	25,000
	Ozone (O <sub>3</sub> )	< 2	< 25	< 100	100

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Note of caution :

The standard indicates concentrations of individual gases that loosely correspond to the 4 classes of corrosivity. If multiple gases are present in the air, a synergistic effect on the observed rate of corrosion that is difficult to quantify may occur. As a consequence, on-site monitoring for a single or multiple gases may not in itself predict or explain corrosion of silver and copper.

## Loose-Filled Deep Beds

### VDBs



Vertical Deep Bed Supply filters (VDBs) are members of the Camfil “ProCarb” range of industrial molecular filtration solutions. This product is designed to ensure the very highest levels of performance in those applications where the elimination of corrosive gases is essential to meet the tightest environmental conditions that are specified by electrical equipment manufacturers. Heavy process industries rely on sophisticated electronic control systems and power distribution systems to operate their processes safely and with high efficiency. In certain industries, acidic gases that are strongly corrosive are present in the air. These gases are liberated from the process raw materials. If left uncontrolled, these gases can degrade; even destroy the electronic/electrical control systems.

### VDBe



Vertical Deep Bed filters (VDBe) are durable cost effective molecular filtration solutions for exhaust streams from industrial processes. This product is designed to ensure the very highest levels of performance in those applications where the elimination of toxic gases and odours is essential for operational security and/or regulatory compliance. Performance is delivered in terms of extremely high removal efficiency and the longest possible lifetime per fill of filtration media. Standard features ensure reliable and safe operation. Two equipment configurations are available with airflow capacities ranging from 10,000 to 105,000 m<sup>3</sup>/h. Virtually any molecular filtration media may be selected for use in the filters, depending on the contaminant(s) to be controlled. VDBe filters are completely passive in operation and require very little routine maintenance.

### HDB



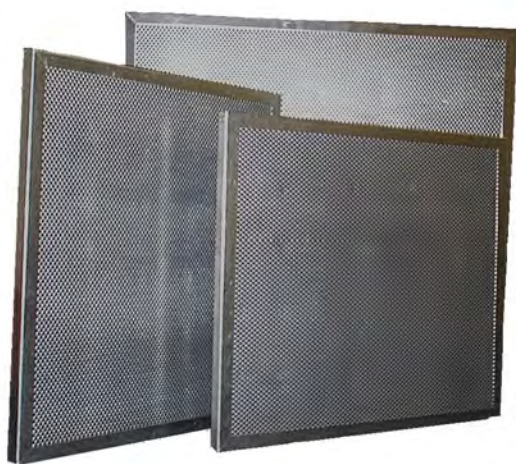
The Horizontal Deep Bed filters (HDB) filter is a robust solution for removing corrosive gases, odours or toxic gases from make-up air and exhaust air systems with very high efficiency on a single pass basis. The filters contain horizontal beds of molecular filtration media that are retained on top of a horizontal perforated screen. The air passes vertically through the media bed. The normal airflow direction is upward, but this arrangement can be reversed in some applications. The filters utilise a very deep bed of media and they are particularly well suited to applications that combine low to moderate airflows and relatively high contaminant concentrations.

A range of standard sizes accommodate flows from 500 m<sup>3</sup>/h to 5,000 m<sup>3</sup>/h. Pre and after-filters can be incorporated by the addition of bolt-on housing to provide a total filtration solution. HDB filters are safe and simple to install. They are completely passive in operation and require little or no routine maintenance beyond changing the filters and media. Fans and variable speed drives can be incorporated as options.





CamCarb PM



Advantages

- Range of standard and non standard sizes
- High performance
- Suitable for a wide range of air volumes

**Application:** Adsorption of odours and gases in air conditioning applications.

**Type:** Loose fill adsorbent panels.

**Frame:** Galvanized steel.

**Media:** Activated carbon, Impregnated Activated Carbon, Activated Alumina.

**Temperature:** Max. 40°C in continuous service.

**Recommended relative humidity:** 30 - 70%.

**Mounting systems:** Front and side access housings and frames are available.

Type	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Weight (kg)
CamCarb PM-LGS048	600x600x24	680/125	9
CamCarb PM-LGS048	300x600x24	340/125	4.5

Above are sample sizes, filters are available in a comprehensive range of sizes, please specify  
For all media options please refer to page 128

CamCarb PM V



Advantages

- Reusable V cell housing
- Exchangeable loose-filled panels
- Cost optimized life cycle
- High performance
- Suitable for a wide range of air volumes

**Application:** Adsorption of odours and gases in air conditioning applications.

**Type:** Loose-filled panels in V cell housing(removable sheet metal panels for replacement).

**Frame:** Stainless steel housing, Galvanized steel panels.

**Media:** Activated carbon, Impregnated Activated Carbon, Activated Alumina.

**Gasket:** 01 = downstream, 10 = upstream

**Recommended temperature range:** Max. 40°C in continuous service.

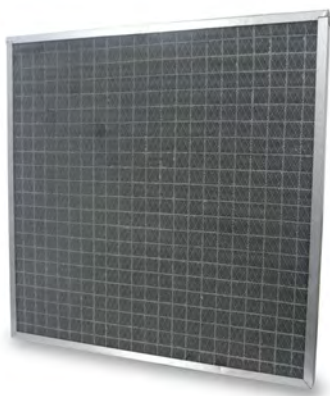
**Recommended relative humidity:** 30 - 70%.

Type	Housing Type	Dimensions WxHxD (mm)	No of panels per layer	Number of panels per housing	Air Flow/pressure drop (m³/hr/Pa)	Appr.Weight with panel (kg)
CamCarb PM V · LGS048	DH: Box type	610x610x292	8	16	2600/300	80
CamCarb PM V · LGS048	DH: Box type	305x610x292	4	8	1100/300	42
CamCarb PM V · LGS048	PH: Single header	592x592x292	8	8	2600/180	40
CamCarb PM V · LGS048	PH: Single header	287x592x292	4	4	1100/180	22

For all media options please refer to page 128



CamCarb PC



Advantages

- Range of standard and non standard sizes
- High performance
- Suitable for a wide range of air volumes

**Application:** Adsorption of odours and gases in air conditioning applications.

**Type:** Loose fill adsorbent panels.

**Frame:** Galvanized steel.

**Media:** Activated carbon, Impregnated Activated Carbon, Activated Alumina.

**Temperature:** Max. 40°C in continuous service.

**Recommended relative humidity:** 30 - 70%.

**Mounting systems:** Front and side access housings and frames are available.

Type	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Weight (kg)
CamCarb PC-LGS048	594x594x47	850/70	7.5
CamCarb PC-LGS048	594x289x47	425/70	4

Above are sample sizes, filters are available in a comprehensive range of sizes, please specify  
Also available with stainless steel case

## Efficient gas filtration with CamCarb

Advanced, high capacity media is used in the CamCarb cylinders to remove smell, corrosive and toxic gases as well as organics in make-up and exhaust air applications.

### CamCarb design

Camfil offers a wide range of high efficient media tailored to the customer's requirements. Camfil experts select the right CamCarb model and the best suitable media based on lowest cost-of-ownership to fulfill customer requirements.

Non impregnated activated carbon is typically used to remove volatile organic compounds (VOC) including smell whereas typically impregnated activated carbon is used to remove acidic, caustic and corrosive gases.

Multiple gas filtration with one, two or three filter stages in series can be achieved in applications with unknown gas mix or when for instance VOC's acids and bases are present in the same air stream. Media blends are also available.

A special designed holding plate system is used as installation frame for the CamCarb cylinders (CamCarb CG and CamCarb CM). The system is available in three different standard sizes.

It is recommended to use a F7 pre-filter to protect the CamCarb system against particle contamination. Particles in the air block the micro pores of the high efficient activated carbon resulting in rapid performance decrease.

Enforcement of the holding plates is required in big scale CamCarb installations (e.g. make-up air unit). Camfil offers the right stabilization solution with the RZA/MZA modular frame set.

### CamCarb refill service for better operational cost and to protect the environment

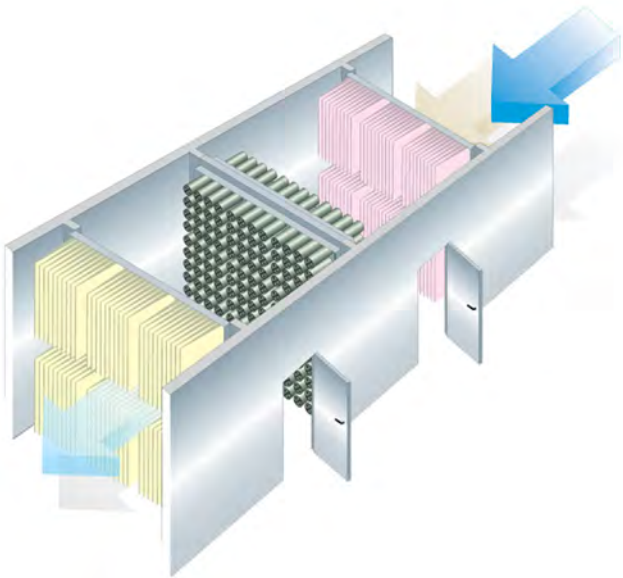
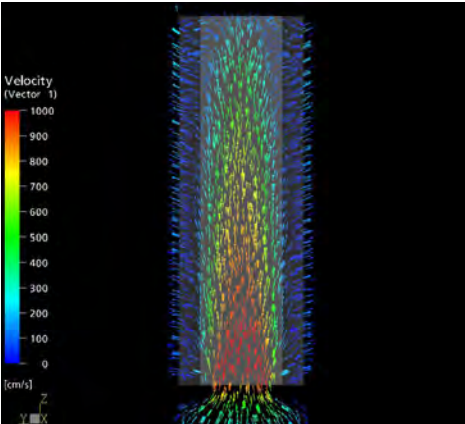
The CamCarb cylinders can be emptied and refilled with new media. This service offers lower operational cost compared to the replacement of the whole cylinder.

Camfil guarantees the same performance of the CamCarb cylinder after the refill service due to special filling technology as well as in-house QA.

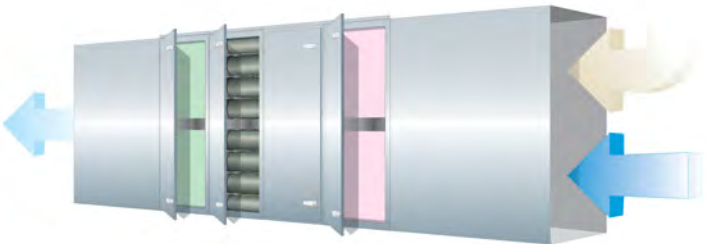
A spare set of cylinders is required to maintain the system operation during the filling process.

### CamCarb air flow distribution

Camfil did CFD (Computer Fluid Dynamics) simulations to design the Camcarb cylinder to achieve a uniform air flow distribution through the media resulting in longer life time compared to competitor products.



Example of RZA/MZA modular frame set system



Application in make-up air unit

CamCarb CG



Advantages

- Leak-free installation ensures maximum possible efficiency
- 360 degree geometry and even air distribution ensures maximum possible lifetime
- High level of product cleanliness
- May be filled with a wide range of molecular filtration medias
- Rapid bayonet fitting system and integral dual TPE gaskets
- Totally corrosion resistant
- Reduced weight compared to metal version
- Modular and flexible assembly

**Application:** The most reliable molecular filter for high efficiency and long-term control of molecular contaminants in sensitive buildings and process industries.

**Type:** Cylindrical molecular filter cartridge manufactured from engineering grade resins.

**Media:** Activated carbon, Impregnated Activated Carbon, Activated Alumina.

**Cleanliness:** Internal scrim protection.

**Temperature:** Max. 40°C in continuous service..

**Mounting system:** Dedicated base plate in 3 standard sizes (see separate page).

Type	Media Type	Rated Airflow m³/hr	Pressure loss Pa**	Weight (kg)	Weight for CP8 (kg)	Baseplate thickness
CamCarb CG 3500	CEX003*/LGS048/CP8	3400	175/165/175	3.75	5.70	
CamCarb CG 2600	CEX003*/LGS048/CP8	2500	135/100/135	2.85	4.40	*1.5mm
CamCarb CG 1300	CEX003*/LGS048/CP8	1250	80/60/80	1.55	2.40	*1.5mm

\* Broad Spectrum carbon, 3 mm pellet size  
\*\* At rated flow for 16 Cylinders on 610x610 Base Plate  
\* Media options: CamPure 4,8,9,10,15, CamPure/ carbon blend CP44, CP84  
\* Other Media options are available  
\* Standard base plate thickness

CamCarb CG filters are filled with high quality activated carbon or CamPure media and are used for high efficiency removal of molecular contaminants from supply air, recirculation air and exhaust air ventilation systems in sensitive building and process applications.

CamCarb CG filters eliminate customer problems with different categories of airborne molecules, including; odours, irritants, toxic gases and corrosives (acidic gases).

The molecular filtration media is deployed in an annular pattern with uninterrupted 360 degree geometry along the entire length of the filter. This arrangement ensures even air distribution over the entire filter area and maximizes filter lifetime.

Filters mount onto a dedicated baseplate using integrated bayonet fastenings without the need for specialized tools. Three standard sizes of the modular baseplate allow the filter installation to be accommodated in any size air handling unit, duct or plenum.



CamCarb CM



Advantages

- Leak-free installation ensures maximum possible efficiency
- 360 degree geometry and even air distribution ensures maximum possible lifetime
- May be re-filled, lowest possible Life Cycle Cost (LCC)
- Rapid bayonet fitting system
- Stainless steel construction
- Modular and flexible assembly

**Application:** The most reliable molecular filter for high efficiency and long-term control of molecular contaminants in sensitive buildings and process industries.

**Type:** Cylindrical molecular filter cartridge manufactured from stainless steel.

**Media:** Activated carbon, Impregnated Activated Carbon, Activated Alumina.

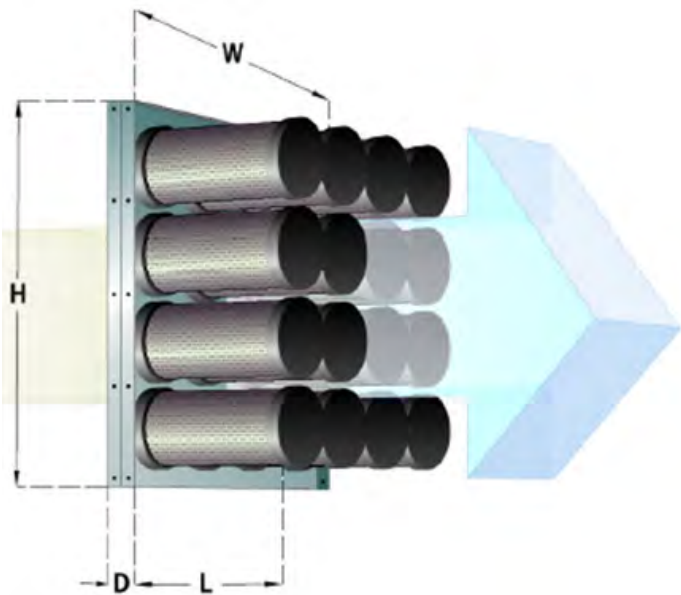
**Temperature:** Max. 40°C in continuous service.

**Mounting system:** Dedicated base plate in 3 standard sizes {see separate page}.



Type	Media Type*	Length (mm)	Diameter (mm)	Air flow/Pressure loss (m³/hr/Pa)**	Weight
2600	CEX003	450	147	2500/100	3.9
3500	CEX003	600	147	3400/150	5.2

\* Broad Spectrum carbon, 3 mm pellet size  
\*\* At rated flow for 16 Cylinders on 610x610 Base Plate  
\* Media options: CamPure 4,8,9,10,15, CamPure/ carbon blend CP44, CP84  
\* Other Media options are available



As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

## CamCarb Mounting Frames



### Advantages

- Modular design adaptable for all types of installations
- Rapid fitting system via bayonet fitting
- Quick and easy service
- Three standard sizes
- Assembly by bolting, rivets, welding

**Application:** Dedicated mounting frames to ensure leak-free installation of CamCarb molecular filters in AHUs, ducts and plenums.

**Applicable filters:** CamCarb CM and CamCarb CG. (Note : always specify filter type when ordering as base plate thickness may vary to accommodate different weights of filters).

**Material:** Galvanized steel or stainless steel (specify with order)

Type	Dimensions WxHxD (mm)	Number of Cylinders	Weight (kg)
G8	305x 610x 70	8	3
G12	457x 610x 70	12	5.7
G16	610x 610x 70	16	6

\*Available as 1.5mm or 2mm





## CamCube CC-L Filter housing



### Advantages

- Easy to install
- Modular construction
- No tools needed to change filters
- Gasket to seal between door and filter housing
- Stable and secure design
- Easy maintenance

**Application:** CamCube CC is a flexible and compact range of filter housings for cylindrical filters in length 450 mm. Two stage filtration is available as an option with a prefilter or afterfilter mounting rail for panel filters.

**Type:** Housing.

**Filter housing material:** Aluzinc.

**Option:** Stainless steel SS EN 1.4301.

**Filter:** Cylindrical filters for loose filled carbon type Camcarb, available in plastic, GZ-steel or stainless steel (EN1.4301). Filled with different types of adsorbents depending on application. See the relevant page in the catalogue for further information.

**Air flow:** Recommended air flow at 0,1 at 0,2 sec contact time, see table and relevant product page for further information.

**Note:** Door hinged on the left or right. Can be changed on site.

CamCube CC is a flexible and compact range of filter housings for cylindrical filters in length 450 mm. Two stage filtration is available as an option with a prefilter or afterfilter mounting rail for panel filters. The housing is a sandwich design with 45 mm heat and condensation insulation between, covered with aluzinc sheet metal inside and outside (corrosivity class C4). The service hatch is hinged mounted. The endless gasket on the inside of the service hatch makes it highly airtight. The filter housing has a leakage class of C according to EN 15727. As standard the casing has M8 threads for mounting the filter housing. The filter housing is supplied with a guide connection, and a flange connection is available as an option.

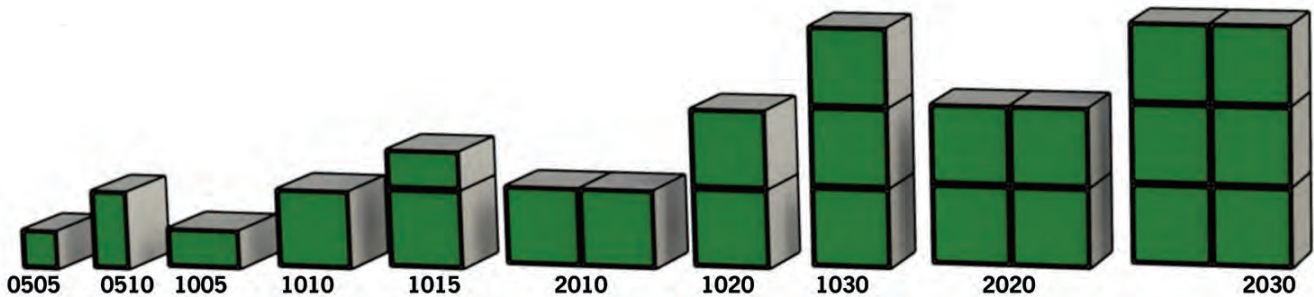
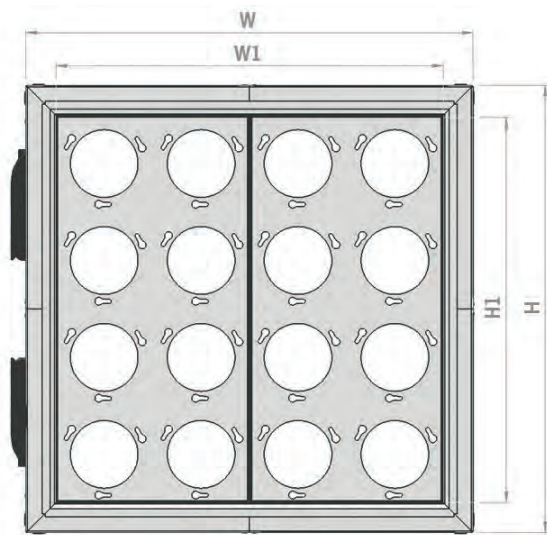
Accessories:  
Prefilter or afterfilter mounting rail 50 mm  
Adjustable feet (4 pcs set) reference 550902  
Hose connectors for pressure drop (2pcs set), supplied separately reference 550901  
Hose connectors for pressure drop (2pcs set), factory mounted reference 550900  
Lockable handles  
Flange adaptor

Example specification text:  
Filter housing: CamCube CC-1010. Supplier, Camfil Svenska AB  
Design: Sandwich construction with 45 mm heat and condensation insulation, covered with double aluzinc sheet metal (corrosivity class C4)  
Leakage class C  
Filter: 16 pcs Camcarb 2600 GZ D=145 mm L=450 mm CEX003  
Accessories: One set of adjustable feet. Hose connectors for pressure drop, factory mounted

Classification:  
Leakage class C, according to the EN 15727:2010 standard  
Leakage class L1 according to the EN 1886:2007 standard  
Mechanical performance: D1 according to the EN 1886:2007 standard

Model Name	Dimensions WxHxD (mm)	Inner flanges W1xH1 (mm)	Number of Cylinders	Weight (kg)	Contact time 0.1 (m³/s)	Contact time 0.2 (m³/s)
CamCube CC-L 3025	1892x 1592x 700	1800x 1500	120	124	19500	9375
CamCube CC-L 3030	1892x 1892x 700	1800x 1800	144	134	23400	11250
CamCube CC-L 0505	392x 392x 700	300x 300	4	24	650	310
CamCube CC-L 0510	392x 692x 700	300x 600	8	34	1300	620
CamCube CC-L 1005	692x 392x 700	600x 300	8	34	1300	625
CamCube CC-L 1010	692x 692x 700	600x 600	16	43	2600	1250
CamCube CC-L 1015	692x 992x 700	600x 900	24	55	3900	1875
CamCube CC-L 1020	692x 1292x 700	600x 1200	32	64	5200	2500
CamCube CC-L 1025	692x 1592x 700	600x 1500	40	76	6500	3150
CamCube CC-L 1030	692x 1892x 700	600x 1800	48	85	7800	3750
CamCube CC-L 1510	992x 692x 700	900x 600	24	53	3900	1875
CamCube CC-L 1515	992x 992x 700	900x 900	36	66	5850	2810
CamCube CC-L 1520	992x 1292x 700	900x 1200	48	76	7800	3750
CamCube CC-L 1525	992x 1592x 700	900x 1500	60	89	9750	4685
CamCube CC-L 1530	992x 1892x 700	900x 1800	72	99	11700	5625

Model Name	Dimensions WxHxD (mm)	Inner flanges W1xH1 (mm)	Number of Cylinders	Weight (kg)	Contact time 0.1 (m³/s)	Contact time 0.2 (m³/s)
CamCube CC-L 2010	1292x 692x 700	1200x 600	32	62	5200	2500
CamCube CC-L 2015	1292x 992x 700	1200x 900	48	77	7800	3750
CamCube CC-L 2020	1292x 1292x 700	1200x 1200	64	86	10400	5000
CamCube CC-L 2025	1292x 1592x 700	1200x 1500	80	100	13000	6250
CamCube CC-L 2030	1292x 1892x 700	1200x 1800	96	109	15600	7500
CamCube CC-L 2510	1292x 692x 700	1500x 600	40	74	6500	3125
CamCube CC-L 2515	1592x 992x 700	1500x 900	60	89	9750	4685
CamCube CC-L 2520	1592x 1292x 700	1500x 1200	80	98	13000	6250
CamCube CC-L 2525	1592x 1592x 700	1500x 1500	100	113	16250	7810
CamCube CC-L 2530	1592x 1892x 700	1500x 1800	120	123	19500	9375
CamCube CC-L 3010	1892x 692x 700	1800x 600	48	83	7800	3750
CamCube CC-L 3015	1892x 992x 700	1800x 900	72	99	11700	5625
CamCube CC-L 3020	1892x 1292x 700	1800x 1200	96	108	15600	7500



As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

CamCarb VG



Advantages

- Completely incinerable
- Low pressure drop
- High efficiency installation in Camfil PSSA housing
- Various medias available dependent upon the contaminant(s) of concern
- Retrofit of a wide range of housings

**Application:** Disposable plastic adsorber module designed to remove corrosive gases from industrial or commercial environments.

**Media:** Activated carbon, Impregnated Activated Carbon, Activated Alumina.

**Cleanliness:** Internal insert moulded mesh for dust control for selected models.

**Temperature:** 50°C maximum in continuous service.

**Mounting system:** PSSA Housing, existing side-access housings, or built up bank assemblies.

Type	Dimensions WxHxD (mm)	Rated Airflow (m³/hr)	No.of Modules per 610x610 area	Frame Construction Material	Application
CamCarb VG 300	300x300x300	400	4	PS or ABS	Make-up air system.
CamCarb VG 440	300x150x440	400	8	PS or ABS	Make up or Recirculation.

Type	Media Type*	Max.Operating Weight (kg)
CamCarb VG 300/440	CEX 003	9 / 6
CamCarb VG 300/440	CEX 004	9 / 6
CamCarb VG 300/440	CP4/CP8/CP15/CP9/CP10	15 /9
*Other media options available		

## Positive Seal Side Access (PSSA) Housing



### Advantages

- Positive filter clamping mechanism
  - Leakage tested housing
- May be used in multiple stages
  - Double skin with insulation
  - No special tools required

**Application :** Leak free housing specifically designed for Vee Cell modules which are installed at make-up air or recirculation air systems.

**Type:** Housing.

**Filter housing material :** 1 mm thick Aluzinc with a corrosion class of C4. The shell of the unit is 50 mm thick, filled with 45 mm mineral wool insulation material.

**Filter:** Vee Cell Module for loose filled media, CamCarb VG. Filled with different types of adsorbents depending on application.

**Recommended face velocity:** 1.25 - 2.5 m/s.

Camfil PSSA housings are robustly constructed to reflect the industrial environment where they are used. An outer frame is clad with double skinned and insulated body panels. Material options are available depending on the application. Hinged doors on the sides of the housing allow access for loading/removing the CamCarb VG modules. The doors are sealed using a jointless pour-on PU gasket for leak-tightness. The door closure handles incorporate a cam mechanism to ensure effective compression of the door seal.

The principal feature of PSSA housings is the inclusion of a unique positive clamping mechanism that ensures an effective seal is achieved between the Camcarb VG filters and the internal framework in the housing. This eliminates internal by-passes, which are a common feature in competitor equipment. The clamps operate via a lead actuating screw, securing the cells into position. On units greater than 1200 mm wide, access doors are provided on both sides of the housing.

Pre and after-filters are fitted in dedicated chambers upstream and downstream of the molecular media beds. The particle filters are access through service doors on the side of the housing. Pre-and after-filters are held in the frame work by a robust clamping mechanism. This ensures elimination of internal leaks. Optional differential pressure loss gauges will be mounted on the side of the housing.

The filters are provided with external inlet and outlet flanges to facilitate connection of ductwork using industry standard connections.

Classification:

Leakage class C, according to the EN 15727:2010 standard

Leakage class L1 according to the EN 1886:2007 standard

Mechanical strength Class D1 according to the EN 1886:2007 standard

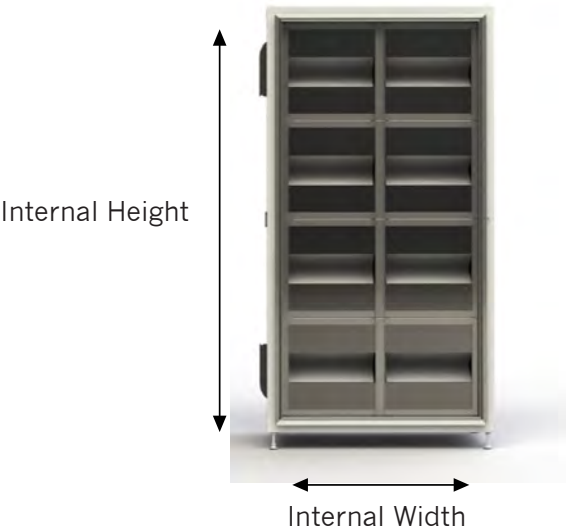
Filter by pass leakage class F9 according to the EN 1886:2007 standard

Type	Flow rate (m³/h)/(CFM)	Face Velocity (m/s) (FPM)	No. of Modules High	No. of Modules Wide	Internal Width (mm) (in.)	Internal Height (mm) (in)
VG440-0402	3200 (1880)	2.5 (500)	4	2	600 (23.6)	600 (23.6)
VG440-0602	4800 (2820)	2.5 (500)	6	2	600 (23.6)	900 (35.4)
VG440-0802	6400 (3760)	2.5 (500)	8	2	600 (23.6)	1200 (47.2)
VG440-1002	8000 (4700)	2.5 (500)	10	2	600 (23.6)	1500 (59)
VG440-1202	9600 (5650)	2.5 (500)	12	2	600 (23.6)	1800 (70.8)
VG440-0804	12800 (7530)	2.5 (500)	8	4	1200 (47.2)	1200 (47.2)
VG440-1004	16000 (9400)	2.5 (500)	10	4	1200 (47.2)	1500 (59)
VG440-1204	19200 (11300)	2.5 (500)	12	4	1200 (47.2)	1800 (70.8)
VG440-1206	28800 (16950)	2.5 (500)	12	6	1800 (70.8)	1800 (70.8)

Type	Flow rate (m³/h)/(CFM)	Face Velocity (m/s) (FPM)	No of Modules High	No. of Modules Wide	Internal Width (mm) (in.)	Internal Height (mm) (in)
VG300-0202	1700 (1000)	1.25(250)	2	2	600 (23.6)	600 (23.6)
VG300-0302	2600 (1530)	1.25(250)	3	2	600 (23.6)	900 (35.4)
VG300-0402	3400 (2000)	1.25(250)	4	2	600 (23.6)	1200 (47.2)
VG300-0303	3800 (2240)	1.25(250)	3	3	900 (35.4)	900 (35.4)
VG300-0502	4300 (2530)	1.25(250)	5	2	600 (23.6)	1500 (59)
VG300-0602	5100 (3000)	1.25(250)	6	2	600 (23.6)	1800 (70.8)
VG300-0403	5100 (3000)	1.25(250)	4	3	900 (35.4)	1200 (47.2)
VG300-0503	6400 (3780)	1.25(250)	5	3	900 (35.4)	1500 (59)
VG300-0404	6800 (4000)	1.25(250)	4	4	1200 (47.2)	1200 (47.2)
VG300-0603	7700 (4540)	1.25(250)	6	3	900 (35.4)	1800 (70.8)
VG300-0504	8500 (5000)	1.25(250)	5	4	1200 (47.2)	1500 (59)
VG300-0604	10200 (6000)	1.25(250)	6	4	1200 (47.2)	1800 (70.8)
VG300-0505	10600 (6240)	1.25(250)	5	5	1500 (59)	1500 (59)
VG300-0605	12800 (7540)	1.25(250)	6	5	1500 (59)	1800 (70.8)
VG300-0606	15300 (9000)	1.25(250)	6	6	1800 (70.8)	1800 (70.8)

Configuration Example

No. of modules high : 4  
No. of modules wide : 2



No. of modules high : 6  
No. of modules wide : 6





GigaPleat XPC/XPB



Advantages

- Reduced waste through reusable housing
  - Up to 2 media types can be combined into the same filter
- Compact solution
  - High media cleanliness
  - Exchangeable panels

**Application:** Clean room recirculation air and clean room make up air.

**Type:** Compact filter with exchangeable panels.

**Housing:** Stainless steel. Removable sheet metal profiles for panel replacement.

**Gasket:** 01 = downstream, 10 = upstream.

**Sealant:** Polyurethane.

**Configuration XPC:** 2 layers of 8 panels / full size housing.

**Configuration XPH:** 1 layer of 8 panels/ full size housing.

**Recommended temperature range:** 10 - 40°C.

**Recommended relative humidity:** 30 - 70%.

**Particle cleanliness:** ISO Class 6.

**Outgassing:** Individually outgassing tested for VOC emissions on request

Product	Type	Material	Dimensions WxHxD (mm)	Number of panels per layer	Number of panels per housing	Appr. weight with panels (kg)
Box Housing	XPC 610x610x292	Stainless Steel	610x610x292	8	16	28
Box Housing	XPC 305x610x292	Stainless Steel	305x610x292	4	8	16
Header Housing	XPH 592x592x292	Stainless Steel	592x592x292	8	8	17
Header Housing	XPH 287x592x292	Stainless Steel	287x592x292	4	4	9

Panel	Fit Housing Width (mm)	Fit Housing Height (mm)	Fit Housing Depth (mm)	Air Flow (m³/hr)	Pressure drop (Pa) +15%
XPC A3	610/305	610	292	2600/1100	95
XPC B2	610/305	610	292	2600/1100	95
XPC C3	610/305	610	292	2600/1100	95
XPC L3	610/305	610	292	2600/1100	95
XPH A3	592/287	592	292	2600/1100	60
XPH B2	592/287	592	292	2600/1100	60
XPH C3	592/287	592	292	2600/1100	60
XPH L3	592/287	592	292	2600/1100	60

AMC removal vs filter model	L	B	A	C
Acids				P
Bases		P	P	
Condensables (B.Pt > 150 deg. C)	P		S	S
Dopants (Organophosphates)	P		S	S
Dopants (BF3)				P
Organics (B.Pt < 150 deg. C)	P			
Ozone	P		S	S
*P - Primary Target, S - Secondary Target For specific contaminants, please contact Camfil				

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

GigaPleat NXPP



Advantages

- Extremely low pressure drop
  - High media cleanliness
  - Individually VOC outgassing tested
- Extremely small form factor
  - Wide range of dimensions
  - Multiple media types can be combined into the same filter

**Application:** For clean room ceiling, Fan Filter Units, mini-environment or process equipment.

**Type:** Panel filter.

**Frame:** Anodized aluminium.

**Available filter depth without knife edge:** 66, 90, 110, 150, 172 and 200 mm.

**Available filter depth with knife edge:** 66 (+38), 90 (+38), 110 (+38), 150 (+15) mm.

**Knife:** KU - facing up, KD - facing down.

**Sealant:** Polyurethane.

**Gasket:** 01 = Downstream, 10 = Upstream, 11 = Downstream and upstream.

**Faceguard:** 02 = Downstream, 20 = Upstream, 22 = Downstream and upstream.

**Recommended temperature range:** 10 - 40°C.

**Recommended relative humidity:** 30 - 70%.

**Particle cleanliness:** ISO Class 6.

**Outgassing:** Individually outgassing tested for VOC emissions.

Type	Dimensions WxHxD (mm)	Air flow / Pressure drop (m³/hr/Pa)	Weight (kg)
NXPP A3	610x610x90	535/15	5
NXPP A3	1220x610x90	1070/15	10
NXPP B2	610x610x90	535/15	5
NXPP B2	1220x610x90	1070/15	10
NXPP C3	610x610x90	535/15	5
NXPP C3	1220x610x90	1070/15	10
NXPP L3	610x610x90	535/15	5
NXPP L3	1220x610x90	1070/15	10
NXPP B2C3L3	610x610x150	535/50	14
NXPP B2C3L3	1220x610x150	1070/50	28

Other dimensions and media combinations available on request. Adapter frames for FFU installation available on request.

AMC removal vs filter model	L	B	A	C
Acids				P
Bases		P	P	
Condensables (B.Pt > 150 deg. C)	P		S	S
Dopants (Organophosphates)	P		S	S
Dopants (BF3)				P
Organics (B.Pt < 150 deg. C)	P			
Ozone	P		S	S

\*P - Primary Target, S - Secondary Target  
For specific contaminants, please contact Camfil

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

GigaPleat NXPH



Advantages

- Low pressure drop
- High media cleanliness
- Low weight
- Incinerable

**Application:** Clean room recirculation air, clean room make up air.

**Type:** Compact filter with header.

**Frame:** ABS.

**Sealant:** Polyurethane.

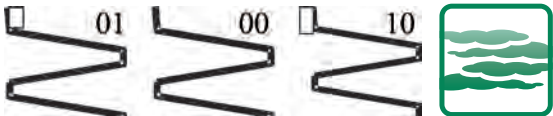
**Gasket:** 01= downstream, 10 = upstream.

**Recommended temperature range:** 10 - 40°C.

**Recommended relative humidity:** 30 - 70%.

**Particle cleanliness:** ISO Class 6.

**Outgassing:** Individually outgassing tested for VOC emissions on request.



Type	Dimensions WxHxD (mm)	Air flow/Pressure loss (m³/hr/Pa)	Weight (kg)
NXPH A3	592x592x292	3300/60	12
NXPH A3	592x287x292	1600/60	6.5
NXPH B2	592x592x292	3300/50	12
NXPH B2	592x287x292	1600/50	6.5
NXPH C3	592x592x292	3300/60	12
NXPH C3	592x287x292	1600/60	6.5
NXPH L4	592x592x292	3300/60	12
NXPH L4	592x287x292	1600/60	6.5

AMC removal vs filter model	L	B	A	C
Acids				P
Bases		P	P	
Condensables (B.Pt > 150 deg. C)	P		S	S
Dopants (Organophosphates)	P		S	S
Dopants (BF3)				P
Organics (B.Pt < 150 deg. C)	P			
Ozone	P		S	S
*P - Primary Target, S - Secondary Target For specific contaminants, please contact Camfil				

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

GigaPleat NXP



Advantages

- Low pressure drop
- High media cleanliness
- Wide range of dimensions

**Application:** Clean room recirculation air, clean room make up air.

**Type:** Compact filter.

**Frame:** GI, aluminium or stainless steel.

**Sealant:** Polyurethane.

**Gasket:** 01 = downstream, 10 = upstream.

**Recommended temperature range:** 10 - 40°C.

**Recommended relative humidity:** 30 - 70%.

**Particle cleanliness:** ISO Class 6.

**Outgassing:** Individually outgassing tested for VOC emissions on request.

Type	Dimensions WxHxD (mm)	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Weight (kg)
NXPC A3	610x 610x 292	610x 610x 292	2600/ 60	15
NXPC A3	305x 610x 292	305x 610x 292	1100/ 60	8
NXPC A3	595x 595x 292	595x 595x 292	2600/ 60	15
NXPC A3	289x 595x 292	289x 595x 292	1100/ 60	8
NXPC A3	592x 592x 292	592x 592x 292	2600/ 60	15
NXPC A3	287x 592x 292	287x 592x 292	1100/ 60	8
NXPC B2	610x 610x 292	610x 610x 292	2600/ 60	15
NXPC B2	305x 610x 292	305x 610x 292	1100/ 60	8
NXPC B2	595x 595x 292	595x 595x 292	2600/ 60	15
NXPC B2	289x 595x 292	289x 595x 292	1100/ 60	8
NXPC B2	592x 592x 292	592x 592x 292	2600/ 60	15
NXPC B2	287x 592x 292	287x 592x 292	1100/ 60	8
NXPC C3	610x 610x 292	610x 610x 292	2600/ 60	15
NXPC C3	305x 610x 292	305x 610x 292	1100/ 60	8
NXPC C3	595x 595x 292	595x 595x 292	2600/ 60	15
NXPC C3	289x 595x 292	289x 595x 292	1100/ 60	8
NXPC C3	592x 592x 292	592x 592x 292	2600/ 60	15
NXPC C3	287x 592x 292	287x 592x 292	1100/ 60	8
NXPC L3	610x 610x 292	610x 610x 292	2600/ 60	15
NXPC L3	305x 610x 292	305x 610x 292	1100/ 60	8
NXPC L3	595x 595x 292	595x 595x 292	2600/ 60	15
NXPC L3	289x 595x 292	289x 595x 292	1100/ 60	8
NXPC L3	592x 592x 292	592x 592x 292	2600/ 60	15
NXPC L3	287x 592x 292	287x 592x 292	1100/ 60	8
For media choice, please refer to Gigapleat NXPH				

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

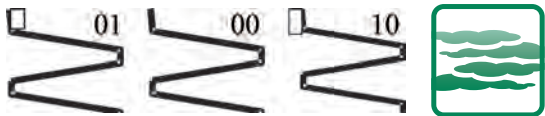
GigaPleat NXDP



Advantages

- Low pressure drop
- Individually VOC outgassing tested
- High media cleanliness
- Multiple media types can be combined into the same filter

**Application:** Clean room recirculation air, clean room make up air.  
**Type:** Deep pleated filter.  
**Frame:** Galvanized Steel (others on request). DH: Box type, PH: Single Header.  
**Sealant:** Polyurethane.  
**Gasket:** 01 = downstream, 10 = upstream.  
**Recommended temperature range:** 10 - 40°C.  
**Recommended relative humidity:** 30 - 70%.  
**Particle cleanliness:** ISO Class 6.  
**Outgassing:** Individually outgassing tested for VOC emissions.



Model Name	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)*	Weight (kg)
NXDP B2	592x 592x 292	3300/ 50	15
NXDP B2	287x 592x 292	1600/ 50	10
NXDP C3	592x 592x 292	3300/ 50	15
NXDP C3	287x 592x 292	1600/ 50	10
NXDP L3	592x 592x 292	3300/ 50	15
NXDP L3	287x 592x 292	1600/ 50	10
NXDP B2C3L3	592x 592x 292	3300/ 140	20
NXDP B2C3L3	287x 592x 292	1600/ 140	12
*Other media combinations available on request			
*Pressure drop based on DH (Box type) frame			

AMC removal vs filter model	L	B	A	C
Acids				P
Bases		P	P	
Condensables (B.Pt > 150 deg. C)	P		S	S
Dopants (Organophosphates)	P		S	S
Dopants (BF3)				P
Organics (B.Pt < 150 deg. C)	P			
Ozone	P		S	S
*P - Primary Target, S - Secondary Target				
For specific contaminants, please contact Camfil				

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.



Products



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**Terminal Filter Housings**  
Cleanseal top entry PU gasket  
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**Terminal Filter Housings**  
Cleanseal side entry PU gasket  
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**Terminal Filter Housings**  
Cleanseal top entry gel gasket  
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**Terminal Filter Housings**  
Cleanseal side entry gel gasket  
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**Filter Containment System**  
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**Filter Containment System**  
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**Filter Housings**  
CamCube HF-L  
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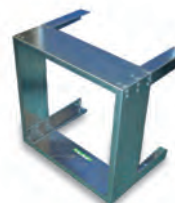
**Filter housing**  
CamCube AS  
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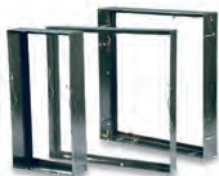
**Filter housing**  
FSBS-A  
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**Filter housing**  
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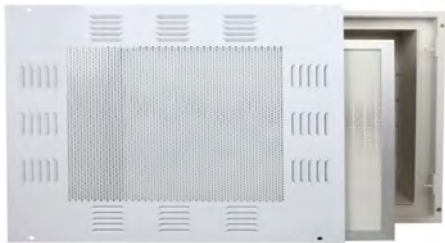


**Filter Holding Frames**  
Absolute filter holding frame  
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**Filter Holding Frames**  
Universal filter holding frame  
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PHAP® Pharmaseal AP



Advantages

- Includes all essentials features for pharmaceutical and health care applications.
- Quick filter change, quick upstream aerosol injection & dispersion, quick aerosol sampling and pressure test.
- In-situ scanning with local penetration ≤ 0.01% (typically) is guaranteed.
- Heavy duty aluminium fully welded to ensure air-tight housing.

**Application:** Non-unidirectional (turbulent) airflow clean rooms in pharmaceutical and health care applications.

**Type:** Ceiling-mount ducted, room-side operatable air supply module with gel-seal HEPA/ULPA filters and butterfly damper.

**Construction:** Casing of 2.8 mm extruded aluminium with fully welded joints, powder coated as standard.

**Filter seal:** Self-healing, non-flowing silicon gel approved by Camfil for pharmaceutical applications..

**Duct connection:** Mould drawn one piece, seamless aluminium inlet collar sealed airtight to the back plate.

**Damper:** Room side adjustable heavy duty butterfly assembly with air diffusion disk for even airflow distribution.

**Challenge aerosol:** Quick-connect airtight nickel plated brass port at room side. Integrated aerosol-dispersion assembly for even aerosol distribution.

**Upstream aerosol sampling and pressure measurement:** At room side, a quick-connecting airtight port for pressure drop measurement and upstream aerosol quick sampling to determine if the upstream aerosol concentration is sufficient for filter scanning test downstream.

**Faceguard:** Stainless steel or aluminium diffuser with swirling blades, perforated style diffuser available as option, powder-coated if required.

**Installation:** Suspended by 4 lifting eyes or rested on ceiling grid.

HEPA Supply Module

Article Number	Type	Dimensions WxHxD (mm)	Inlet Size(mm)	Air Flow/pressure drop (m³/hr/Pa)	In-Situ scanning local min. efficiency @ 0.3µm	Weight (kg)
Aluminum diffuser in center perforated and 4-way blades style						
4130005C	PHAP-476x476-A-TS-C10-A11-O-BS-A-P	476x476x254x	250	500/205	99.99%	17.5
4130006C	PHAP-635x635-A-TS-C12-A11-O-BS-A-P	635x635x254	305	1000/205	99.99%	23
4130007C	PHAP-695x695-A-TS-C12-A11-O-BS-A-P	695x695x254	305	1250/205	99.99%	24.5
4130008C	PHAP-756x756-A-TS-C14-A11-O-BS-A-P	756x756x254	350	1500/205	99.99%	27
4130009C	PHAP-867x867-A-TS-C16-A11-O-BS-A-P	867x867x254	405	2000/210	99.99%	33
Aluminum diffuser in swirling style						
4130010C	PHAP-476x476-A-TS-C10-A31-O-BS-A-P	476x476x254	250	500/205	99.99%	17.5
4130011C	PHAP-635x635-A-TS-C12-A31-O-BS-A-P	635x635x254	305	1000/205	99.99%	23
4130012C	PHAP-695x695-A-TS-C12-A31-O-BS-A-P	695x695x254	305	1250/205	99.99%	24.5
4130013C	PHAP-756x756-A-TS-C14-A31-O-BS-A-P	756x756x254	350	1500/205	99.99%	27
4130014C	PHAP-867x867-A-TS-C16-A31-O-BS-A-P	867x867x254	405	2000/210	99.99%	33
Aluminum diffuser in fully perforated style; used at air velocity ≤ 0.5m/s						
4130015C	PHAP-476x476-A-TS-C10-A21-O-BS-A-P	476x476x254	250	500/205	99.99%	17.5
4130016C	PHAP-635x635-A-TS-C12-A21-O-BS-A-P	635x635x254	305	1000/205	99.99%	23
4130017C	PHAP-695x695-A-TS-C12-A21-O-BS-A-P	695x695x254	305	1250/205	99.99%	24.5
4130018C	PHAP-756x756-A-TS-C14-A21-O-BS-A-P	756x756x254	350	1500/205	99.99%	27
4130019C	PHAP-867x867-A-TS-C16-A21-O-BS-A-P	867x867x254	405	2000/210	99.99%	33
55304 diffuser in swirling style						
4120151C	PHAP-476x476-A-TS-C10-S30-O-BS-A-P	476x476x254	250	500/205	99.99%	19
4130001C	PHAP-635x635-A-TS-C12-S30-O-BS-A-P	635x635x254	305	1000/205	99.99%	26
4130002C	PHAP-695x695-A-TS-C12-S30-O-BS-A-P	695x695x254	305	1250/205	99.99%	28
4130003C	PHAP-756x756-A-TS-C14-S30-O-BS-A-P	756x756x254	350	1500/205	99.99%	31
4130004C	PHAP-867x867-A-TS-C16-S30-O-BS-A-P	867x867x254	405	2000/210	99.99%	38

Tolerance of pressure drop is +/- 15%  
Other dimensions are available on request  
Only 0305 and 0350 inlet collars are mould drawn one-piece  
\*Note : Please refer to the next 2 tables of ' Model number system ' for model selection per detail options

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Model Number System for HEPA Supply Module

PHAP-	695x695-	A-	TS-	C12-	S	1	0-	0-	BS-	A-	P-
1	2	3	4	5	6	7	8	9	10	11	12

Naming Description												
1. Product :				Pharmaseal AP HEPA supply module								
2. Hood standard size: (Length xWidth (mm) (excl. trim) *if other sizes, please state)				476x476		635x635		695x695		756x756		867x867
3. Hood construction material :				A = Heavy duty extruded Aluminium (standard)				S = Stainless Steel 304# (optional)				
4. Inlet location :				TS=Top Side(standard)				SS=Side				
5. Inlet style and size : Mould-drawn top Inlet collar and top plate of one-piece aluminium (standard):				C12=Round, → 12″=305mm				C14=Round, → 14″=350mm				Other sizes are fully welded instead of mould-drawn one piece
6. Outlet diffuser material :				A = Aluminium				S = Stainless steel 304				
7. Diffuser style :				1 = center perforated and 4-way blades surrounded				2 = fully perforated style		3 = Swirling		4 = Other style (specify separately)
8. Diffuser surface treatment :				1 = Powder coated (standard color RAL9016 or specify)				0 = No coating				
9. Diffuser location :				I= Inside the hood (within)				= Outside the hood (extended)				
10. Damper :				BS= Butterfly damper, Stainless steel 304				NO= No damper				
11. Aerosol injection and dispersion :				A = Yes (air tight quick connect)				N = No				
12. Upstream aerosol sampling :				P = Yes (air tight quick-connect)				N = No				

Filter Element

Article Number	Type	PHF Size			Housing Size WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Efficiency	Weight (kg)
		A	B	H				
15218202C	PHF-LSS- 416x416-01/22	416	416	110	476x476x254	500/205	H14	4.1
15218215C	PHF-LSS- 575x575-01/22	575	575	110	635x635x254	1000/205	H14	6.5
15218208C	PHF-LSS- 635x635-01/22	635	635	110	695x695x254	1250/205	H14	7.6
15218213C	PHF-LSS-696x696-01/22	696	696	110	756x756x254	1500/205	H14	8.8
15218232C	PHF-LSS-807x807-01/22	807	807	110	867x867x254	2000/210	H14	12.2

Tolerance of pressure drop is +/- 15%  
Other dimensions are available on request  
\*Note : Please refer to the next 2 tables of ‘ Model number system’ for model selection per detail options

Model Number System for Filter Element

PHAP-	LSS-	635x635-	01/	22
1	2	3	4	5

Naming Description				
1. Product :		Pharmaseal-AP filter element		
2. Seal between filter and hood :		LSS : Liquid Seal, Special (Silicon gel)		
3. Filter standard size (width x height) mm :		416x416	575x575	635x635    807x807    Other odd sizes required, please specify
4. Seal groove location :		01 : Air outlet side (standard)		10 : Air inlet side
5. Face guard :		22 : Both Sides (standard)		

PHAP® Exhaust AP



Advantages

- Includes all essential functions for pharmaceutical and bio-cleanroom applications.
- In-situ efficiency 99.97% or higher is guaranteed.
- High capacity “V” -bank HEPA filter inside results in low pressure drop, low energy cost and long service life.
- Heavy duty aluminium or stainless steel fully welded to ensure the air-tight robust construction
- All ports of injection and samplings are of air tight quick-connection design.

**Application:** Exhaust/return air system for pharmaceutical and bio-cleanroom applications.  
**Type:** Wall-mount, room side operatable, efficiency tested exhaust/return air housing with Sofilair filters.  
**Construction:** Aluminium or stainless steel 304 fully welded, powder coated if required.  
**Filter seal:** Endless PU gasket on filter.  
**Outlet connection:** Flanged rectangular duct connection.  
**Damper:** Room-side adjustable butterfly damper assembly, stainless steel #304.  
**Room-side grill:** Stainless steel 304, or aluminium painted.  
**Auxiliary test shroud:** Movable room-side, functions for upstream aerosol injection and dispersion, upstream & downstream aerosol sampling.  
**Accessory:** Downstream sampling kit along with every housing supplied.  
**Installation:** Side wall mounted with site-made metal brackets (instructed but not supplied by Camfil).

Article Number	Type	Housing Dimensions WxHxD (mm)	Outlet size WxD (mm)	HEPA size WxHxD (mm)	Prefilter size WxHxD (mm)	Weight (kg)
4200007C	PWAP- 670x670- S-A21- BS	670x670x880	500x400	610x610x292	594x594x45	26
4200008C	PWAP- 670x365- S-A21- BS	365x670x880	250x400	305x610x292	289x594x45	17

*Note: Tolerance of the pressure drop data within +/- 20% as standard. Please refer to next "Model Number System" for model selection per detail option*

Model Number System

PWAP-	670x670-	S-	S	2	0	BS-
1	2	3	4	5	6	7

Naming Description	
1. Product :	PhanmasealAP Wall Mount Exhaust/Return Air HEPA Housing
2. Housing standard 2 sizes: Width x Height (excl. trim) x Depth (mm)	670 x 670 x 880 (with Sofilairfilter 610x610x292mm) 670 x 365 x 880 (with Sofilair filter 305x610x292mm)
3. Outlet location :	S = Side outlet (for upwards or downwards), standard B = Back outlet
4. Diffuser style :	2 = Fully perforated, standard
5. Diffuser surface coating :	0 = No treatment or coating 1 = Powder coated, RAL9016, for other color, please separately 2 = Other style, please state separately
7. Damper at outlet :	BS = Butterfly damper, stainless steel #304 NO = No damper

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Slimline RSR



Advantages

- Low profile
- Room side replaceable HEPA filter module
- Housing can be installed from room and top side
- Gap free, architecturally pleasing room side surface
- Adjustable room side diffusion disc
- Gel seal between filter and housing
- Noise reducing rounded collar
- Welded housing

Filter

**Application:** Microelectronic, hospitals, life science.

**Type:** HEPA filter panel with fluid seal.

**Frame:** Anodized extruded aluminium.

**Gel:** Polyurethane gel.

**Media:** Glass fibre.

**Separator:** Hot-melt.

**Sealant:** Polyurethane.

**Faceguard:** Expanded metal, powder coated, white RAL 9016.

**Gasket:** Gel.

**EN 1822:2009 filter class:** H13.

**MPPS efficiency:** H13: ≥ 99.95%.

**DOP efficiency:** ≥ 99.99%.

**Max. temperature:** 70°C.

**Fire rating:** UL 900.

Housing

**Frame:** Extruded aluminium.

**Back plate:** Hot dipped galvanized steel.

Filter

Article Number	Type	Dimensions WxH (mm)	Filter Classification EN1822:2009	Media area m²	Air Flow/pressure drop (m³/hr/Pa)	Weight (kg)
15290001	Slimline RSR - 600*600	600x600	H13	6.98	435/121	4.7
15290002	Slimline RSR - 905*600	905x600	H13	11.1	680/120	6.6
15290003	Slimline RSR- 1210*600	1210x600	H13	15.46	947/119	7.9

Housing

Article Number	Type	Dimensions WxHxD (mm)	Collar Size Ø	Media area m²	Weight (kg)
4109001	SLM Housing 600*600 Ø250	600x600x133	250	6.98	9.72
4109002	SLM Housing 905*600 Ø305	905x600x133	305	11.1	9.8
4109003	SLM Housing 1210*600 Ø305	1210x600x133	305	15.46	9.91

*\*Other dimensions, finishes and different options are available on request*



# Cleanseal product overview

## Available diffusers



Perforated (PF)



Swirl (SW)

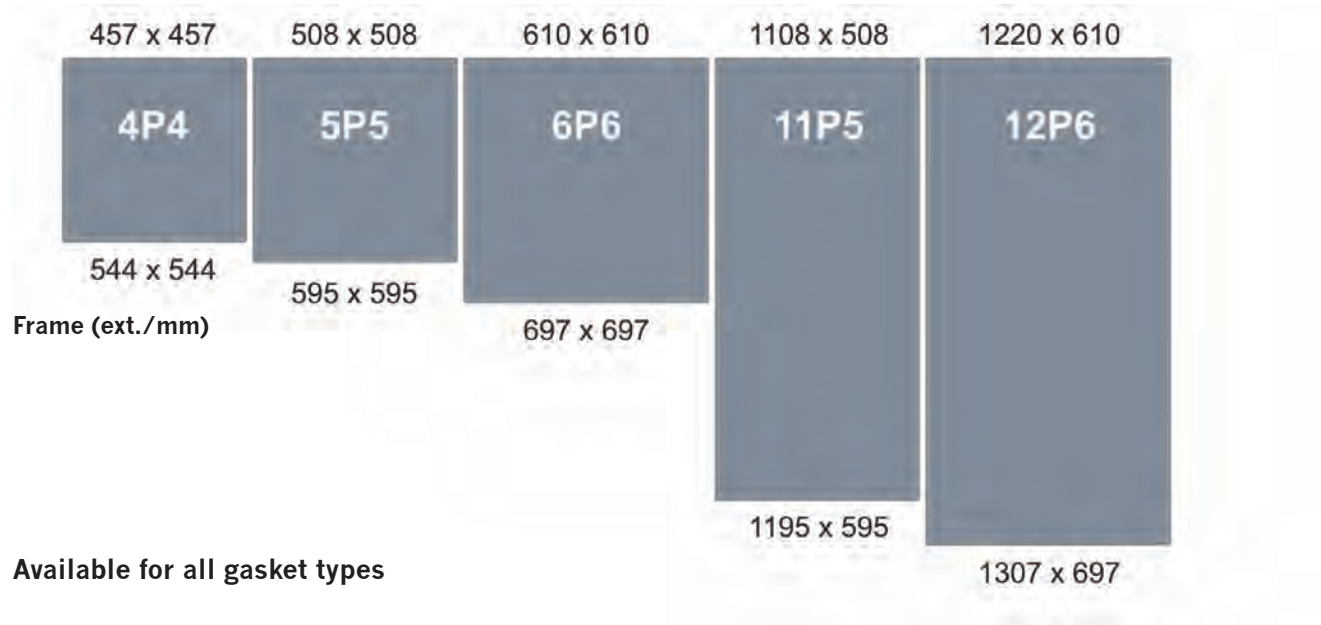
## Available configurations



Top entry

## Standardized dimensions

Filter (ext./mm)



## Available for all gasket types

CleanSeal versions allow customer to chose any type of gaskets PU or Camfil Gel gaskets.



As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Cleanseal AP



Advantages

- Aesthetic pleasing room side appearance
- Tool free, single person filter installation
- Several mounting options
- Leak free design with welded corners
- Fits Camfil standard MD/MG/MX cleanrooms panels with dry or gel seal
- Noise reducing rounded terminal

**Application:** Turbulent airflow in clean rooms  
**Type:** Terminal housing for HEPA/ULPA filters with PU gasket  
**Construction:** Galvanized steel, fully welded seams  
**Finishing:** RAL9010 Aluminium, Optional  
**Connection:** By ribbed circular inlet continuous welded on top  
**For Filters:** MEGALAM MD/MX/MD PU gasket frame height (66/90/110mm) (to be ordered separately)  
**Filter Mounting:** Tool-less multi-height quick release lever clamp for immediate and secured clamping including gasket compression limiter and filter retainer.  
**Control equipment:** room side access: 1 port for dp or 100% measurement.  
**Housing installation:** by removable «universal blocks, for suspension by hangers, or integration into clean room ceiling panels or fitting into T bar grids system  
**Diffusion plates:** Perforated or swirl

Housing Gasket

Article Number		Type	Housing Outermost Dimension (AxBxH / Ø) mm)	Filter Size (WxHxD) (mm)	Diffusers
MD	4108001	CL-AL-4P4-P-MD-T-C-250-00-AAA0	539 X 539 X 260 /250	457 X 457 X 66	Perforated
	4108002	CL-AL-5P5-P-MD-T-C-250-00-AAA0	590 X 590 X 260 /250	508 X 508 X 66	Perforated
	4108003	CL-AL-5P5-P-MD-T-C-250-00-AAA0	590 X 590 X 260 /250	508 X 508 X 66	Swirl
	4108004	CL-AL-6P6-P-MD-T-C-250-00-AAA0	692 X 692 X 260 /250	610 x 610 x 66	Perforated
	4108005	CL-AL-11P5-P-MD-T-C-250-00-AAA0	1190 590 260 /250	1108 508 66	Perforated
	4108006	CL-AL-12P6-P-MD-T-C-250-00-AAA0	1302 X 692 X 260 /250	1220 X 610 X 66	Perforated
MX	4108007	CL-AL-4P4-P-MX-T-C-250-00-AAA0	539 539 260 /250	457 457 90	Perforated
	4108008	CL-AL-5P5-P-MX-T-C-250-00-AAA0	590 X 590 X 260 /250	508 X 508 X 90	Perforated
	4108009	CL-AL-5P5-P-MX-T-C-250-00-AAA0	590 X 590 X 260 /250	508 X 508 X 90	Swirl
	4108010	CL-AL-6P6-P-MX-T-C-250-00-AAA0	692 X 692 X 260 /250	610x610x90	Perfoarted
	4108011	CL-AL-11P5-P-MX-T-C-250-00-AAA0	1190 X 590 X 260 /250	1108 X 508 X 90	Perforated
	4108012	CL-AL-12P6-P-MX-T-C-250-00-AAA0	1302 X 692 X 260 /250	1220 X 610 X 90	Perforated
MG	4108013	CL-AL-4P4-P-MG-T-C-250-00-AAA0	539 X 539 X 260 /250	457 X 457 X 110	Perforated
	4108014	CL-AL-5P5-P-MG-T-C-250-00-AAA0	590 X 590 X 260 /250	508 X 508 X 110	Perforated
	4108015	CL-AL-5P5-P-MG-T-C-250-00-AAA0	590 X 590 X 260 /250	508 X 508 X 110	Swirl
	4108016	CL-AL-6P6-P-MG-T-C-250-00-AAA0	692 X 692 X 260 /250	610 X 610 X 110	Perforated
	4108017	CL-AL-11P5-P-MG-T-C-250-00-AAA0	1190 X 590 X 260 /250	1108 X 508 X 110	Perforated
	4108018	CL-AL-12P6-P-MG-T-C-250-00A- AA0	1302 X 692 X 260 /250	1220 X 610 X 110	Perforated

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Housing Gel

Article Number		Type	Housing Outermost Dimension (AxBxH / Ø) (mm)	Filter Size (WxHxD) (mm)	Diffusers
MD	4108019	CL-AL-4P4-G-MD-T-C-250-00-AAAO	539 X 539 X 260 /250	457 X 457 X 71	Perforated
	4108020	CL-AL-5P5-G-MD-T-C-250-00-AAAO	590 X 590 X 260 /250	508 X 508 X 71	Perforated
	4108021	CL-AL-5P5-G-MD-T-C-250-00-AAAO	590 X 590 X 260 /250	508 X 508 X 71	Swirl
	4108022	CL-AL-6P6-G-MD-T-C-250-00-AAAO	692 X 692 X 260 /250	610 X 610 X 71	Perforated
	4108023	CL-AL-11P5-G-MD-T-C-250-00-AAAO	1190 X 590 X 260 /250	1108 X 508 X 71	Perforated
	4108024	CL-AL-12P6-G-MD-T-C-250-00-AAAO	1302 X 692 X 260 /250	1220 X 610 X 71	Perforated
MX	4108025	CL-AL-4P4-G-MX-T-C-250-00-AAAO	539 X 539 X 260 /250	457 X 457 X 105	Perforated
	4108026	CL-AL-5P5-G-MX-T-C-250-00-AAAO	590 X 590 X 260 /250	508 X 508 X 105	Perforated
	4108027	CL-AL-5P5-G-MX-T-C-250-00-AAAO	590 X 590 X 260 /250	508 X 508 X 105	Swirl
	4108028	CL-AL-6P6-G-MX-T-C-250-00-AAAO	692 X 692 X 260 /250	610 X 610 X 105	Perforated
	4108029	CL-AL-11P5-G-MX-T-C-250-00-AAAO	1190 X 590 X 260 /250	1108 X 508 X 105	Perforated
	4108030	CL-AL-12P6-G-MX-T-C-250-00-AAAO	1302 X 692 X 260 /250	1220 X 610 X 105	Perforated
MG	4108031	CL-AL-4P4-G-MG-T-C-250-00-AAAO	539 X 539 X 260 /250	457 X 457 X 115	Perforated
	4108032	CL-AL-5P5-G-MG-T-C-250-00-AAAO	590 X 590 X 260 /250	508 X 508 X 115	Perforated
	4108033	CL-AL-5P5-G-MG-T-C-250-00-AAAO	590 X 590 X 260 /250	508 X 508 X 115	Swirl
	4108034	CL-AL-6P6-G-MG-T-C-250-00-AAAO	692 X 692 X 260 /250	610 X 610 X 115	Perforated
	4108035	CL-AL-11P5-G-MG-T-C-250-00-AAAO	1190 X 590 X 260 /250	1108 X 508 X 115	Perforated
	4108036	CL-AL-12P6-G-MG-T-C-250-00-AAAO	1302 X 692 X 260 /250	1220 X 610 X 115	Perforated
*305mm,315mm & 350mm drawn type collar size available on request.					

# Cleanseal product overview

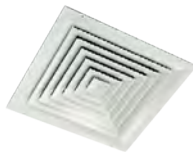
## Available diffusers



Perforated (PF)



Swirl (SW)



Four way (4W)

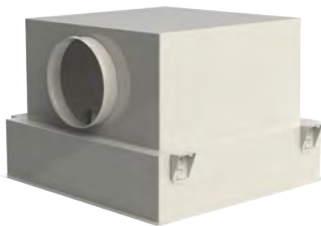


Adjustable (AV)

## Available configurations



Top entry

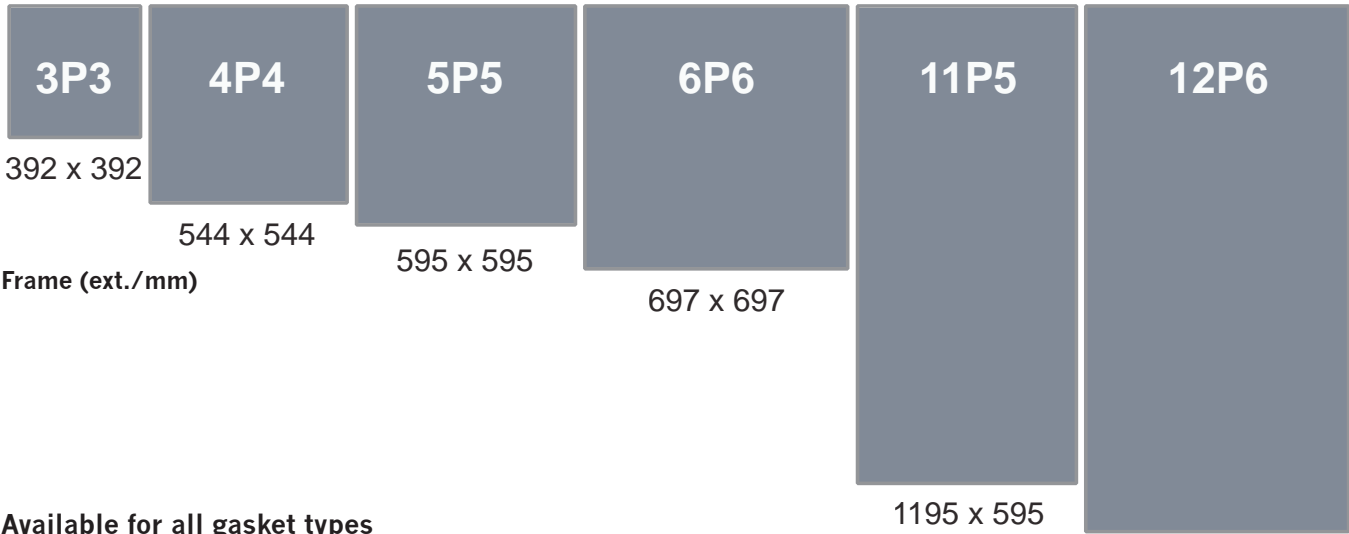


Side entry

## Standardized dimensions

Filter (ext./mm)

305 x 305    457 x 457    508 x 508    610 x 610    1108 x 508    1220 x 610



## Available for all gasket types

CleanSeal versions allow customer to chose any type of gaskets PU or Camfil Gel gaskets.



As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

Cleanseal top entry PU gasket



Advantages

- Tool-less filter clamping 100% secured and immediate
- Quick grid locking for immediate access to filter
- Long lasting reliability and tightness : robust fully welded construction
- High corrosion protection against decontamination agents
- Large choice of standardized sizes
- Complete interchangeable diffusion plate range

**Applications:** Turbulent airflow in clean rooms

**Type:** Terminal housing for HEPA/ULPA filters with PU gasket

**Construction:** Carbon steel, fully welded seams, accessories in Stainless Steel

**Finishing:** 3 steps - white epoxy coated RAL 9010, qualified for high corrosion protection against decontamination agents

**Connection:** By ribbed circular inlet - continuously welded

**For filters:** MEGALAM MD/MX/MD PU gasket frame height (66/90/110mm) (to be ordered separately)

**Filters mounting :** Tool-less multi-height quick release lever clamp for immediate and secured clamping including gasket compression limiter and filter retainer

**Control Equipment:** room side access: 1 port for dp or 100%

**Housing installation:** by removable «universal blocks, for suspension by hangers, or integration into clean room ceiling panels, or fitting into T bar grids system

**Diffusion plates (to be ordered separately):**

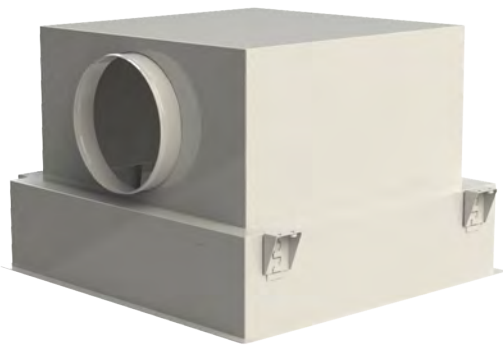
Flush hinged grids with “credit card” quick locking : Perforated, swirl, 4 ways, adjustable blades

Article number	Type	Modal	Size* (AxBxH**/Ø) mm	For filters (WxHxD) mm	Unit volume m³	Unit mass kg
CleanSeal top entry PU gasket : full equipment						
5577-111-11110	Top	CL-SW-3P3-P-XX-T-C160-N-00-AAA	392x392x311/160	305x305x66/90/110	0.05	6.7
5577-211-12110	Top	CL-SW-4P4-P-XX-T-C200-N-00-AAA	544x544x311/200	457x457x66/90/110	0.09	10.1
5577-211-13110	Top	CL-SW-4P4-P-XX-T-C250-N-00-AAA	544x544x311/250	457x457x66/90/110	0.09	10.0
5577-311-13110	Top	CL-SW-5P5-P-XX-T-C250-N-00-AAA	595x595x311/250	508x508x66/90/110	0.11	11.3
5577-311-14110	Top	CL-SW-5P5-P-XX-T-C315-N-00-AAA	595x595x311/315	508x508x66/90/110	0.11	11.1
5577-411-13110	Top	CL-SW-6P6-P-XX-T-C250-N-00-AAA	697x697x311/250	610x610x66/90/110	0.15	14.1
5577-411-14110	Top	CL-SW-6P6-P-XX-T-C315-N-00-AAA	697x697x311/315	610x610x66/90/110	0.15	13.9
5577-511-14110	Top	CL-SW-11P5-P-XX-T-C315-N-00-AAA	1195x595x311/315	1108x508x66/90/110	0.22	19.1
5577-611-14110	Top	CL-SW-12P6-P-XX-T-C315-N-00-AAA	1307x697x311/315	1220x610x66/90/110	0.28	22.7
ATTENTION : references for housing factory set Megalam MD (other settings on request)						
NOTE 1 : (*) : INCLUDING PERIPHERAL RETURN OF20mm						
NOTE 2 : (**) : INCLUDING COLLAR HEIGHT OF 46mm						
NOTE 3 : (***) : FOR ORDERING, REPLACE XX, AND SELECT FILTER FRAME HEIGHT :MD FOR MEGALAM MD 66mm						
MX FOR MEGALAM MX 90mm						
MG FOR MEGALAM MG 110mm						

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.



Cleanseal side entry PU gasket



Advantages

- Tool-less filter clamping 100% secured and immediate
- Quick grid locking for immediate access to filter
- Long lasting reliability and tightness : robust fully welded construction
- High corrosion protection against decontamination agents
- Large choice of standardized sizes
- Complete interchangeable diffusion plates range
- For limited space above false ceiling

**Applications:** Turbulent airflow in clean rooms for limited space above false ceiling

**Type:** Compact terminal housing for HEPA/ULPA filters with PU gasket

**Construction:** Carbon steel, fully welded seams, accessories in Stainless Steel

**Finishing:** 3 steps - white epoxy coated RAL 9010, qualified for high corrosion protection against decontamination agents.

**Connection:** By ribbed circular inlet - continuously welded

**For filters:** MEGALAM MD/MX/MD PU gasket frame height (66/90/110mm) (to be ordered separately)

**Filters mounting:** Tool-less multi-height quick release lever clamp for immediate and secured clamping including gasket compression limiter and filter retainer

**Taking control:** room side access: 1 port for dp or 100%

**Housing installation:** by removable «universal blocks, for suspension by hangers, or integration into clean room ceiling panels, or fitting into T bar grids system

**Diffusion plates (to be ordered separately):**

Flush hinged grids with “credit card” quick locking : Perforated, swirl, 4 ways, adjustable blades

Article number	Type	Modal	Size* (AxBxH**/Ø) mm	For filters (WxHxD) mm	Unit volume m³	Unit mass kg
CleanSeal side entry PU gasket : full equipment						
5577-111-21110	Side	CL-SW-3P3-P-MD-S-C-160-N-00-AAA0	392x392x383/160	305x305x66/90/110	0.06	8.1
5577-211-22110	Side	CL-SW-4P4-P-MD-S-C-200-N-00-AAA0	544x544x423/200	457x457x66/90/110	0.13	13.2
5577-211-22110	Side	CL-SW-4P4-P-MD-S-C-250-N-00-AAA0	544x544x473/250	457x457x66/90/110	0.14	14.1
5577-311-23110	Side	CL-SW-5P5-P-MD-S-C-250-N-00-AAA0	595x595x473/250	508x508x66/90/110	0.17	15.9
5577-311-24110	Side	CL-SW-5P5-P-MD-S-C-315-N-00-AAA0	595x595x583/315	508x508x66/90/110	0.21	17.1
5577-411-23110	Side	CL-SW-6P6-P-MD-S-C-250-N-00-AAA0	697x697x473/250	610x610x66/90/110	0.23	19.7
5577-411-23110	Side	CL-SW-6P6-P-MD-S-C-315-N-00-AAA0	697x697x538/315	610x610x66/90/110	0.26	21.2
5577-511-44110	Side	CL-SW-11P5-P-MD-S-C-315-N-LS-AAA0	1195x595x538/315	1108x508x66/90/110	0.38	28.9
5577-511-34110	Side	CL-SW-11P5-P-MD-S-C-315-N-SS-AAA0	1195x595x538/315	1108x508x66/90/110	0.38	28.9
5577-611-44110	Side	CL-SW-12P6-P-MD-S-C-315-N-LS-AAA0	1307x697x538/315	1220x610x66/90/110	0.49	33.9
5577-611-34110	Side	CL-SW-12P6-P-MD-S-C-315-N-SS-AAA0	1307x697x538/315	1220x610x66/90/110	0.49	33.9
ATTENTION : references for housing factory set Megalam MD (other settings on request)						
NOTE 1 : (*) : INCLUDING PERIPHERAL RETURN OF 20mm						
NOTE 2 : (**) ENTRY POSITION : S = SIDE / LS = LONG SIDE / SS = SHORT SIDE						
NOTE 3 : (***) : FOR ORDERING, REPLACE XX, AND SELECT FILTER FRAME HEIGHT : MD FOR MEGALAM MD 66mm						
MX FOR MEGALAM MX 90mm						
MG FOR MEGALAM MG 110mm						

Cleanseal top entry gel gasket



Advantages

- Tool-less filter clamping 100% secured and immediate
- Quick grid locking for immediate access to filter
- Long lasting reliability and tightness : robust fully welded construction
- High corrosion protection against decontamination agents
- Large choice of standardized sizes
- Complete interchangeable diffusion plates range

**Applications:**Turbulent airflow in clean rooms

**Type:** Terminal housing for HEPA/ULPA filters with gel gasket

**Construction:**Carbon steel, fully welded seams, accessories in Stainless Steel

**Finishing :** 3 steps - white epoxy coated RAL 9010, qualified for high corrosion protection against decontamination agents

**Connection:** By ribbed circular inlet - continuously welded  
**For filters:** MEGALAM MD/MX/MG gel gasket frame height (71/105/115mm) (to be ordered separately)

**Filters mounting:** Tool-less multi-height quick release lever clamp for immediate and secured clamping including gasket compression limiter and filter retainer

**Control Equipment:** room side access: 1 port for dp or 100%

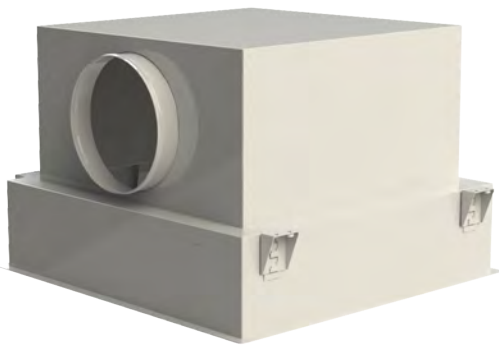
**Housing installation:**by removable «universal blocks, for suspension by hangers, or integration into clean room ceiling panels, or fitting into T bar grids system

**Diffusion plates (to be ordered separately):**

Flush hinged grids with “credit card” quick locking : Perforated, swirl, 4 ways, adjustable blades

Article number	Type	Modal	Size* (AxBxH**/Ø) mm	For filters (WxHxD) mm	Unit volume m³	Unit mass kg
CleanSeal top entry gel gasket : full equipment						
5577-125-11110	Top	CL-SW-3P3-G-MD-T-C-160-N-00-GAA0	392x392x311/160	305x305x71/105/115	0.05	7.0
5577-225-12110	Top	CL-SW-4P4-G-MD-T-C-200-N-00-GAA0	544x544x311/200	457x457x71/105/115	0.09	10.6
5577-225-13110	Top	CL-SW-4P4-G-MD-T-C-250-N-00-GAA0	544x544x311/250	457x457x71/105/115	0.09	10.5
5577-325-13110	Top	CL-SW-5P5-G-MD-T-C-250-N-00-GAA0	595x595x311/250	508x508x71/105/115	0.11	11.8
5577-325-14110	Top	CL-SW-5P5-G-MD-T-C-315-N-00-GAA0	595x595x311/315	508x508x71/105/115	0.11	11.6
5577-425-13110	Top	CL-SW-6P6-G-MD-T-C-250-N-00-GAA0	697x697x311/250	610x610x71/105/115	0.15	14.7
5577-425-14110	Top	CL-SW-6P6-G-MD-T-C-315-N-00-GAA0	697x697x311/315	610x610x71/105/115	0.15	14.5
5577-525-14110	Top	CL-SW-11P5-G-MD-T-C-315-N-00-GAA0	1195x595x311/315	1108x508x71/105/115	0.22	19.9
5577-625-14110	Top	CL-SW-12P6-G-MD-T-C-315-N-00-GAA0	1307x697x311/315	1220x610x71/105/115	0.28	23.7
ATTENTION : references for boxes factory set Megalam MD (other setting on request)						
NOTE 1 : (*) : INCLUDING PERIPHERAL RETURN OF 20mm						
NOTE 2 : (**) : INCLUDING COLLAR HEIGHT THEN ADD 46mm						
NOTE 3 : (***) : FOR ORDERING, REPLACE XX, AND SELECT FILTER FRAME HEIGHT : MD FOR MEGALAM MD 71mm						
MX FOR MEGALAM MX 105mm						
MG FOR MEGALAM MG 115mm						

Cleanseal side entry gel gasket



Advantages

- Tool-less filter clamping 100% secured and immediate
- Quick grid locking for immediate access to filter
- Long lasting reliability and tightness : robust fully welded construction
- High corrosion protection against decontamination agents
- Large choice of standardized sizes
- Complete interchangeable diffusion plate range
- For limited space above false ceiling

**Applications:** Turbulent airflow in clean rooms for limited space above false ceiling

**Type:** Compact terminal housing for HEPA/ULPA filters with gel gasket

**Construction:** Carbon steel, fully welded seams, accessories in Stainless Steel

**Finishing:** 3 Steps - white epoxy coated RAL 9010, qualified for high corrosion protection against decontamination agents

**Connection:** By ribbed circular inlet- continuously welded

**For filters:** MEGALAM MD/MX/MG gel gasket frame height (71/105/115mm) (to be ordered separately)

**Filters mounting :** Tool-less multi-height quick release lever clamp for immediate and secured clamping including gasket compression limiter and filter retainer

**Control Equipment:** room side access: 1 port for dp or 100%

**Housing installation:** by removable «universal blocks, for suspension by hangers, or integration into clean room ceiling panels, or fitting into T bar grids system

**Diffusion plates (to be ordered separately):**

Flush hinged grids with “credit card” quick locking : Perforated, swirl, 4 ways, adjustable blades

Article number	Type	Modal	Size* (AxBxH**/Ø) mm	For filters (WxHxD) mm	Unit volume m³	Unit mass kg
CleanSeal side entry gel gasket : full equipment						
5577-125-21110	Side	CL-SW-3P3-G-MD-S-C-160-N-00-GAA0	392x392x383/160	305x305x71/105/115	0.06	8.4
5577-225-22110	Side	CL-SW-4P4-G-MD-S-C-200-N-00-GAA0	544x544x423/200	457x457x71/105/115	0.13	13.8
5577-225-22110	Side	CL-SW-4P4-G-MD-S-C-200-N-00-GAA0	544x544x473/250	457x457x71/105/115	0.14	14.7
5577-325-23110	Side	CL-SW-5P5-G-MD-S-C-250-N-00-GAA0	595x595x473/250	508x508x71/105/115	0.17	16.4
5577-325-24110	Side	CL-SW-5P5-G-MD-S-C-315-N-00-GAA0	595x595x583/315	508x508x71/105/115	0.21	17.6
5577-425-23110	Side	CL-SW-6P6-G-MD-S-C-250-N-00-GAA0	697x697x473/250	610x610x71/105/115	0.23	20.3
5577-425-23110	Side	CL-SW-6P6-G-MD-S-C-250-N-00-GAA0	697x697x538/315	610x610x71/105/115	0.26	21.8
5577-525-44110	Side	CL-SW-11P5-G-MD-S-C-315-N-LS-GAA0	1195x595x538/315	1108x508x71/105/115	0.38	29.7
5577-525-34110	Side	CL-SW-11P5-G-MD-S-C-315-N-SS-GAA0	1195x595x538/315	1108x508x71/105/115	0.38	29.7
5577-625-44110	Side	CL-SW-12P6-G-MD-S-C-315-N-LS-GAA0	1307x697x538/315	1220x610x71/105/115	0.49	34.8
5577-625-34110	Side	CL-SW-12P6-G-MD-S-C-315-N-SS-GAA0	1307x697x538/315	1220x610x71/105/115	0.49	34.8
ATTENTION : references for boxes factory set Megalam MD (other setting on request)						
NOTE 1 : (*) : INCLUDING PERIPHERAL RETURN OF 20mm						
NOTE 2 : (**) ENTRY POSITION : S = SIDE / LS = LONG SIDE / SS = SHORT SIDE						
NOTE 3 : (***) : FOR ORDERING, REPLACE XX, AND SELECT FILTER FRAME HEIGHT : MD FOR MEGALAM MD 71mm						
MX FOR MEGALAM MX 105mm						
MG FOR MEGALAM MG 115mm						

## CamSafe 3 - Safe change filter casing Bag In Bag Out (BIBO)



### Advantages

- Modularity and Flexibility
- High security guarantee: class 3 ISO10648-2 at +/- 6000Pa
- Fully welded
- Filter clamping “Twice the Security” (patented)
- High operator protection by BIBO

**Applications:** Exhaust of contaminated air (particles, microorganisms, molecules), filter changing in secure plastic bag: Pharmaceutical, Biotechnology, Chemistry, Hospitals, Laboratories biosafety, animal facilities.

**Type:** Modular system BIBO safe change housing to be assembled, fully welded.

**Construction:** 2mm steel airtight welded.

**Finish:** White painted baked RAL 9010.

**Filter frame:** Bended and continuous welded.

**For filters:** 292mm depth particle and carbon filter, 45mm depth prefilter.

**Filters mounting :** Fast filter clamping by ClampSafe, equipped with a “twice security” both on clamping frame and door: impossible to clamp the filter if not correctly positioned and impossible to close the door if the filter is not clamped.

**Connection:** Rectangular flanges pre-drilled.

**Pressure ports:** Locations provided upstream and downstream (pressure port kit to be ordered separately).

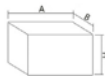
**Performance:** Housing qualified +/- 5000Pa: Class 3 acc. to ISO 10648-2, L1 acc. to EN1886, Class D acc. to EN12237, Class C acc. to Eurovent 2/ 2.

**Accessories:** Safe change bag with integrated a-ring sealable, Gaskets and bolting kit  
Connecting ducks 1-6 housing in parallel for high flow rates.

**Option:** Stainless steel, factory mounting full or partial, individual factory tests with test report.

Article number	Type	Housing Size (AxHxB) (mm)	Filter Size (WxHxD) (mm)	Weight (kg)
4500004C	CS3-610-F-SS	730x535x725	610x610x292	45
4500006C	CS3-305-F-SS	730x535x420	305x610x292	39
4500000C	CS3-610-F-PPC	730x535x725	610x610x292	45
4500002C	CS3-305-F-PPC	730x535x420	305x610x292	39

## Cleanseal Extract Exhaust/Return Air Housing



### Advantages

- Tool-less filter clamping 100% secured and immediate
- Quick grid locking for immediate access to filter
- Long lasting reliability and tightness : robust fully welded construction
- High corrosion protection againts decontamination agents
- Ensure localized control of potent compounds, eliminating the contamination of downstream ductworks
- Easily operation with scanning system for filter integrity test

**Application:** CleanSeal Extract is wall mount equipment used for exhaust/return air system: Pharmaceutical, Biotechnology, Chemistry, Hospitals, and animal facilities.

**Type:** Fully welded Wall mount housing.

**Construction:** Carbon steel, fully welded seams, accessories in Stainless Steel

**Finish:** 3 Steps - white epoxy coated RAL 9010, qualified for high corrosion protection against decontamination agents

**Filter Seal:** Endless PU gasket on filter.

**Connection:** Rectangular pre-drilled flanges.

**Pressure Gauge:** Pressure gauge is pre-installed on the equipment.

**Performance:** The whole equipment could bear  $\pm 1000\text{Pa}$ . The overall leakage rate should no more than 0.25% per hour under 1000Pa pressure.

**Scanning system:** Accourding to standard ISO14644-3.

Article number	Model	Housing Size (AxHxB) (mm)	Filter Size (WxHxD) (mm)	Unit volume (m³)	Weight (kg)
WM10000C	CLE-SW-6P6-P-MD-SR6008-N-LS-A000	800X998X526	HEPA:610x610x66	0.6	55
WM10001C	CLE-SW-6P6-P-MX-SR6008-N-LS-A000	800X998X526	HEPA:610x610x90	0.6	55
WM10002C	CLE-SW-6P6-P-MG-SR6008-N-LS-A000	800X998X526	HEPA:610x610x110	0.6	55
WM10003C	CLE-SW-6P6-P-48MD-SR6008-N-LS-A000	800X998X526	Pre-filter:610x610x48 HEPA:610x610x66	0.6	55
WM10004C	CLE-SW-6P6-P-NF-SR6008-N-LS-A000	800X998X526	No Filter	0.6	55

*\*Other model please contact Camfil Kunshan factory.*

## One-Stage Filter HEPA-Megalam

Article number	Modal	Dimension (HxWxD) (mm)	Media area (m²)	Air flow/Pressure Drop (m³/h/Pa)	Efficiency EN779	Unit volume (m³)	Weight (kg)
15042392C	Megalam MDA-610x610-01/22	610x610x66	9.7	1000/250	H14	0.02	4
15056166C	Megalam MXA-610x610-01/22	610x610x90	13.2	1500/250	H14	0.03	5.6
15066022C	Megalam MGA-610x610-01/22	610x610x110	17.5	1800/250	H14	0.04	5.3



## CamContain



### Advantages

- Integrated filter scanning technology
- Especially secure filter clamping technology
- Innovative filter insertion device
- Safe decontamination concept

**Application:** Hospital isolation rooms/wards and Intensive Care Units (ICUs) for the control of airborne pathogens, viral contaminants and infectious organisms

**Type:** Housing

**Construction:** Matched components can include bag-in/bag-out section, prefilter section, testing section and an optimized fan section

**Filters:** Absolute® filters and various grades of ASHRAE grade filters for prefiltration

**Additional data:** Consult factory or Product Sheet 3424 for additional information

Safety cannot be stressed enough.

Especially when it involves highly sensitive applications in which people, animals or the environment are endangered by highly infectious microorganisms, for example. High safety demands apply to all situations in which toxic, radioactive or bacterial substances must be isolated, such as in the pharmaceutical industry, with the use of biotechnical equipment as well as in BSL-3/BSL-4 laboratories and nuclear power engineering.

The filter housings have been designed to meet the highest safety demands.

To ensure a complete documentation of your air filtration, most notably in highly sensitive areas, the CamContain CS housing can be supplied with an integrated scanner. The HEPA filter can be tested on-site for separation efficiency and any leaks, and the results professionally documented. For applications in which dangerous microorganisms must be filtered out (BSL-3/BSL-4), the housing can be equipped with connections and devices for safe decontamination. What is more, the maintenance bag replacement technology guarantees additional safety for the operator. The CamContain CS housings made of stainless steel are gas-tight welded, torsion-resistant and compliant with the highest tightness requirements, which are also commonly used in nuclear power plant engineering.

The CamScan Mobile is a mobile analysis unit for the automatic testing of an installed filter. As defined in the standard DIN 1822, the built-in filter can be tested for overall separation efficiency and any possible leaks. The computer that is integrated into the system stores the measurement values, which in turn allows for trouble-free documentation.



## CamCube filter housings

Flexible, compact and with multiple stage filtration options

**HINGED SERVICE HATCH**  
with foldable handles



**ROBUST CONSTRUCTION**  
Leakage class C, EN15727  
Mechanical performance:  
D1, EN1886:2007

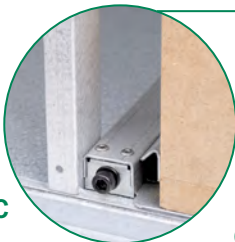
**HEAT AND CONDENSATION INSULATED**  
45 mm insulation in a sandwich design

**ALUZINC**  
Corrosion class C4

**OPTIONAL PREFILTER**  
**MOUNTING RAIL**



**CLAMPING DESIGN AC**



**CLAMPING DESIGN HF**



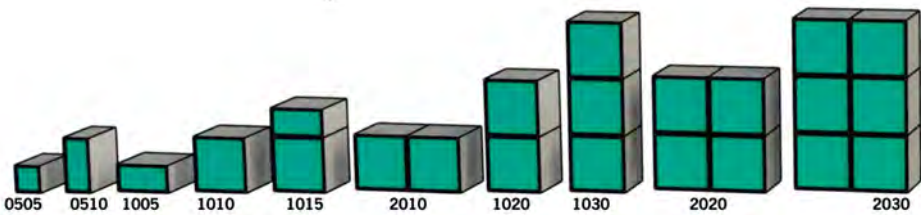
**ADJUSTABLE FEET**  
Available for floor mounting



- CamCube HF: For filters with header frame 25 mm, like Hi-Flo, Opakfil, CityCarb and CitySorb.
- CamCube AS: is a housing with integrated scanning system for HEPA filters size 610x610x292 mm
- CamCube AD: for HEPA filter size 610x610x292 mm
- CamCube AC: for HEPA filters size 595x595x292 mm
- The HEPA filters from the Absolute series fits in the CamCube A housings
- CamCube CC: For cylindrical carbon filters CamCarb 2600



**THE HOUSINGS CAN BE ORDERED IN A VARIETY OF DIFFERENT SIZES**



Size samples

CamCube HF-L



Advantages

- Heat and condensation insulated
- Corrosivity class C4
- Leakage class C
- Easy maintenance
- Short delivery time

**Application:** CamCube HF is a flexible and compact range of filter housings for bag filters and other filter types with a 25 mm frame. Used in comfort and industrial applications

**Type:** Housing

**Filter housing material:** Aluzinc

**Option:** Stainless steel SS EN 1.4301

**Filter:** Bag filters such as Hi-Flo XL and City-Flo XL. Compact filters such as Opakfil. See the relevant page in the catalogue for the technical data about filters

**Air flow:** The recommended air flow in a full module filter (592 x 592 mm) is 3,400 m3/h. See the relevant page in the catalogue for further information about design

**Note:** Door hinged on the left or right, can be changed on site

CamCube HF is a flexible and compact range of filter housings for bag filters and other filter types with a 25 mm frame. Two stage filtration is available as an option with a prefilter mounting rail for panel filters. The housing walls is a sandwich design with 45 mm heat and condensation insulation between, covered with aluzinc sheet metal inside and outside (corrosivity class C4). The service hatch is hinged mounted. The endless gasket on the inside of the service hatch makes it highly airtight. The filter housing has a leakage class of C according to EN 15727. When the service hatch is closed the newly developed clamping device ensures the clamping of the filter. As standard the casing has M8 threads for mounting the filter housing. The filter housing is supplied with a guide connection and a flange connection is available as an option.

Accessories:

Prefilter mounting rail 50 or 100 mm

Adjustable feet (4 pcs set)

Hose connectors for pressure drop (2 pcs set), supplied separately reference 550901

Hose connectors for pressure drop (2 pcs set), factory mounted reference 550900

Locking handles

Flange adaptor

Example specification text:

Filter housing: CamCube HF-1010. Supplier, Camfil Svenska AB

Design: Sandwich construction with 45 mm heat and condensation insulation, covered with double aluzinc sheet metal (corrosivity class C4)

Leakage class C

Filter: 1 x Cityflo XL-592x592x640 F7

Accessories: One set of adjustable feet. Hose connectors for pressure drop, factory mounted

Classification:

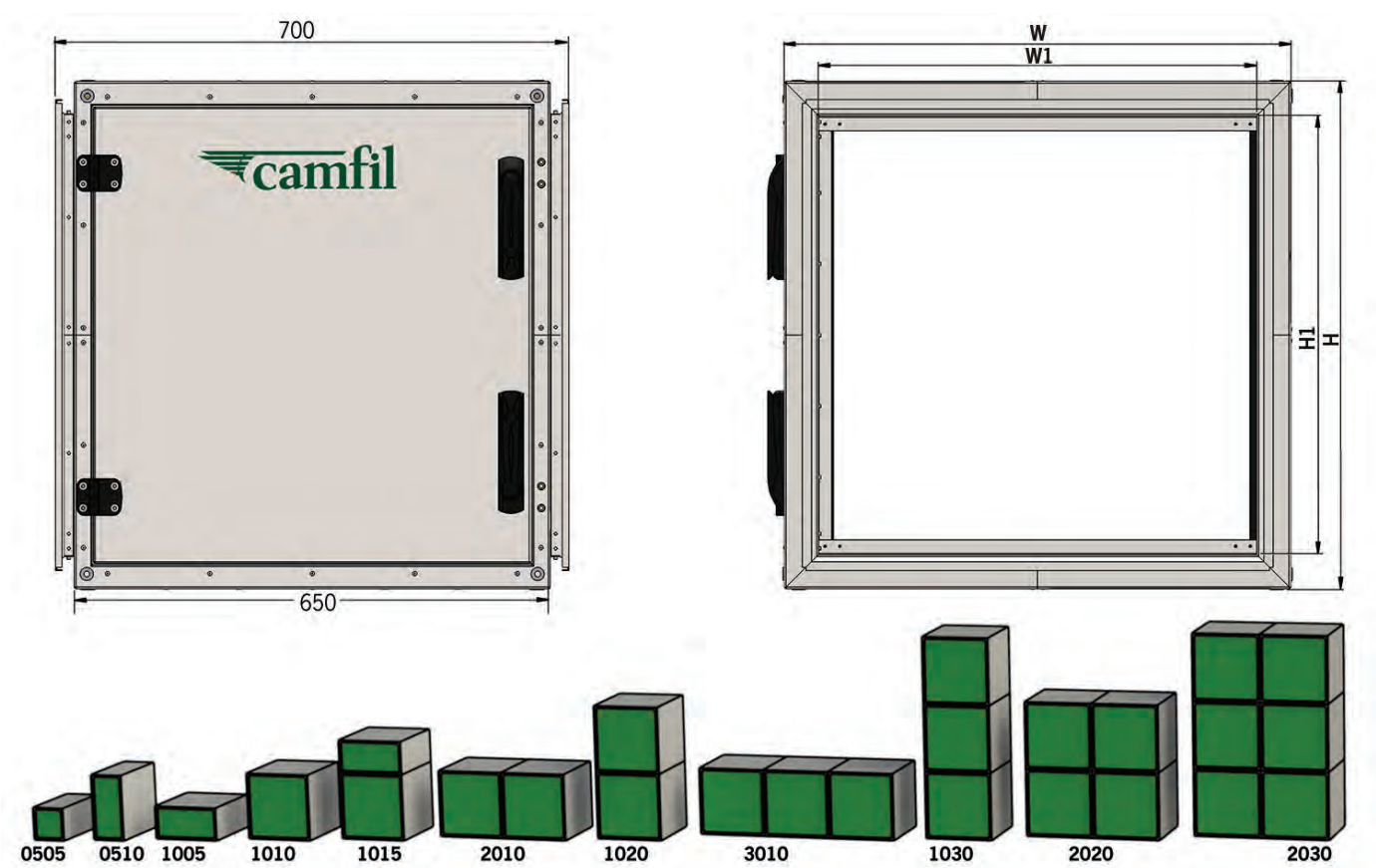
Leakage class C, according to the EN 15727:2010 standard. Leakage class L1 according to the EN 1886:2007 standard

Mechanical performance: D1 according to the EN 1886:2007 standard

Filterbypass test, highest class according to the EN 1886:2007 standard, up to filter class F9

Art. No.	Model Name	Dimensions WxHxD (mm)	Inner flanges W1xH1 (mm)	Weight (kg)
550001	CamCube HF-L 0505	392x 392x 700	300x 300	24
550002	CamCube HF-L 0510	392x 692x 700	300x 600	34
550003	CamCube HF-L 1005	692x 392x 700	600x 300	34
550004	CamCube HF-L 1010	692x 692x 700	600x 600	43
550005	CamCube HF-L 1015	692x 992x 700	600x 900	55
550006	CamCube HF-L 1020	692x 1292x 700	600x 1200	64
550007	CamCube HF-L 1025	692x 1592x 700	600x 1500	76
550008	CamCube HF-L 1030	692x 1892x 700	600x 1800	85
550009	CamCube HF-L 1510	992x 692x 700	900x 600	53
550010	CamCube HF-L 1515	992x 992x 700	900x 900	66
550011	CamCube HF-L 1520	992x 1292x 700	900x 1200	76
550012	CamCube HF-L 1525	992x 1592x 700	900x 1500	89
550013	CamCube HF-L 1530	992x 1892x 700	900x 1800	99
550014	CamCube HF-L 2010	1292x 692x 700	1200x 600	62
550015	CamCube HF-L 2015	1292x 992x 700	1200x 900	77
550016	CamCube HF-L 2020	1292x 1292x 700	1200x 1200	86

Art. No.	Model Name	Dimensions WxHxD (mm)	Inner flanges W1xH1 (mm)	Weight (kg)
550017	CamCube HF-L 2025	1292x 1592x 700	1200x 1500	100
550018	CamCube HF-L 2030	1292x 1892x 700	1200x 1800	109
550019	CamCube HF-L 2510	1592x 692x 700	1500x 600	74
550020	CamCube HF-L 2515	1592x 992x 700	1500x 900	89
550021	CamCube HF-L 2520	1592x 1292x 700	1500x 1200	98
550022	CamCube HF-L 2525	1592x 1592x 700	1500x 1500	113
550023	CamCube HF-L 2530	1592x 1892x 700	1500x 1800	123
550024	CamCube HF-L 3010	1892x 692x 700	1800x 600	83
550025	CamCube HF-L 3015	1892x 992x 700	1800x 900	99
550026	CamCube HF-L 3020	1892x 1292x 700	1800x 1200	108
550027	CamCube HF-L 3025	1892x 1592x 700	1800x 1500	124
550028	CamCube HF-L 3030	1892x 1892x 700	1800x 1800	134



As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.



CamCube AS



Advantages

- Unique non-intrusive patented scanning system
- Space saving installation
- Advanced patented probe for reliable scanning
- Built-in inspection lens and light
- Leak-free guarantee
- Built-in thermal insulation

**Application:** Filter housing with integrated scanning system

**Type:** Housing

**Filter:** High airflow HEPA filter, in size 610x610x292 mm. See the relevant page in the catalogue for the technical data about filters

**Filter clamping:** Suitable for filters, in depth 292 mm. Tool for filter clamping hex key 5 mm

**Note:** The housing is reversible depending on airflow direction

Accessories:  
Replacement kit for scanning system  
Lockable handles

**Product description:**  
CamCube AS is a flexible and compact range of scannable filter housings for high airflow (Absolute DG14) HEPA filters and other filter types with 292 mm depth. The cover is a sandwich design with 45 mm heat and condensation insulation between, covered with Aluzinc sheet metal inside and outside (corrosivity class C4). The groove around and between the filters is sealed with sealant to exclude any leakage from the joints.  
The service hatch is hinged mounted. The endless gasket on the inside of the service hatch ensure high tightness.  
The filter housing has leakage class D according to EN 15727.  
When the service hatch is closed the newly developed clamping device ensures the clamping of the filter.  
The filter housing is supplied with flange connection and hose connectors for pressure drop.

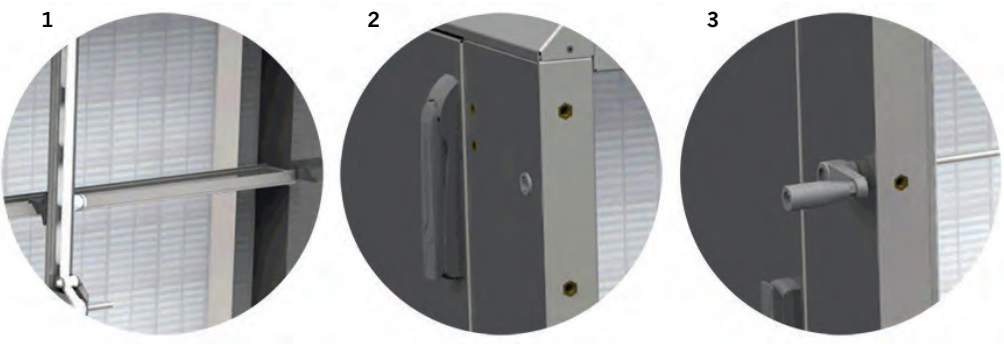
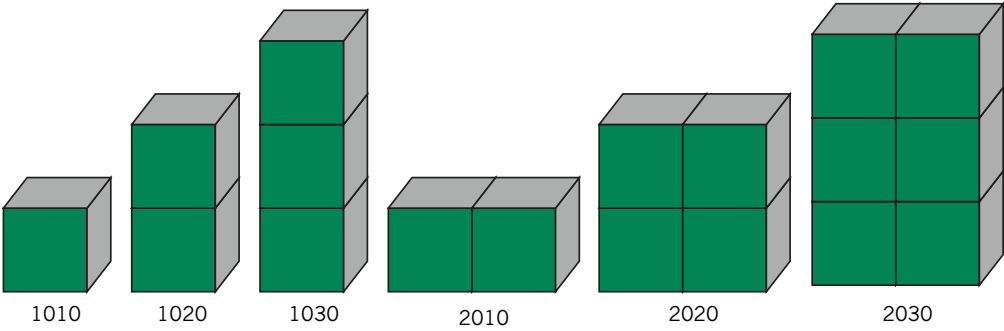
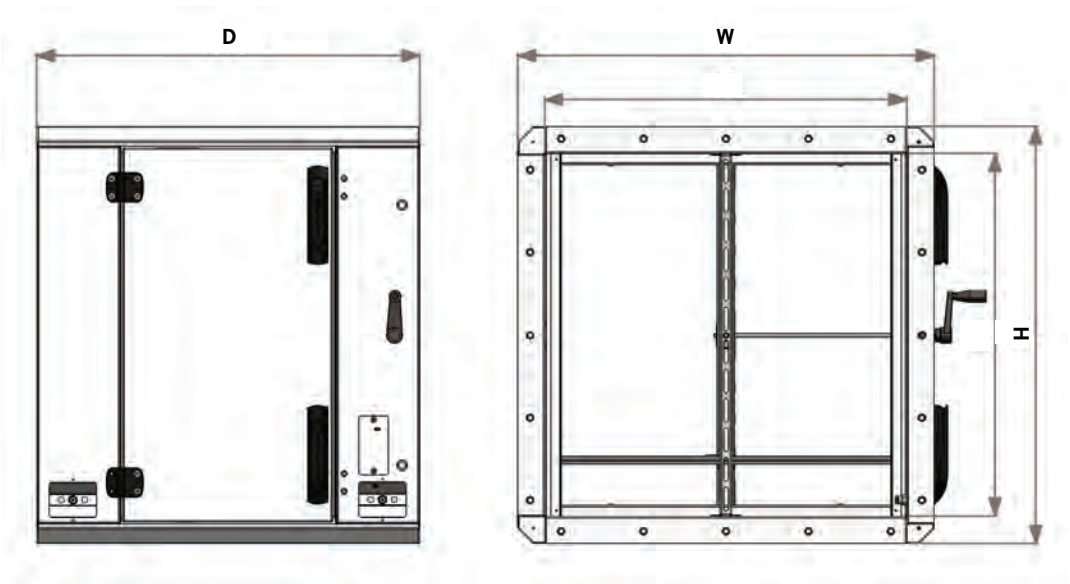
**Scanning:**  
Using the integrated crank, with foldable handle, the scanning probe can be moved up and down. The scanning process is non-intrusive, easy, reliable and secure and installation footprint is minimized.  
The built-in wide angel inspection lens and light makes it easy to look inside the housing.  
The scanning system is easy to replace if needed.

**Example specification text:**  
Filterhousing: Camfil CamCube AS-1010.  
Design: Sandwich construction with 45 mm heat and condensation insulation, covered with double aluzinc sheet metal (corrosivity class C4).  
Including hinged airtight hatch for fast access.  
Filter: Absolute DG 610x610x292 mm.  
Integrity test for validation operation : Built-in, non intrusive scanning system for HEPA filter integrity test, including 100% concentration measurement ports.  
Clamping system: Designed not to disturb integrity test operations.  
Inspection: Built-in inspection lens and light to survey while performing scanning.

**Performance:**  
Leakage class D according to EN 15727:2010 standard.  
Leakage class L1 according to EN 1886:2007 standard.  
Mechanical: D1 according to EN 1886:2007 standard.  
Max penetration gasket frame (filter section) < 0,01% by ISO 14644-3.  
Fulfills the regulatory demands on HEPA-filter integrity test according to ISO 14644-3.

Art. No.	Model Name	Dimensions WxHxD (mm)	Duct connection (mm)	Weight (kg)
553004	CamCube AS 1010	707x707x650	615x615	43
553006	CamCube AS 1020	707x1322x650	615x1230	64
553008	CamCube AS 1030	707x1937x650	615x1845	85
553016	CamCube AS 2020	1322x1322x650	1230x1230	86
553014	CamCube AS 2010	1322x707x650	1230x615	62
553018	CamCube AS 2030	1322x1937x650	1230x1845	109





1. Advanced patented probe 2. Optical wide angle inspection lens 3. Crank with foldable handle

FCBS-A



Advantages

- Easy to Install
- Modular construction
- No tools needed to change filters
- Gasket to seal between door and filter housing
- Easy servicing
- Stable and secure design

**Housing:** Galvanised steel.  
**Filters:** Absolute, AIROPAC, MICRETAIN and SOFILAIR.  
**Alternative:** Possibility to switch the housings 180° (flexibility to access from left or right side).  
**Please note:** Stainless steel version is also available.

Model Name	Exterior dimensions (WxHxD) (mm)	Interior dimensions (WxH) (mm)	Number of filters 592x592 (mm)	Number of filters 287x592 (mm)	Weight (kg)
FCBS-A 0510	399x744x500	309x614	-	1	20
FCBS-A 1005	704x439x500	614x309	-	1	20
FCBS-A 1010	704x744x500	614x614	1	-	26
FCBS-A 1015	704x1055x500	614x925	1	1	41
FCBS-A 1020	704x1360 x500	614x1230	2	-	46
FCBS-A 1025	704x1670 x500	614x1540	2	-	59
FCBS-A 1030	704x1975x500	614x1845	3	-	68
FCBS-A 1510	1013x744x500	923x614	1	-	37
FCBS-A 1520	1013x1360x500	923x1230	2	2	62
FCBS-A 1530	1013 x1975 x500	923x1845	3	3	88
FCBS-A2010	1318x744x500	1228x614	2	-	42
FCBS-A2015	1318x1055 x500	1228x925	2	2	68
FCBS-A2020	1318X1360X500	1228X1228	4	-	72
FCBS-A2025	1318X1670X500	1228x1540	4	2	95
FCBS-A2030	1318 x1975x500	1228x1845	6	-	101
FCBS-A 2510	1677x744x500	1537x614	2	1	51
FCBS-A 2520	1677x1360 x500	1537x1230	4	2	89
FCBS-A2530	1677x1975 x500	1537x1845	6	3	126
FCBS-A3010	1982x744x500	1842 X614	3	-	59
FCBS-A 3015	1982X1055 X500	1842 X925	3	3	89
FCBS-A 3020	1982x1360x500	1842 x1230	6	-	98
FCBS-A 3025	1982x1670 x500	1842 x1540	6	3	130
FCBS-A 3030	1982x1975 x500	1842x1842	9	-	138
other dimensions and arrangements available on request					

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

FCBL-CC



Advantages

- Easy to Install
- No tools needed to change filters
- Gasket to seal between door and filter housing
- Easy servicing
- Stable and secure design
- Modular construction
- CREO Approved

**Housing:** Galvanised steel.

**Filters:** Camcarb CG 1300, 2600 or 3500.

**Alternative:** Possibility to switch the housings 180° (flexibility to access from left or right side).

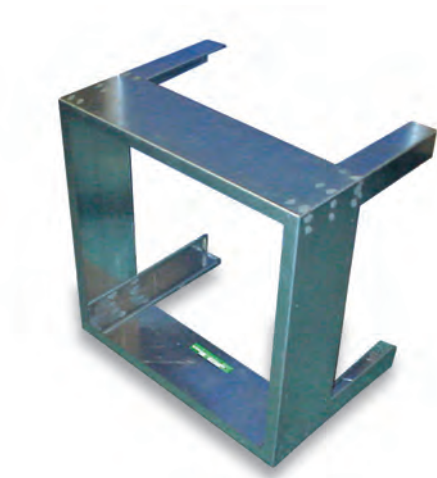
**Please note:** Stainless steel version is also available



Model Name	Dimensions WxHxD (mm)	Inner flanges W1xH1 (mm)	Number of Cylinders	Weight (kg)
FCBL-CC 0510	399x744x750	309X610	8	25.5
FCBL-CC 1005	704x439 x750	614X309	8	25.5
FCBL-CC 1010	704x744x750	614x614	16	33
FCBL-CC 1015	704x1055x750	614x925	24	49.5
FCBL-CC 1020	704X1360X750	614X1230	32	58.5
FCBL-CC 1025	704X1670X750	614X1540	40	75
FCBL-CC 1030	704X1975X750	614X1845	48	82.5
FCBL-CC 1510	1013x744x750	923X614	24	45
FCBL-CC 1520	1013x1360x750	923x1230	48	75
FCBL-CC 1530	1013x1975x750	923x1845	72	110
FCBL-CC 2010	1318x744x750	1228x614	32	53
FCBL-CC 2015	1318X1055 X750	1228x925	48	80.5
FCBL-CC 2020	1318X1360X750	1228X1228	64	91.5
FCBL-CC 2025	1318 x1670 x750	1228X1540	80	118
FCBL-CC 2030	1318 x1975x750	1228x1845	96	128.5
FCBL-CC 2510	1677x744x750	1537x614	40	65
FCBL-CC 2520	1677x1360x750	1537x1230	80	111
FCBL-CC 2530	1677x1975x750	1537 x1845	120	157.5
FCBL-CC 3010	1982x744x750	1842 X614	48	72.5
FCBL-CC 3015	1982 x1055 x750	1842x925	72	111
FCBL-CC 3020	1982 x1360x750	1842x1230	96	124.5
FCBL-CC 3025	1982 x1670 x750	1842x1540	120	161.5
FCBL-CC 3030	1982X1975X750	1842X1842	144	175
Other dimensions and arrangements available on request				

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

## Absolute Filter Holding Frame



### Advantages

- Modular design adaptable for all types of installations
- Location dimples in frame ensure correct filter fitting
- Pre drilled for easy assembly
- Filter holding clips can be easily replaced as required
- CREO Approved

**Application:** Mounting very high efficiency filters in air conditioning units and systems

**Type:** Mounting Frame

**Frame:** Stainless steel, Galvanised steel

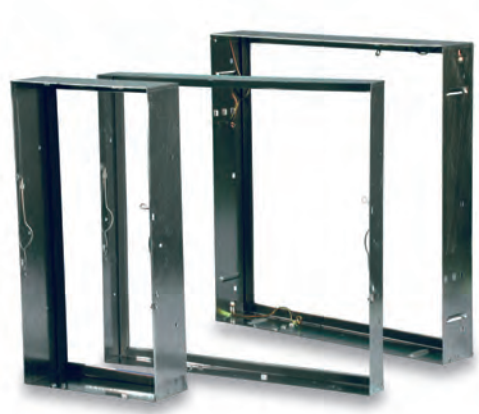
**Filter Types:** Absolute and Micretain very high efficiency filters

**Filter fixing:** Using 4 corner mounted clamps



Type	Dimensions WxHxD (mm)	Filter size HxWxD (mm)	Weight (kg)
Galvanised steel	626x 626x 335	610x 610x 292	12,5
Galvanised steel	626x 321x 335	305x 610x 292	10
Galvanised steel	610x 610x 335	595x 595x 292	12,3
Galvanised steel	610x 305x 335	290x 595x 292	9,9
Stainless steel	626x 626x 335	610x 610x 292	12,5
Stainless steel	626x 321x 335	305x 610x 292	10
Stainless steel	610x 610x 335	595x 595x 292	12,3
Stainless steel	610x 305x 335	290x 595x 292	9,9
Other dimensions and arrangements available on request.			

# Universal filter holding frame



### Advantages

- Robust rigid construction
- Pre drilled for easy assembly
- Filter holding clips can be easily replaced as required
- Modular design adaptable for all types of installations
- Location dimples in frame ensure correct filter fitting

**Application:** Mounting air filters in air conditioning systems

**Type:** Front access filter holding frame.

**Construction:** Galvanised steel.

**Gasket:** Type 4: endless PU; Type 8: PU foam.

**Filter Types:** Pre-filters and header frame type filters.

**Filter fixing:** Using 4 corner mounted clips, to suit the installed filter.

**Note:** Remember to order the frame and the appropriate clips.

## Frame

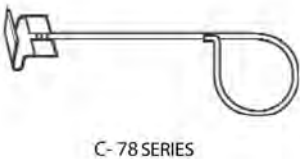
Article number	Type	Exterior dimension (HxWxD) (mm)	Clips included	Weight (kg)
4300001	Frame 4SPXM	608x608x76	Yes	3
4300003	Frame 4URZO	303x608x76	Yes	2.2
430F-4300104	Type 8 Holding Frame 24x12"	303x608x68	No	2.2
430F-4300101	Type 8 Holding Frame 24x24"	608x608x68	No	3

## Clips

Article number	Type	Model
6999-10001	Clip	C70
6999-10002	Clip	C78-3
6999-10003	Clip	C78-4
6999-10004	Clip	C78-5

## Recommended clips for Type 8 frame

Prefilter	Secondary filter	Recommended clip	Number of clips required
1"	None	C70	4
2"	None	C70	4
4"	None	C78-4	4
None	With 25 or 20mm header	C70	4
1"	With 25 or 20mm header	C70	4
2"	With 25 or 20mm header	C78-3	4
4"	With 25 or 20mm header	C78-5	4





Products



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City Sense



Advantages

- Healthier Indoor Environment
  - Reduce PM1 and PM2.5
  - Less Asthma and Allergy Suffering
- Reduced Environmental Impact
  - Less Odour
  - Low power consumption

**Application:** Air purifiers for all types of indoor environments, for example hospitals, hotels, offices, homes, schools, public environments and where high quality air purification is required.  
**Power Supply:** 200-240V  
**Filter:** EPA12 + Molecular  
**CADR:** 692m3/ h  
**CCM:** P4≥12,000mg  
**Cleaning Energy Efficiency:** High efficiency class (GB18801-2015)  
**Timer:** 2, 4, 8, 12h  
**Installation:** Floor  
**Effective room size:** ≤84m2

Model Number	Type	Dimensions WxHxD (mm) / Weight (kg)	Transport Dimensions WxHxD (mm) / Weight (kg)	Filter included in standard version
CVM 061L	CITY Sense (WHITE)	355x424x550 / 10.12	388x456x597 / 12.9	EPA E12+Molecular

Available in select markets only

Operating Specification

Setting	Air flow m³/h	Energy consumption W	Noise dBa	Max Filtration Efficiency(%)
TURBO	692	65	56	>99
HIGH	502	32	49	>99
MED	384	17	43	>99
LOW	255	9	35	>99
SLEEP	192	6.5	32	>99

Exchange

Article Number	Type	Number of filters per air purifier	Specification
9119121	Primary Filter	2	Nylon
CITF001C	EPA E12	2	Particle Filter
CIC01	Molecular Filter	2	Activated Carbon

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

City S



Advantages

- Healthier employees
  - Less cleaning
  - Better air quality for people suffering from asthma or allergies
- Reduced environmental impact
  - Less odour

**Application:** Air purifier for all types of indoor environments, for example hospitals, hotels, offices, homes, schools, public environments and where high quality air purification is required

**Product voltage (V):** 200...240V

**Type:** Air purifier

**Filter:** H13/Molecular

**Installation:** Floor

**Design:** White, Black

**Average Air purification area:** 45m²



Article Number	Typet	Dimensions WxHxD (mm)	Weight (kg)
94000071	Air purifier CITY S (WHITE)	340x 465x 345	12
94000072	Air purifier CITY S (BLACK)	340x 465x 345	12
94020032	Replacement Main filter*		
94020034	Replacement Pre filter**		

\*Includes 2pcs H13/Molecular

\*\*Includes 2pcs PPI mat

Operating Specification

Setting	Air flow m³/h	Energy consumption W	Noise dBa	Max Filtration Efficiency(%)
1	21	5	21	>99.9
2	47	6	28	>99.9
3	82	9	36	>99.9
4	119	12	40	>99.9
5	183	22	45	>99.9
6	247	36	52	>99.9

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

City M



Advantages

- Healthier employees
- Less cleaning
- Better air quality for people suffering from asthma or allergies
- Reduced environmental impact
- Less odour

**Application:** Air purifier for all types of indoor environments, for example hospitals, hotels, offices, homes, schools, public environments and where high quality air purification is required

**Product voltage (V):** 200...240V

**Type:** Air purifier

**Filtro:** H13/Molecular

**Installation:** Floor

**Design:** White, Black

**Average Air purification area:** 75m²



Art. No.	Type	Dimensions WxHxD (mm) / Weight (kg)	Transport Dimensions WxHxD (mm) / Weight (kg)	Filter included in standard version
94000047	Air purifier CITY M (WHITE)	340x720x345 / 15	395x790x395 / 17	H13 / Molecular
94000048	Air Purifier CITY M (BLACK)	340x720x345 / 15	395x790x395 / 17	H13 / Molecular
94000050	Replacement Main filter*			H13 / Molecular
94020031	Replacement Pre filter**			PPI mat

Operating Specification

Setting	Air flow m³/h	Energy consumption W	Noise dBA	Max Filtration Efficiency(%)
1	37	4	16	>99.9
2	67	5	16	>99.9
3	94	6	16	>99.9
4	127	7	22	>99.9
5	251	19	38	>99.9
6	433	55	53	>99.9

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

CC 300 Concealed



Advantages

- Healthier employees
- Less cleaning
- Lower energy costs
- Reduced environmental impact
- Clean products, fewer operational disruptions
- Easy to adapt ducts and diffusers
- Less odour

**Application:** Air purifier for rooms measuring up to 100 m², for example small or medium offices. Can also be used to complement larger air purifiers

**Product voltage (V):** 200...240V

**Type:** Air cleaner

**Duct Connection:** 2 pc Ø250mm

**Capacity:** 0-400 m³/h, Air Flow controlled by potentiometer with cable (5m)

**Installation:** Wall or ceiling (built in)

**Design:** Powder coated sheet steel (White)

**Air purification area:** MAX 100m²

Article number	Type	Dimensions (WxHxD) (mm)	Weight	Air flow / pressure drop (m³/h/Pa)	Power output W	Filter included in standard version
94000077	Air Cleaner 300 (Concealed)	1052x300x364	25	316/276	83	F7 + H13
94000001	Air Cleaner 300 (Concealed) - M	1052x300x364	31.5	316/292	83	G4 + H13

Operating specifications

Setting	Air flow m³/h	Noise level dBa	System efficiency based on H13
1	83	23,5	>99 %
2	135	28,8	>99 %
3	250	43,3	>99 %
4	362	53,9	>99 %
5	466	60,7	>99 %
6	471	61,3	>99 %



## CC 300 Concealed

Built-in air purifier for all types of indoor environments.



**UPGRADE FOR SMELLS REMOVAL (VOC), AND 97MM ECOPLEAT.**  
Art. number: 94000012



**Air Cleaner CC 300  
Concealed**  
Art. number: 94000011

**EXAMPLE OF A  
CC 300 CONCEALED  
BEHIND FALSE CEILING**



### Upgrades / Accessories / Exchange

#### UPGRADES

- Art. no. 94000012 - Upgrade with CamCarb CG 600 for VOC, and 97mm Ecopleat
- Art. no. 94000013 - Upgrade with CamCarb CG 600 for formaldehyde removal, and 97mm Ecopleat
- Art. no. 94000057 - Upgrade with CamCarb CG 600 for decontamination, and 97mm Ecopleat
- Art. no. 94000014 - Upgrade to H13

#### ACCESSORIES

- Art. no. 94000015 - UK plug 230V, UK 50Hz

#### EXCHANGE - PRE-FILTER

- Art. no. 94020023 - HI-FLO XLT 7 287x287x370-5-25, filter class F7, 1 pc per unit, standard
- Art. no. 94020027 - 3GPA 287x287x97-M5, filter class M5, 1 pc per unit

#### EXCHANGE - HIGH EFFICIENCY

- Art. no. 94020022 - CET11-287x287x292-01, filter class E11, 1 pc per unit, standard
- Art. no. 94020024 - DE13-287x287x292-PR, filter class H13, 1 pc per unit

#### EXCHANGE - MOLECULAR

- Art. no. 94020046 - CamCarb CG 600 VOC, 9 pc per unit
- Art. no. 94020049 - CamCarb CG 600 formaldehyde, 9 pc per unit
- Art. no. 94020052 - CamCarb CG 600 decontamination, 9 pc per unit

CC 800



Advantages

- Healthier employees
  - Less cleaning
- Less asthma and allergy suffering
  - Reduced environmental impact

**Application:** Air purifiers for all types of indoor environments, for example offices, homes, schools, public environments and where high quality air purification is required. Can be connected to outdoor air

**Product voltage (V):** 200...240V

**Type:** Air cleaner

**Filter:** E11 (Can use filters of other classes).

**Installation:** Mobile or stationary

**Capacity:** 0 - 720 m³/h

**Design:** Stainless steel / White

**Average air purification area:** 120m²

Article Number	Type	Dimensions (WxHxD) (mm)	Transport dimensions (WxHxD) (mm)	Weight (kg)	Filter included in standard version *
94000022	CamCleaner 800 Stainless steel	550x638x263	655x665x365	20	E11
94000042	CamCleaner 800 White	550x638x263	655x665x365	20	E11

*\*Other filter classes available on request*

Operating specifications

Setting	Air flow m³/h	Energy consumption/W	Noise level dBA	System efficiency based on H13
1	180	5	30	>99 %
2	250	6	33	>99 %
3	300	7	34	>99 %
4	347	8	35	>99 %
5	520	40	46	>99 %
6	720	124	56	>99 %

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

## CC 800

Air purifier for hospitals, offices, homes, schools, public spaces.

**MOLECULAR BOX WITH 3 PCS  
CAMCARB CG 2600, VOC,  
1 BOX PER UNIT**  
Art. number: 94000024



**Air Cleaner CC 800**  
Art. number: 94000022

**SUCTION SIDE (OUTDOOR  
CONNECTION), 1 PC PER UNIT**  
Art. number: 94000025



**WHEEL PLATE, 2 PCS PER UNIT**  
Art. number: 94000034



### Upgrades/Accessories/Exchange

#### UPGRADES

- Art. no. 94000023 - HEPA 13 (Includes 2 pcs H13 filter)

#### ACCESSORIES

- Art. no. 94000015 - UK plug 230V, UK 50Hz
- Art. no. 94000032 - Pre-filter mats, 2 pcs per unit

#### EXCHANGE - HIGH EFFICIENCY

- Art. no. 94020002 - Main filter Micretain MXE 11-252x610x150-00, filter class E11, 2 pcs per unit, standard
- Art. no. 94020003 - Main filter Absolute MGE 13-252X610X150-00, filter class H13, 2 pcs per unit

#### EXCHANGE - MOLECULAR

- Art. no. 94020048 - CamCarb CG 2600 VOC, 3 pcs per unit
- Art. no. 94020051 - CamCarb CG 2600 formaldehyde, 3 pcs per unit
- Art. no. 94020054 - CamCarb CG 2600 decontamination, 3 pcs per unit

*(Other filter classes available on request)*

CC 2000



Advantages

- Healthier employees
- Less cleaning
- Eliminates tobacco smoke, weld smoke, construction dust, asbestos and particles of all sizes down to ultrafine
- Reduced environmental impact
- Clean products, fewer operational disruptions
- Lower energy costs

**Application:** Air purifier for dusty environments and indoor premises such as warehouses, pharmaceutical facilities, food factories, heavy industry, paper mills, welding workshops, construction sites, laundries, timber facilities, bakeries, packaging production, printing facilities, stables, processing industry and supermarkets. Also suitable in connection with construction, demolition and coating operations

**Product voltage (V):** 200...240V

**Type:** Air cleaner

**Filter:** F7, E11, H13

**Connection:** 2 standard spacers, diam. 160mm or 1 pc 250mm

**Installation:** Mobile, stationary, on wall or floor

**Capacity:** 0 - 1400 m³/h

**Energy consumption:** 0 - 302w

**Please note:** Molecular filtration option is available

**Design:** Stainless steel body

**Average Air purification area:** 300m²

Article Number	Type	Dimension (WxHxD)(mm)	Weight (kg) including filter	Filter included in standard version *	Number of filters per air purifier
94000018	CamCleaner 2000 Handle	702x987x373	43	F7 / E11	2 Pre + 2 Main
94000019	CamCleaner 2000 Basic	550x783x302	32	G4 / E11	2 Pre + 2 Main

Operating specifications

Air flow m³/h	Energy consumption/W	Noise level dBA	System efficiency based on H13
0-1400	0-302	0-68	>99 %

# CC 2000

Mobile/stationary air purifier for dusty indoor premises.

**EXTENSION FRAME WITH 1 PC  
HEPA H13 ON SUPPLY SIDE**  
Art. number: 94000020



**Air Cleaner CC 2000  
Handle + Basic**  
Art. number: 94000018  
Art. number: 94000019

**MOLECULAR BOX WITH 6 PCS  
CAMCARB CG 2600 VOC,  
1 BOX PER UNIT**  
Art. number: 94000021



**CC 2000 STANDARD AND SUCTION SIDE**  
Art. number: 94000018 & 94000029

## Upgrades/Accessories/Exchange

### UPGRADES

- Art. no. 94000028 - HEPA 13 (Includes 2 pcs H13 filter)

### ACCESSORIES

- Art. no. 94000032 - Suction side, 2 pcs per unit
- Art. no. 94000015 - UK plug 230V, UK 50Hz
- Art. no. 94000031 - Pre-filter, 2 pcs per unit
- Art. no. 94000034 - Wheel plate, 2 pcs per unit

### EXCHANGE - PRE-FILTER

- Art. no. 94020007 - Pre-filter 3GPA (753x250x90-F7), filter class F7, 2 pcs per unit, standard

### EXCHANGE - HIGH EFFICIENCY

- Art. no. 94020006 - Main filter Microtain MGE11 (250x750x150-0), filter class E11, 2 pcs per unit, standard
- Art. no. 94020008 - Main filter Absolute MGE13 (250x750x150-0), filter class H13, 2 pcs per unit
- Art. no. 94020009 - Absolute MXE13 for extension frame on supply side 390x750x250, filter class H13, 1 pc per unit

### EXCHANGE - MOLECULAR

- Art. no. 94020048 - CamCarb CG 2600 VOC, 6 pcs per unit
- Art. no. 94020051 - CamCarb CG 2600 formaldehyde, 6 pcs per unit
- Art. no. 94020054 - CamCarb CG 2600 decontamination, 6 pcs per unit

(Other filter classes available on request)





CC 1700 & CC 2500



Advantages

- Corrosion control
- Health Care
- Life science
- IAQ
- Energy saver
- Easy to service
- Touch Screen control
- Pressure drop alarm
- Easy to implement BMS
- Silent performance
- On/Off timer
- Constant Air flow features

**Application:** Versatile Air Cleaner specialized for elimination of acids, corrosive gases, VOC's, ozone, formaldehyde and particulate matter. Inside, you will find the well-known CamCarb, City or Gigapleat molecular products and EN, ASHRAE or ISO certified Particle filters. Due to Camfil's in house HEPA / Molecular filter expertise, we provide several unique customer benefits, such as low pressure drop and energy consumption, unique media combinations and optimized product lifetime. This air cleaner is engineered for multiple segment customization and often used in the following areas: Control rooms of petrochemical facilities, metal refining and pulp & paper mills; data centres & switch rooms, IVF Clinique's, health care facilities, indoor air quality excellence in polluted cities, cleanroom upgrades or complement to existing cleanrooms. Taking into account filter replacement, service cost, downtime and electrical power requirements, this product provides a minimum LCC value

**Product voltage (V):** 200...240V

**Type:** Air cleaner

**Filter:** Up to 4 stage filter option

**Capacity:** Max 2500 m3/h

Article Number	Model	Dimensions (WxHxD) (mm)	Weight (kg) including filter	Air flow (m³/h)	Area of use m²	Power output KW
94000085	CC 1700	1000x 2100x 550	310	1700	150-300	0.249
94000086	CC 2500	1000x 2100x 550	310	2500	500-800	0.517

## CC 1700 & CC 2500

**Versatile air cleaner specially engineered to provide clean indoor air. Especially suitable for these professional segments: Corrosion control, healthcare, comfort, life science, food & beverage.**



### Air Cleaner CC 1700 & CC 2500

Art. number: 94000085 & 94000086

#### Upgrades/Accessories/Exchange

##### OIL & GAS, METAL, PULP AND PAPER (CC 1700) FOR CORROSION CONTROL

- Art. no. 94020065 - Inlet, filter class G4, target containment: PM10, 1 pc per unit
- Art. no. 94020068 - CC CG MS, target containment: Acids, H2S, SO2, 15 pcs per unit
- Art. no. 94020074 - CC CG MCI, target containment: Inorganic & organic acids, ozone, 15 pcs per unit
- Art. no. 94020067 - Outlet, filter class E11, target containment: PM2.5, PM1, nanoparticles, 1 pc per unit

##### DATA CENTERS (CC 1700)

- Art. no. 94020066 - Inlet, filter class F7, target containment: PM10, PM2.5, PM1, 1 pc per unit
- Art. no. 94020063 - GigaPleat NXPC MA, target containment: Acids, H2S, SO2, ozone, 1 pc per unit
- Art. no. 94020067 - Outlet, filter class E11, target containment: PM1, nanoparticles, 1 pc per unit
- Art. no. 94020064 - Outlet, filter class H13, target containment: PM1, nanoparticles, 1 pc per unit (upgrade from E11)

##### COMFORT (CC 1700) FORMALDEHYDE

- Art. no. 94020066 - Inlet, filter class F7, target containment: PM10, PM2.5, PM1, 1 pc per unit
- Art. no. 94020075 - CC CG formaldehyde, target containment: Formaldehyde, aldehydes, 15 pcs per unit
- Art. no. 94020062 - CitySorb VOC, target containment: VOC, smells, 1 pc per unit
- Art. no. 94020021 - CC CG VOC, target containment: VOC, smells, 15 pcs per unit (upgrade from CitySorb)
- Art. no. 94020067 - Outlet, filter class E11, target containment: PM1, nanoparticles, 1 pc per unit

##### COMFORT (CC 2500)

- Art. no. 94020065 - Inlet, filter class G4, target containment: PM10, 1 pc per unit
- Art. no. 94020061 - CityCarb, target containment: PM2.5, PM1, VOC, smells, 1 pc per unit
- Art. no. 94020067 - Outlet, filter class E11, target containment: PM1, nanoparticles, 1 pc per unit
- Art. no. 94020064 - Outlet, filter class H13, target containment: PM1, nanoparticles, 1 pc per unit (upgrade from E11)

CC 6000



Advantages

- Healthier employees
- Less cleaning
- Eliminates tobacco smoke, weld smoke, construction dust, asbestos and particles of all sizes down to ultrafine.
- Lower energy costs
- Reduced environmental impact
- Clean products, fewer operational disruptions
- Reduces the average temperature in rooms with high ceilings

**Application:** Air purifier for dusty environments and large indoor premises such pharmaceutical facilities, food factories, heavy industry, paper mills, welding workshops, timber facilities, bakeries, packaging production, printing facilities, stables, processing industry, supermarkets and other specialist applications such as upgrading of clean room environments and other classified assembly environments

**Type:** Air cleaner

**Power supply:** 3-phase 380-480V or 1-phase 230V

**Filter:** F7, E11-H13

**Fan:** EC fan with adjustable airflow and ModBus connection

**Capacity:** 0 - 6000 m³/h

**Connection:** 4 standard round (diameter 315mm) or 2 standard round (diameter 315mm) and 2 round (diameter 250mm) with sound reduction

**Installation:** Mobile or stationary, floor, wall or ceiling mounting (with wire or suspension arms)

Article number	Type	Model	Dimensions WxHxD (mm)	EN779:2012	EN1822:2009	Number of filters per air purifier
94000001	CamCleaner 6000 230V, 1 phase	Vertical	798x1968x820	F7	E11	4 Pre + 2 Main
94000002	CamCleaner 6000 380-400V, 3 phase	Vertical	798x1968x820	F7	E11	4 Pre + 2 Main
94000003	CamCleaner 6000 230V, 1 phase	Horizontal	1262x1359x829	F7	E11	4 Pre + 2 Main
94000004	CamCleaner 6000 380-400V, 3 phase	Horizontal	1262x1359x829	F7	E11	4 Pre + 2 Main

## CC 6000

Air Cleaner CC 6000 is engineered to help large logistic and manufacturing companies keep employees healthy, improve product quality and reduce dust.



**Air Cleaner CC 6000  
Vertical**

Art. number: 94000001 /  
94000002



**Air Cleaner CC 6000  
Horizontal**

Art. number: 94000003 /  
94000004



**Air Cleaner CC 6000  
Prosafe**

Art. number: 94020005

### Accessories/Exchange

#### ACCESSORIES

- Art. no. 94000007 - Constant airflow sensor, 1 pc per unit
- Art. no. 94000015 - UK Plug (1 phase), 1 pc per unit
- Art. no. 94000016 - UK Plug (3 phase)
- Art. no. 94000026 - Extension frame kit 97mm incl. 2 frames (without filter), 2 pcs per unit
- Art. no. 94000027 - Extension frame bag filter incl. 2 frames (without filter), 2 pcs per unit

#### EXCHANGE - PRE-FILTER

- Art. no. 94020013 - 3GPA-F7-610x610x48, filter class F7, 4 pcs per unit, standard (1)
- Art. no. 94020016 - Bagfilter XLT F7 592x592x370, filter class F7, 4 pcs per unit
- Art. no. 94020015 - 3GPA-F7-610x610x96, filter class F7, 4 pcs per unit
- Art. no. 94020058 - Aluminium pre-filter with flange 588x1198x50, 2 pcs per unit

#### EXCHANGE - COMBINATIONS FILTER

- Art. no. 94020018 - CityCarb CIZP-7I 592x592x292, filter class F7, 4 pcs per unit
- Art. no. 94020017 - CityFlo HFZS-F7 592x592x380, filter class F7, 4 pcs per unit

#### EXCHANGE - HIGH EFFICIENCY

- Art. no. 94020012 - MGE11-1220x610x100, filter class E11, 2 pcs per unit, standard (2)
- Art. no. 94020039 - MGE13-1220x610x100, filter class H13, 2 pcs per unit

#### EXCHANGE - HIGH MOLECULAR

- Art. no. 94020047 - CamCarb CG 1300 VOC, 2x32 pcs per unit
- Art. no. 94020050 - CamCarb CG 1300 formaldehyde, 2x32 pcs per unit
- Art. no. 94020053 - CamCarb CG 1300 decontamination, 2x32 pcs per unit

#### EXCHANGE - PROSAFE FILTER

- Art. no. 94020011 - Prosafe pre-filter 610x610x48, filter class F7, 4 pcs per unit
- Art. no. 94020030 - Prosafe 610x1220x100, filter class H14, 2 pcs per unit



1



2

CC 6000 (continued)



SILENCER (ONLY FOR VERTICAL MODEL), 1-2 PCS PER UNIT  
Art. number: 94000005



EYELETS FOR CEILING MOUNTING (HORIZONTAL), 4 PCS PER UNIT  
Art. number: 94000006



EXT. FRAME FOR BAGFILTER/CITYCARB/CITY-FLO 592X592X MAX 370 (WITHOUT FILTER)  
Art. number: 94000010



UPGRADE PRE-FILTER TO 97MM ECOPLEAT  
Art. number: 94000008



MOLECULAR BOX FOR 2X32 PCS CAMCARB CG 1300 INCL. 2 FRAMES (WITHOUT FILTER), 2 PCS PER UNIT  
Art. number: 94000035



UPGRADE MAIN FILTER TO HEPA 13  
Art. number: 94000009

Air flow m³/h	Energy consumption/W	W/(m³/h)	dBA without silencer	dBA with silencer	Working area m²	System Efficiency based on H13
3000	150W	0,05	52	50	750	>99 %
4000	312W	0,08	56	53	1000	>99 %
5000	556W	0,11	62	57	1250	>99 %
6000	887W	0,15	67	64	1500	>99 %

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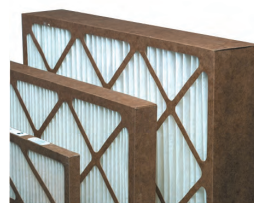
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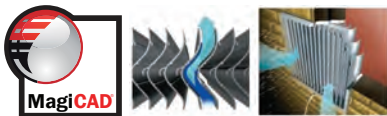


**Pulse filters**  
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**Pulse filters**  
CamPulse CamBrane  
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## CamVane 100



### Advantages

- Air velocity (m/s): 1,0 - 5,0
- Size WxH (mm): Up to 2500 x 2500
- Deep D (mm): 100
- Optional extras: Protective grating for CamVane 100 is delivered afterwards, Installation flanges on the front or rear of the CamVane
- Order example: x CamVane 100 (w x h) 600 x 600 mm, x Protective grating (W x h) 600 x 600 mm
- Weight (kg/m<sup>2</sup>): Approx. 35
- Efficiency of droplet separator: cc 25 mm: 20 µm at 3,0 m/s
- Tested by VTT in Finland to EN 13030:2001
- Determining the sound power level, pressure and flow from one out grilles to ISO 5135 (SP Report P906282 rev)
- Optional extras:
  - \* Protective grating for CamVane 100 is delivered afterwards
  - \* Installation flanges on the front or rear of the CamVane
- Order example:
  - \* CamVane 100 (w x h) 600 x 600 mm
  - \* Protective grating (W x h) 600 x 600 mm
  - Weight (kg/m<sup>2</sup>): Approx. 35
  - Efficiency of droplet separator: cc 25 mm: 20 µm at 3,0 m/s
- Tested by VTT in Finland to EN 13030:2001
- Determining the sound power level, pressure and flow from one out grilles to ISO 5135 (SP Report P906282 rev)

**Application:** Intake grille which is a very efficient for rainprotection. It is used in all filter installations where the water, rain and moisture problems occur, such as in marine environments, coastal areas, the rivers and inland

**Type:** Metal Panel

**Mounting/Frames:** Mounting flange or fastening ears to customer specifications.

**Air velocity (m/s):** 1,0 - 5,0

**Size WxH (mm):** Up to 2500 x 2500

**Deep D (mm):** 100

**Optional extras:** Protective grating for CamVane 100 is delivered afterwards, Installation flanges on the front or rear of the CamVane

**Order example:** x CamVane 100 (w x h) 600 x 600 mm, x Protective grating (W x h) 600 x 600 mm

**Weight (kg/m<sup>2</sup>):** Approx. 35

**Efficiency of droplet separator:** cc 25 mm: 20 µm at 3,0 m/s

**Tested by VTT in Finland to EN 13030:2001**

**Determining the sound power level, pressure and flow from one out grilles to ISO 5135 (SP Report P906282 rev)**

**Optional extras:**

- Protective grating for CamVane 100 is delivered afterwards
- Installation flanges on the front or rear of the CamVane

**Order example:**

x CamVane 100 (w x h) 600 x 600 mm

x Protective grating (W x h) 600 x 600 mm

**Weight (kg/m<sup>2</sup>):** Approx. 35

**Efficiency of droplet separator:** cc 25 mm: 20 µm at 3,0 m/s

**Tested by VTT in Finland to EN 13030:2001**

**Determining the sound power level, pressure and flow from one out grilles to ISO 5135 (SP Report P906282 rev)**

Air velocity (m/s): 1,0 - 5,0

Size WxH (mm): Up to 2500 x 2500

Deep D (mm): 100

Optional extras: Protective grating for CamVane 100 is delivered afterwards, Installation flanges on the front or rear of the CamVane

Order example: x CamVane 100 (w x h) 600 x 600 mm, x Protective grating (W x h) 600 x 600 mm

Weight (kg/m<sup>2</sup>): Approx. 35

Efficiency of droplet separator: cc 25 mm: 20 µm at 3,0 m/s

Tested by VTT in Finland to EN 13030:2001

Determining the sound power level, pressure and flow from one out grilles to ISO 5135 (SP Report P906282 rev)

Optional extras:

- Protective grating for CamVane 100 is delivered afterwards
- Installation flanges on the front or rear of the CamVane

Order example:

x CamVane 100 (w x h) 600 x 600 mm

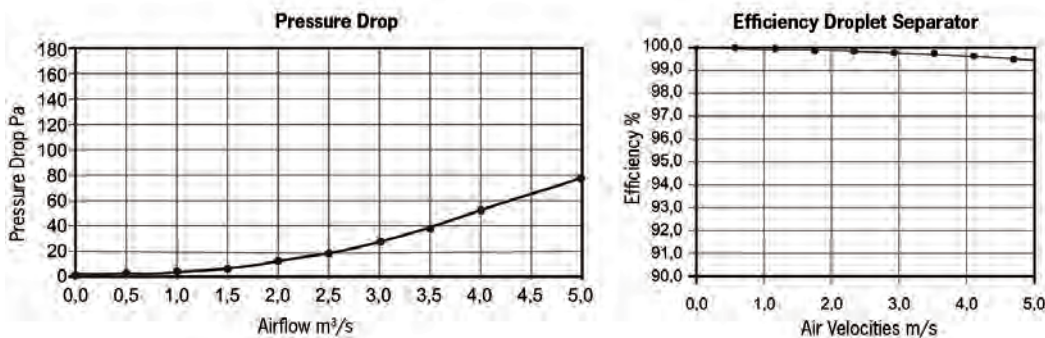
x Protective grating (W x h) 600 x 600 mm

Weight (kg/m<sup>2</sup>): Approx. 35

Efficiency of droplet separator: cc 25 mm: 20 µm at 3,0 m/s

Tested by VTT in Finland to EN 13030:2001

Determining the sound power level, pressure and flow from one out grilles to ISO 5135 (SP Report P906282 rev)



30/30 GT



Advantages

- High mechanical strength
- Rigid, reinforced water resistant cardboard frame
- Large media surface
- Unique radial pleat design
- Bonded into case to eliminate air bypass
- Compact

**Application:** Suitable for most areas

**Type:** Pleated Panel

**Frame:** Water resistant cardboard

**Media:** Cotton/Synthetic

**Rec. final pressure drop:** 250 Pa/1.0" wg

**Temperature max:** 70°C/158°F

**Mounting/Frames:** Universal frame or clip

**Additional information:** Different clips available for mounting combinations with different filters.

**Fire Rating:** UL 900

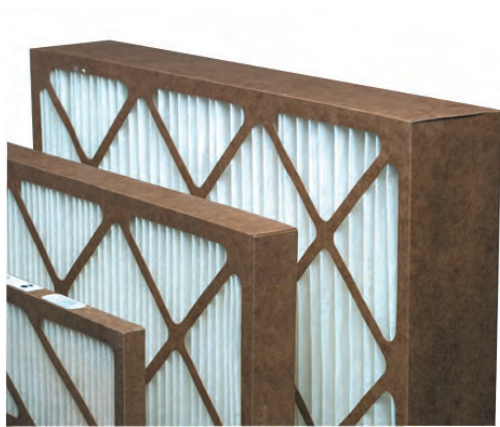


The 30/30GT® has been setting the standard for G4/MERV 8 panel pre-filters. The combination of the unique media, robust construction and pleating technology makes the Camfil 30/30GT a low pressure drop pre-filter that performs well in all situations

Article Number	Model Name	ASHRAE 52.2:2017	EN779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
540F-FG070205001	30/30 GT CL2 24x24x4	MERV 8	G4	Coarse 70%	594x594x95	3400/ 68	2,5	0.9
*540F-FG402312001	30/30 GT CL2 24x24x4	MERV 8	G4	Coarse 70%	594x594x95	3400/68	2.5	0.9

\*with gasket

# 30/30® WR



## Advantages

- Two-in-one performance keeps out water and dirt.
  - A multi-layered non-cellulose media, repels water, captures dust, lint, pollen and other particulate contaminants.
- Media bonded to the frame to eliminate air bypass
  - Water resistant beverage board frame
  - Large media surface

**Applications:** Primary filter for medium efficiency applications.

**Type:** High performance pleated panel filter.

**Frame:** High strength moisture resistant beverage board.

**Media:** Glass fibre.

**Recommended final pressure drop:** 250 Pa.

**Holding frames:** Front and side access housings and frames are available, Type 8 and FC Housings.

**Fire rating:** UL 900



Article Number	Model Name	ASHRAE 52.2:2017	EN779:2012	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
125343005	30/30 WR 24x24x2	MERV 7	G4	Coarse 70%	595x595x44	3400/60	2.61	0.65
125343006	30/30 WR 24x12x2	MERV 7	G4	Coarse 70%	289x595x44	1700/60	1.27	0.33
402137001	30/30 WR 24x24x4	MERV 7	G4	Coarse 70%	595x595x95	3400/55	4.24	1.2
402137002	30/30 WR 24x12x4	MERV 7	G4	Coarse 70%	289x595x95	1700/55	4.24	0.6



## Camclose Compact



**Advantages**

- High water removal efficiency
- High strength ABS frame
- High dust holding capacity
- Fully incinerable

**Application:** Pre-filter with high efficiency removal of water and mist with medium efficiency removal of airborne particulate.s

**Frame:** ABS plastic.

**Media:** Synthetic, wire backed.

**Recommended final pressure drop:** 450 Pa.

**Fire rating:** DIN 53438.



Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
5302001	Camclose Compact - 592x592x96-G4	MERV 7	G4	592x592x96	3400/43	2.281	5.42

## CamClose



### Advantages

- Clip-on design
- Optimal coalescing performance
- High strenght plastic frame
- Downstream pleat separators
- Can be fitted directly to a final filter

**Application:** Suitable for most areas including wet and coastal

**Type:** Pleated Panel

**Frame:** Plastic moulded

**Gasket:** Polyurethane, endless foamed

**Media:** Glass fiber, Synthetic

**Rec. final pressure drop:** 400 Pa

**Temperature max:** 70°C

**Mounting/Frames:** Integrated clip on / optional without clip.

Separate metal clips available

**Additional information:** External dimensions Std. 598x604x129.



The Camfil CamClose is primarily used as a pre-filter to extend the service life of final filters by offering low initial pressure drop and high dust capacity. The filter is specially suitable for applications in humid conditions, like tropical and coastal installations, thanks to its downstream pleat separators and built-in drainage.

CamClose clips on CamGT and Opakfil.

Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
540F-FG402312002	CamClose GT 592x592x130-G4	MERV 7	G4	592x592x130	4250/77	2.46	2.3
5301001	CamClose M6-592x592x130-02	MERV 12	M6	592x592x130	3400/95	12.28	5.42

*\*Note - Outmost dimension is 598x598mm at clip or guide locaion*



Hi-Cap GT



Advantages

- Rigid self supporting pockets
- Robust plastic header frame
- High mechanical strength
- Welded pocket construction
- High dust holding capacity
- No metal parts

**Application:** Comfort air conditioning applications, gas turbines.

**Type:** Multi pocket bag filter.

**Frame:** ABS plastic or galvanized steel.

**Media:** Polyester fibre.

**Recommended final pressure drop:** 250 Pa.

**Temperature:** 70°C maximum in continuous service.

**Holding frames:** Front and side access housings and frames are available, Type 8 and FC Housings.



Hi-Cap GT is a high quality filter, available for the removal of coarse particles. It allows for a secure and efficient filtration in industrial environments where large amounts of dust are present. Long experience and continuous R&D has optimised the product for impressive filtration at a low cost.

Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)
3204012	Hi-Cap GT-592*592-6*360-G4	MERV 7	G4	592x592x360	4250/50	6	2.6	2.2
3204009	Hi-Cap GT-592*592-6*580-G4	MERV 7	G4	592x592x580	4250/30	6	4.2	3.2

Cam-Flo XMGT



Advantages

- Non discharging synthetic media
- Maximum surface use
- High mechanical strength
- Incinerable bags
- High dust holding capacity = long life
- Recommended choice for gas turbine pre-filtration

**Application:** Installations exposed to turbulence and harsh environments

**Type:** Bag Filter

**Frame:** Galvanized steel

**Media:** Synthetic

**Dimensions:** Filter front dimensions according EN 15805

**Rec. final pressure drop:** 450 Pa

**Temperature max:** 70°C

**Additional information:** Available in half - and special size filters on request.



The Cam-Flo XMGT filter is a sturdy bag filter, recommended in areas where considerations for high humidity and/or turbulence is important. The filter has a synthetic fibre media with unique properties, effectively removing harmful particles from the air. Self-supporting bags and a unique design make this filter an excellent pre-filter and coalescer choice for turbomachinery applications.

Article Number	Model Name	ASHRAE 52.2:2017	EN779:2012	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Bags	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*	Energy class
3500001	XMGT	MERV 12	M6	592x 592x 640	4250/ 92	10	7.5	3	26	21	C
3500005	XMGT	MERV 13	F7	592x 592x 640	4250/ 103	10	7.5	3	60	58	A

\*ME%: Minimum efficiency ref. to EN779:2012  
\*Energy Consumption, kWh/year: Calculated according to Eurovent Guideline 4/11  
\*Energy class: Calculated according to Eurovent

Cam-Flo GT Hybrid HV



Advantages

- Hybrid Technology media
- Maximum surface use
- High mechanical strength
- Incinerable bags
- High dust holding capacity = long life
- Recommended choice for gas turbine pre-filtration

**Application:** Installations exposed to turbulence and harsh environments

**Type:** Bag Filter

**Frame:** Galvanized or Stainless steel

**Media:** Hybrid Synthetic and Glass Technology

**Rec. final pressure drop:** 450 Pa

**Temperature max:** 70°C

**Additional information:** Available in half - and special size filters on request



The Cam-Flo Hybrid is a new generation of premium bag filters for gas turbines that utilize the breakthrough Hybrid media technology to combine glass fiber and synthetic fibers. The results is a smart solution for an extended filter life, a stable and predictable performance, and most of all, carefree operations. Self-supporting bags and a unique design make this filter an excellent pre-filter and coalescer choice for turbomachinery applications.

Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Bags	Media area (m²)
3502001	CamFlo X7 Hybrid-620*580-600*10-85	MERV 13	F7	620x580x600	4250/90	10	8.51
3502002	CamFlo X7 Hybrid-595*595-600*10-85	MERV 13	F7	595x595x600	4250/103	10	8.49
3502003	CamFlo-GT Hybrid-592*592-640*10-85	MERV 13	F7	592x592x640	4250/90	10	8.51



## CamGuard



### Advantages

- Allows on-line filter replacement
- Reduced overall TCO
- Extends filter life
- Solid corrosion resistant frame in stainless steel

**Application:** High velocity air inlet systems. Typical coastal and offshore

**Type:** Bag Filter

**Frame:** Stainless steel

**Media:** Synthetic

**Temperature max:** 70°C

**Additional information:** Designed for use in combination with Cam-Flo Hybrid HV.



The CamGuard is a coarse filter that is installed downstream of the Cam-Flo GTX7, allowing online filter replacement thus reducing costly downtime.

Material	EN779:2012	Dimensions WxHxD (mm)	Media area (m²)	Weight (kg)
Stainless steel	G4	618 x 577x 630	1.7	2

CamPGT



Advantages

- Low pressure drop
- Easy mounting
- Light weight construction
- Improves overall filter economy
- Fully incinerable

**Application:** Suitable for demanding operating conditions like heavy polluted rural or industrial areas

**Type:** Compact Pleated Filter

**Frame:** Plastic moulded

**Gasket:** Polyurethane, endless foamed

**Media:** Glass fiber

**Separator:** Hot Melt Separator Technology

**Rec. final pressure drop:** 450 Pa

**Temperature max:** 70°C



The CamPGT is an energy efficient solution functioning as a high efficiency filter in Camfil medium velocity multistage inlet houses. It is intended for inland industrial and rural areas. Its unique geometry provides a large inlet area and optimized air flow, thus offering a lower pressure drop than industry standard for V-shaped barrier filters.

Model Name	ASHRAE 52.2:2017	EN779:2012	EN1822:2009	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)
CamPGT 4H300 Std	MERV 14	F7		592x 592x 292	4250/ 94	17	4,3
CamPGT 4H300 Std	MERV 15	F8		592x 592x 292	4250/ 110	18	4,3
CamPGT 4H300 Std	MERV 16	F9		592x 592x 292	4250/ 125	19	4,3
CamPGT 4H300 Std			E10	592x 592x 292	4250/ 200	24	4,3
XL versions available on demand							

CamGT 4V-300



Advantages

- Ensures water drainage
- High filtration efficiency
- Low pressure drop also in wet conditions
- Resistant to turbulence and extreme pressure drop
- Easy mounting
- Meets the industry's latest and most stringent requirements
- Water resistant media

**Application:** All installations where safety/reliability is important

**Type:** Compact Pleated Filter

**Frame:** Plastic moulded

**Gasket:** Polyurethane, endless foamed

**Media:** Glass fiber

**Separator:** Hot Melt

**Sealant:** Polyurethane

**Grille, Downstream:** Support grid for filter media

**Rec. final pressure drop:** 600 Pa

**Temperature max:** 70°C

**Fire rating:** Available according to DIN4102 class b2 rating on request

**Burst strength:** > 6250 Pa continuous wet/soaked

**Reverse flow version:** With support grid available on request

**Additional information:** Also available in 1/2 and 3/4 size on request.

CamGT 4V-300 is a high efficiency air inlet filter used for second and/or third stage filtration, depending on the gas turbine air inlet system. Typical range from M6 or MERV 11 up to E12 (EPA level), for the best gas turbine protection. Also available in versions with Fire rating DIN4102 class b2, Reverse flow, half-size and 3/4 size on request.

Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	EN 1822:2009	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*
CGT0100111MY	4V300	MERV 13	M6			592x592x292	4250/105	19	8.0		
CGT0101111MY	4V300	MERV 14	F7		ePM1 75%	592x592x292	4250/135	19	8.0	55	55.0
CGT0101211MY	4V300XL	MERV 14	F7		ePM1 75%	592x592x292	4250/125	26	8.5	55	55.0
CGT0102111MY	4V300	MERV 15	F8		ePM1 80%	592x592x292	4250/145	19	8.0	70	70.0
CGT0102211MY	4V300 XL	MERV 15	F8		ePM1 80%	592x592x292	4250/135	26	8.5	70	70.0
CGT0103111MY	4V300	MERV 16	F9		ePM1 85%	592x592x292	4250/170	19	8.0	81	81.0
CGT0103211MY	4V300XL	MERV 16	F9		ePM1 85%	592x592x292	4250/160	26	8.5	81	81.0
CGT0104111MY	4V300			E10		592x592x292	4250/210	29	8.5		
CGT0105111MY	4V300			E11		592x592x292	4250/230	29	8.5		
CGT0106111MY	4V300			E12		592x592x292	4250/310	30	9.0		

\* ME%: Minimum efficiency ref. to EN779:2012

CamGT 3V-600



Advantages

- Low air resistance (dP) for optimal economy
- Ensures water drainage
- High filtration efficiency
- Low air resistance also in wet/dry conditions
- Solid HEPA frame eliminates air bypass
- Resistant to high and extreme pressure drops
- Suitable for all environment

**Application:** All installations where safety/reliability is crucial in combination with low air resistance

**Type:** Compact Pleated Filter

**Frame:** Plastic moulded

**Gasket:** Polyurethane, endless foamed

**Media:** Glass fiber

**Separator:** Hot Melt

**Sealant:** Polyurethane

**Grille, Downstream:** Support grid for filtermedia

**Rec. final pressure drop:** 600 Pa

**Temperature max:** 70°C

**Burst strength:** > 6250 Pa continuous wet/soaked.



The CamGT 3V-600 is built on a solid 600 mm deep frame with extended media area. The unique design provides industry-leading pressure drop and dust holding capacity ensuring optimum performance, low average pressure drop and a long filter life. The filter is also available with CamBrane media in E12 efficiency.

Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	EN 1822:2009	ISO16890	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*
CGT0202111MY	3V600	MERV 15	F8		ePM1 80%	592x592x600	4250/100	41	15	67	67
CGT0203111MY	3V600	MERV 16	F9		ePM1 85%	592x592x600	4250/115	37.8	15	82	82
CGT0204111MY	3V600			E10		592x592x600	4250/135	45.3	15		
CGT0205111MY	3V600			E11		592x592x600	4250/140	47.8	15		
CGT0206111MY	3V600			E12		592x592x600	4250/190	50	15		

\* ME%: Minimum efficiency conform EN779: 2012  
Valid for H13; >99,97% efficiency at 0,3 µm (= American HEPA)

## CamGT Box Type Green II



### Advantages

- Ensures water drainage
- High filtration efficiency
- Low pressure drop also in wet conditions
- Resistant to turbulence and high pressure drop
- Easy mounting
- Water resistant media

**Application:** All installations where safety/reliability is important

**Type:** Compact Pleated Filter

**Frame:** Plastic moulded

**Gasket:** Polyurethane, endless foamed

**Media:** Glass fiber

**Separator:** Hot Melt Separator Technology

**Rec. final pressure drop:** 600 Pa

**Temperature max:** 70°C

**Additional information:** XL version available on request. Profile placed at 292 mm depth for clamping, i.e for fastener spring type C-80.



CamGT Box Type Green is a high-capacity filter for turbomachinery. Thanks to the unique design, its performance is maintained in humid or wet conditions, guaranteeing a long lifetime and a good filter economy.

Article Number	Model Name	ASHRAE 52.2:2017	EN 779:2012	EN 1822:2009	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*
2472001	Cam GT Box Green II 592*592*315-F7-01	MERV 14	F7		592x 592x 315	4250/140	19	7.28	60	60
2472004	Cam GT Box Green II 592*592*315-F9-01	MERV 16	F9		592x 592x 315	4250/200	19	7.28	81	81
2472007	Cam GT Box Green II 592*592*315-E10-01			E10	592x 592x 315	4250/240	19	7.28	88	87,5
2472010	Cam GT Box Green II 592*592*315-F7-01 (XL)	MERV 14	F7		592x 592x 315	4250/135	25	7.8	60	60
2472013	Cam GT Box Green II 592*592*315-F9-01 (XL)	MERV 16	F9		592x 592x 315	4250/190	25	7.8	81	81
2472016	Cam GT Box Green II 592*592*315-E10-01 (XL)			E10	592x 592x 315	4250/220	25	7.8		



TurboPac



Advantages

- Flanges on one or both sides
- Media pack protected by face guards
- Rigid design
- Water repellent media
- High dust holding capacity = long life

**Application:** All installations where safety/reliability is important

**Type:** Compact Pleated Filter

**Frame:** Galvanized steel

**Media:** Glass fiber

**Separator:** Aluminium

**Rec. final pressure drop:** 450 Pa

**Temperature max:** 70°C

**Additional information:** XL version available on request. Profile placed at 292 mm depth for clamping; i.e for fastener spring type C-80.

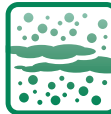


TurboPac barrier filters are engineered to provide optimum performance under severe turbo machinery applications such as high face velocity, turbulence and surging airflows, heavy dust and high humidity.

Article number	Model Name	ASHRAE 52.2:2017	EN 779:2012	Dimensions WxHxD (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*
217F-2175001	3DTCP8-60-242412 TURBOPAC	MERV 12	M6	594x594x295	3400/135	10	8.2	30	30
217F-2176001	3DTCP8-90-242412 TURBOPAC	MERV 12	M6	594x594x295	3400/175	13	8.2	30	30
217F-2177001	3DTCP8-60-242412 TURBOPAC XL	MERV 15	F8	594x592x295	3400/130	10	8.2	68	66
217F-2178001	3DTCP8-90-242412 TURBOPAC XL	MERV 15	F8	594x594x295	3400/165	13	8.2	68	66

\* ME%: Minimum efficiency ref. to EN779:2012  
\* Energy Consumption, kWh/year: Calculated according to Eurovent Guideline 4/11  
\* Energy class: Calculated according to Eurovent

## CamPulse GTC



### Advantages

- HemiPleat™ technology- proven open pleat solution
  - Non discharging F9
  - Water resistant media
  - Improved dust release
- 2 in 1 package - saves space and money
  - Optimal ability to handle daily fog and humidity
  - Helicord design for efficient pulse cleaning

**Application:** For humid/dry heavy dust load areas. Our recommended choice for one-stage self cleaning air intake systems

**Type:** Pleated Cylinder

**Media:** Synthetic

**Temperature max:** 70° C

**Pleat:** HemiPleat

**End caps:** Available Galvanized steel (Standard), Powder coated, Stainless steel AISI304, Stainless steel AISI 31

**Liners:** External helical cords and internal screen, secure the filter element from movement without obstruction to the pulse

**Additional information:** Available in Co/Cy, Tenkay, as dimple pleat and in other dimensions on request.

Our conical-cylindrical air inlet filters are available in vertical or horizontal designs, to best suit your system of choice. With our broad range of media, including EPA filters, we can offer an air inlet pulse filter for every environment and every gas turbine inlet. Camfil CamPulse with proven HemiPleat™ technology, combined with a synthetic media, delivers valuable benefits to gas turbine operation and maintenance.

Model Name	ASHRAE 52.2:2017	EN 779:2012	Length (mm)	Diameter (mm)	Length 2 (mm)	Diameter 2 (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*
CyCy	MERV 16	F9	660	324	660	445	2500/ 140	35	12	75	74
CoCy	MERV 16	F9	660	324	660	445	2500/ 140	35	12	75	74

\* ME%: Minimum efficiency ref. to EN 779:2012

CyCy = Large Cylindrical, Small cylindrical

CoCy= Large Conical, Small Cylindrical

CamPulse GTD



Advantages

- HemiPleat™ technology- proven open pleat solution
  - Non discharging F9
  - Improved dust release
  - Water resistant
- 2 in 1 package - saves space and money
  - Helical design for efficient pulse cleaning

**Application:** For desert/dry/ heavy dust load areas

**Type:** Pleated Cylinder

**Media:** Synthetic

**Temperature max:** 70° C

**Pleat:** HemiPleat

**End caps:** Available in Galvanized steel (Standard), Powder coated, Stainless steel AISI304, Stainless steel AISI 31

**Liners:** External helical cords and internal screen secure the filter element from movement without obstruction to the pulse

**Test information:** Tested according to ARAMCO spec. 32-SAMSS-008.

**Additional information:** Available in Co/Cy, Tenkay, as dimple pleat and in other dimensions on request

Our conical-cylindrical air inlet filters are available in vertical or horizontal designs, to best suit your system of choice. With our broad range of media, including EPA filters, we can offer an air inlet pulse filter for every environment and every gas turbine inlet. Camfil CamPulse with proven HemiPleat™ technology, combined with a synthetic media, delivers valuable benefits to gas turbine operation and maintenance.

Model Name	ASHRAE 52.2:2017	EN 779:2012	Length (mm)	Diameter (mm)	Length 2 (mm)	Diameter 2 (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*
CyCy	MERV 16	F9	660	324	660	445	2500/ 160	35	12	88	75
CoCy	MERV 16	F9	660	324	660	445	2500/ 175	35	12	88	75

\* ME%: Minimum efficiency ref. to EN 779:2012

CyCy = Large Cylindrical, Small cylindrical

CoCy= Large Conical, Small Cylindrical

CamPulse GT Polytech HE



Advantages

- Patented HemiPleat™ technology- proven open
- Water repellent media protected by metal liners
- Each filter set is shipped together in one carton
- Galvanized metal finish
- Self-cleaning air filter cartridges
- Improved air distribution
- Suitable also in high humidity conditions
- Suitable as prefilter for filter class E10, E12
- Increased air to cloth ratio thanks to Hemi-Pleat™ technology.

**Application:** For desert/dry/ heavy dust load areas

**Type:** Pleated Cylinder

**Media:** Polytech HE

**Temperature max:** 70° C

**Pleat:** HemiPleat

**Additional information:** Available as dimple pleated and in fire retardant version on request.



Camfil CamPulse with proven HemiPleat™ technology, combined with a synthetic media, delivers valuable benefits to gas turbine operation and maintenance.

Model Name	ASHRAE 52.2:2017	EN 779:2012	Length (mm)	Diameter (mm)	Length 2 (mm)	Diameter 2 (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)	Initial eff. (%)
CoCy	MERV 14	F7	660	324	660	445	2500/ 165	34,7	12,8	94

*CyCy = Large Cylindrical, Small cylindrical*  
*CoCy= Large Conical, Small Cylindrica*

## CamPulse EF



### Advantages

- Self-cleaning air filter cartridges
- High filtration efficiency
- Effective dust holding capacity
- Built-in structural strength
- Galvanized metal finish
- Media protected by metal liners on both sides

**Application:** Desert and arctic environments

**Type:** Pleated Cylinder

**Media:** Synthetic

**Rec. final pressure drop:** 1000

**Temperature max:** 70° C

**Caps:** Galvanized (Standard), stainless steel (AISI304 / 316) or powder coated

**Fire rating:** Available according to DIN 4102-b2

**Holding frames:** Various on request.



CamPulse filter systems are designed to protect rotating machinery in high dust load environments. The cleaning system provides continuous operation and stable pressure even in extremely dusty environments.

Model Name	ASHRAE 52.2:2017	EN 779:2012	Length (mm)	Diameter (mm)	Length 2 (mm)	Diameter 2 (mm)	Air Flow/pressure drop (m³/hr/Pa)	Media area (m²)	Weight (kg)	Initial eff. (%)	ME (%)*
CyCy	MERV 12	M6	660	324	660	445	2500/ 190	46	13.5	15	15
CoCy	MERV 12	M6	660	324	660	445	2500/ 190	46	13.5	15	15

\* ME%: Minimum efficiency ref. to EN 779:2012  
CyCy = Large Cylindrical, Small cylindrical  
CoCy= Large Conical, Small Cylindrical



Tenkay



Advantages

- High filtration efficiency
- Excellent energy performance
- Long life
- Continuous one-piece gasket
- Factory bonded steel top and bottom headers
- Pleated media
- Helical cord retainer

**Application:** For desert/dry/ heavy dust load areas

**Type:** Pleated Cylinder

**Media:** Synthetic, Polytech HE

**Rec. final pressure drop:** 600

**Temperature max:** 70° C

**Size:** Standard 34", 22" and 27" on request.

**Additional information:** Also available as CamBrane E12, Goldcone, Fires retardant and eXtreme versions on request



The Tenkay filters for turbomachinery provide enhanced performance and longer service life, thanks to greater media utilization and more effective filtration. The HemiPleat™ separator bead opens up the pleats uniformly, allowing more effective cleaning, low pressure drop and long life.

Model Name	ASHRAE 52.2:2017	EN779:2012	Length (mm)	Diameter (mm)	Air Flow/pressure drop (m³/hr/Pa)	Weight (kg)
Polytech HE	MERV 14	F7	864	324	1150/ 145	8,6
GTC	MERV 16	F9	864	324	1150/ 115	8,6
GTD	MERV 16	F9	864	324	1150/ 130	8,6

\* ME<sub>0.5</sub> : Minimum efficiency ref. to EN779:2012  
\* Energy Consumption, kWh/year: Calculated according to Eurovent Guideline 4/11  
\* Energy class: Calculated according to Eurovent

# CamPulse CamBrane



### Advantages

- Water and salt resistant filter
  - Non discharging EPA filter
  - Optimized Sandwich construction for long life
  - EPA high efficient membrane media
- 2 in 1 package - saves space and money
  - HemiPleat™ technology- proven open pleat solution

**Application:** For humid/desert/dry/ heavy dust load areas

**Type:** Pleated Cylinder

**Media:** Membrane

**Temperature max:** 70°C

**Pleat:** HemiPleat

**End caps:** Available in Galvanized steel (Standard), Power coated, Stainless steel AISI304, Stainless steel AISI 316

**Additional Information:** Also available as Cylindrical/Conical.



The CamBrane combines a variety of filtration technologies into one unique composite media tailored for the tough requirements of modern gas turbines. The synthetic pre-filter layer is extremely efficient on small particles, hydrocarbons and airborne salt while the membrane layer adds a barrier to submicron particles and stops water and salt from penetrating the filter. CamBrane offers best-in-class protection at lowest possible air flow restriction.

Model Name	EN1822:2009	Length (mm)	Diameter (mm)	Length 2 (mm)	Diameter 2 (mm)	Air Flow/pressure drop (m³/hr/Pa)	Weight (kg)
CamPulse CamBrane	E12	660	324	660	445	2500/180	12
* ME%: Minimum efficiency ref. to EN 779:2012							
CyCy = Large Cylindrical, Small cylindrical							
CoCy= Large Conical, Small Cylindrical							



As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

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## Farr Gold Series®



### Advantages

- High efficiency collector using HemiPleat® cartridges
- Modular design for optimum flexibility
- Customised for Original Equipment Manufacturers (OEM)
- Easy to install and maintain
- Simple cartridge replacement using quick release cam bars
- Up to 25% smaller
- ATEX and NFPA available upon request

**Application:** The Farr Gold Series® cartridge dust and fume collectors may be used for a wide range of pollution control and product recovery applications including: Blasting, Chemical Processing, Pharmaceutical Manufacturing Processes, Fiberglass and FRP, Food Processing, Laser/Plasma Cutting, Paper Scrap, Rubber Grinding, Seed Processing, Mining, Thermal Spray and more. Contact Camfil for more information

**Type:** Dust collector

**Options:** A wide variety of options are available including: Explosion Venting, Special Inlet Designs, BIBO (bag in-bag out) for Pharmaceutical Applications, Custom Colours, Stainless Steel Construction, Alternative Hopper Designs etc. please contact us with your specific requirements

**Cartridges:** Vertically mounted to shed dust readily for efficient cleaning and longer service life. High filtration efficiency meeting the 5 mg/m<sup>3</sup> or less emissions required to re-circulate the air back into the work place on non hazardous dusts

### Features

- Modular design for optimum flexibility-have it your way fast!
- Each module accommodates airflows up to 8,500 m<sup>3</sup>/h
- Module constructed of 4.5mm thick carbon steel
- Door, hopper, inlet and panels are all 3.4mm thick
- Powder painted for unsurpassed corrosion resistance
- Component configurations are virtually unlimited
- Vertical design of cartridges enables efficient pulse cleaning of dust

### Easy Maintenance

Simple, quick-open heavy gauge door(s) provide access to a super-fast cartridge change-out system that does not require entry into the collector. The door is fully reversible for access from either side and has an exclusive lock-out feature for worker safety.

#### Easy Access Door

- No knobs to lose or drop
- No threads to bind
- Mechanically attached seal
- Heavy 3.4mm thick construction

#### Easy Change-out

Gold Cone™ cartridge with patented cambar action that positively seals the cartridges without using threads or knobs.

## Farr Gold Series® Camtain®



### Advantages

- Designed specifically for pharmaceutical and containment applications
- Bag-in/bag-out safe change options available.
- High efficiency collector using HemiPleat® cartridges
- Modular design for optimum flexibility
- Customised for Original Equipment Manufacturers (OEM)
- Easy to install and maintain
- Simple cartridge replacement using quick release cam bars
- Up to 25% smaller

**Application:** The Farr Gold Series® Camtain® is used in a wide range of pharmaceutical applications including tablet presses, coating, fluid bed and spray drying, blending, granulation and general ventilation. Contact Camfil for more information

**Type:** Dust collector

**Options:** A wide variety of options are available including: BIBO (bag-in/bag-out) for Pharmaceutical Applications, Explosion Venting, Special Inlet Designs, Custom Colours, Stainless Steel Construction, Alternative Hopper Designs etc. please contact us with your specific requirements

**Cartridges:** Vertically mounted to shed dust readily for efficient cleaning and longer service life. High filtration efficiency meeting the 5 mg/m<sup>3</sup> or less emissions required to re-circulate the air back into the work place on non hazardous dusts

### Features

- Safe-change containment systems are available for both the filter cartridges and discharge system underneath the collector.
- The cartridge change utilizes the safe change filter replacement method while the discharge uses continuous liner technology.
- The Farr Gold Series Camtain is perfect for high efficiency filtration in pharmaceutical manufacturing processes where recovery of the product is not required.
- The only dust collector that is potent compound surrogate tested for validated performance verification. Test report available upon request.





## Quad Pulse Package



### Advantages

- Economical, space-saving cleaning unit requiring just a single primary filter cartridge
- Cleaning during operation for production process and product quality control
- EN14460:2006 Explosion Resistance Equipment
- Low pressure drop across the filter for energy cost savings
- Camfil pleated filter technology provides exceptional dust release enabling extended filter service life and reduced filter replacement

**Application:** The Quad Pulse Package compact dust collector provides a cleanable filter system for the pharmaceutical and chemical industries

**Type:** Dust collector

Compact and strong unit construction incorporates a unique HEPA filter design, with specialized materials from the aerospace industry, providing the following key advantages:

- The Quad Pulse Package HEPA filter captures the fine dust particles and is a tested flame and contamination barrier.
- Additional, expensive explosion safety devices are not required.
- The pressure resistant housing maintains its integrity with no damage during an explosion event.
- Compact unit with flexibility for indoor installation reduces the need for long duct runs.

# Handte EM Profi



## Advantages

- Modular, user-friendly design to provide a high-end solution for high-efficiency emulsion (coolant) mist separation
  - The highest available collection efficiencies, plus the ability to run “24/7” for reduced maintenance, service ease and lower operating costs
  - No Leaks - guaranteed. German engineering and American manufacturing expertise result in premium quality products. We guarantee that our mist collectors will not leak
- Multi-stage Filtration - We consistently achieve high separation performance by designing our filter materials to meet specific needs or to handle a given droplet spectrum. We do this through optimized, flow-engineered, multistage design

**Application:** Handles the heaviest loads encountered in the industry to clean up contaminants generated during milling, drilling, tapping, turning, grinding and other machining processes that utilize emulsion mist coolants

**Type:** Mist Separator

**Modular Design:** Minimum space requirement, maximum performance. System can be expanded in the future as needed. Short delivery time. Easy transport and installation

**Basic Modules:** Ground/platform versions with optional return pump station (for recirculating separated fluids). Filter module (contains main and final filter).Connection box for use with an external fan. Connection can be on left, right or rear side. Built-in fan in compact design enclosure with integrated sound insulation. Top mount fan

Product Name	Air Volume m³/h	Dimension (WxD) mm	mm	Weight (kg)
Handte EM Profi 3.0	3000	798 x 958	2942	555
Handte EM Profi 4.5	4500	798 x 1208	2102	705
Handte EM Profi 6.0	6000	1548 x 958	2127	850
Handte EM Profi 9.0	9000	1548 x 1208	3461	1625
Handte EM Profi 13.5	13500	2298 x 1208	3525	2139



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# Handte Oil Expert



### Advantages

- Economically efficient separation of ultra-fine cooling liquid mists and fumes
- Collection efficiencies at 99.97% on 0.3 micron and higher particle size with the optional HEPA final filter
- Long-life filters
- 24/7 operation
- Air flow can be adjusted without affecting the collection efficiency
- Operator-friendly due to low-maintenance design
- Tool-free filter changes with quick-acting clamps
- Optional clean air recirculation
- Plug-and-play delivery

### Type: Mist Separator

**Progressive filtration design:** The progressive design of ascending filter classes provides the highest filtration efficiency available in the industry. This includes the coarse separator mesh for high contamination, the standard CoaPack diffusion filter as a preliminary filter, a fine filter and the optional downstream final stage filter. This design makes it possible to configure the system for simple applications or for highly complex requirements such as clean air recirculation. This is especially true for ultra-fine mists and fumes generated in the course of high-performance machining

**Modular design for flexible configuration:** The compact, modular design of the Handte Oil Expert provides for easy, efficient adaptation to specific requirements and installation situations. It is available in four standardized basic modules with different air capacities, which can be combined in a large central system. State-of-the-art technology enables flexible adjustment for system conversions or expansion as production requirements increase

**Innovative filter media:** The unique structure of the standard CoaPack filter material combines premium separation performance with self-cleaning features via optimum drainage of the separated cooling lubricant. This ensures extremely long filter life of the optional HEPA final filter

**Easy filter change for simple, clean maintenance:** The operation of the Handte Oil Expert is practically maintenance free. When infrequent filter changes are needed, the change-out is clean, easy and requires no tools. The closed filter cassettes can be removed without being exposed to the oil coated filter materials

**Customizable:** By combining different basic modules, it is possible to design economically efficient central extraction systems for each requirement capable of air volumes of 41,000 cfm or more. The modular concept of the Handte Oil Expert provides for smooth, cost-efficient production conversions or extensions during ongoing operation

With increasing production in modern manufacturing, energy consumption continues to grow, particularly in machining processes where cooling lubricants are used. As a result, there are higher demands for the separation of ultra-fine mists and fumes. Worker safety, production efficiency and capital equipment protection cannot be compromised. The Handte Oil Expert provides for optimum results even under the most challenging conditions.

Product Name	Air Volume m³/h	Dimension (WxD) mm	mm	Weight (kg)
Handte Oil Expert 3.0	3000	770 x 1190	2900 - 3900	1075
Handte Oil Expert 4.5	4500	770 x 1735	3050 - 4200	1420
Handte Oil Expert 6.0	6000	1240 x 1190	3020 - 4380	1745
Handte Oil Expert 9.0	9000	1240 x 1190	3035 - 4620	2585
Handte Oil Expert 13.5	13500	1784 x 1735	3400 - 4620	3895

## Handte Wet Scrubbers



### Advantages

- No filter elements required
- The safest solution when dealing with flammable/combustible materials
- Universal applications
- High-level separation combined with safe operating technique
- Low-maintenance

**Application:** The Handte Vortex and Handte Venturi wet scrubber systems provide high-efficiency and low-maintenance removal of dusts and other hazardous substances from the workplace

**Type:** Wet Scrubber

Handte wet scrubbers are for applications where hazardous substances are in production processes. Examples:

- Steam: Washing machines, waste treatment, soldering, die-casting machines, releasing agents, paint vapors, cooling aggregates, spark discharge material removal machines, paint-stripping units, electro-plating units, lead production, electro-galvanizing plants, foundries
- Aluminum magnesium dust: Minimal lubrication, grit production, chip removal, de-burring, brushing, separating, finishing processes, forging processes, grinding and polishing
- Aluminum magnesium chippings: Drilling, machining, rough machining, sawing, de-burring, forming processes, recycling systems
- Rubber/leather/plastic fines: Shoe manufacturing, tire re-treading, plastics processing, foils
- Production, extruders, modeling, textiles manufacturing
- Fibers/fluff/textile dust: Polishing processes, paper machines, waste sorting systems, textile processing, recycling plants, insulation material production, asbestos abatement, food processing, grain processing
- Sticky powders: Pharmaceutical processes, manufacturing of food, animal feed, dyes, mold and die manufacturing, printing machines, tire and chip production, adhesive applications, textile finishing, mixing and conveying plants, plastics processing, ceramic coating

## Zephyr III™ Portables



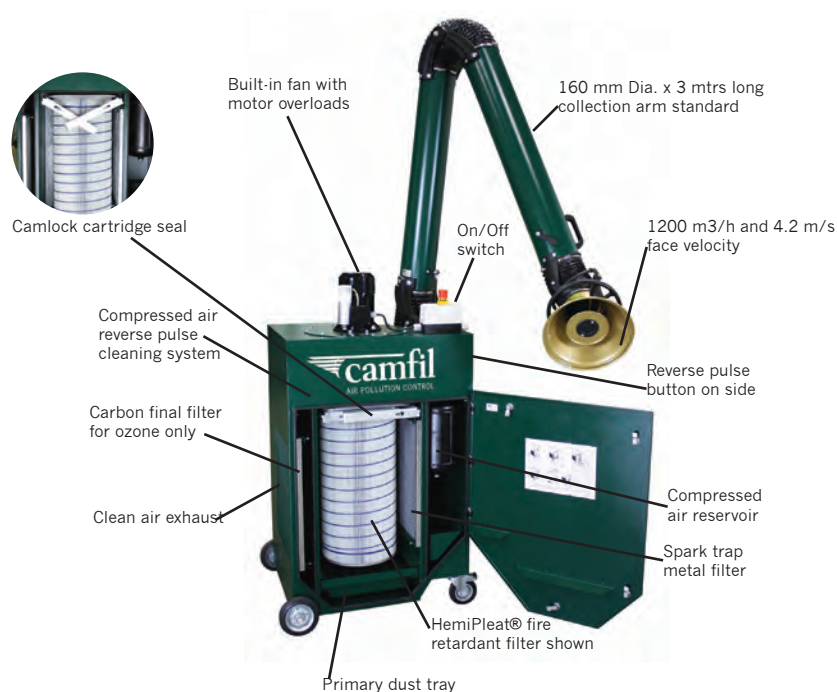
### Advantages

- Portable air purification system
- Ideal for industrial process contamination, source capture, and for plants requiring periodic dust collection at various locations
- Complete unit-plug it in and start collecting dust and fumes
- Portable
- The only thing you need to supply is the electrical feed and compressed air line

**Application:** The Zephyr is a portable air cleaner for capturing welding fumes, grinding dusts, dry dusts, and soldering fumes, and other airborne particles. Not suitable for explosive dusts & solvent fumes.

### Features

- Roll out dust drawer
- Quick clamp cartridge sealing/removal
- Exterior arm adjustments
- Heavy duty fume arm is obstruction free inside
- Easy, 360° hood positioning
- 1200 m<sup>3</sup>/h at the capture hood
- Three stage filtration: Primary spark trap, Gold Cone® HemiPleat® and Carbon after filter for ozone only
- Large wheels with swivels and brakes for ease in moving and positioning
- Tough powder coated surface finish inside and outside
- Venturi assisted pulse cleaning, manually activated
- Dust drawer grid minimizes dust re-entrainment
- Thermal overload in motor starter switch
- 7.5 m extension cord
- The only thing you need to supply is the electrical feed and compressed air line





HemiPleat® Gold Cone™



Advantages

- Original spare for Farr Gold Series® dust collectors
- Vertically integrated cartridge for better dust release and ease of removal and installation
- Excellent energy saving performance
- Extended Filter Life
- High Filtration Efficiency
- Pour in place one piece double gasket

**Application:** Air Pollution Control filter cartridge to collect dust, fumes and/or oil mist in many different industrial applications and processes

**Type:** Pleated Cylinder

**Gasket:** Polyurethane, endless foamed

**Separator:** HemiPleat Separator Technology

**Sealant:** Polyurethane

**Temperature max:** 70° Operating

**Mounting/Frames:** Internal GV support cage

**Filter Class:** M

- Featuring an injection molded inner cone in the center of the cartridge, cleaning is accomplished by pulse waves that emanate outward from this inner cone providing enhanced cleaning for more efficient operation, longer cartridge life and reduced service requirements.
- The new PolyTech™ media is the most advanced pulse-cleaned media ever made, and now comes standard with a moisture resistant treatment for high humidity resistance.
- Continuous double seal gaskets give added insurance against leaks. No other filter design gives you a double seal barrier.
- The separation beads, NOT the media beads, contact the inner cage, protecting the media from frictional damage.
- The HemiPleat separator bead opens up the pleats uniformly, allowing more effective cleaning and lower pressure drop.

Art. No.	Model Name	Length (mm)	Diameter (mm)	Media area (m²)	Weight (kg)	Media Type
325325-001	GS-GR-325	990	381	30.20	15	Standard Green
325325-002	GS-FR-325	990	381	30.20	15	Fire Retardant
325325-003	GS-CB-325	990	381	30.20	15	Carbon Impregnated
325325-004	GS-XG-325	990	381	30.20	15	eXtreme Green
325325-005	GS-XF-325	990	381	30.20	15	eXtreme Fire Retardant
325325-006	GS-XC-325	990	381	30.20	15	eXtreme Carbon Impregnated
325325-007	GS-SY-325	990	381	30.20	15	Synthetic
325325-008	GS-XS-325	990	381	30.20	15	eXtreme Synthetic

As part of our program for continuous improvement, Camfil reserves the right to change specifications without notice.

## Dura-Pleat® Gold Cone®



### Advantages

- Meets widest range of tough application challenges; handles difficult dusts
- Washable media may be resused in many applications
- Exceptionally rugged, long-lasting
- Vertically integrated cartridge for better dust release and ease of removal and installation

**Application:** Dura-Pleat media is made of 100% spun bond polyester in a pleated design that combines the best of both worlds: the high efficiency of pleated media and the versatility of synthetic materials. Filter cartridges with Dura-Pleat technology capture and release more pollutants when pulsed, resulting in a safer, cleaner work environment with less maintenance.

## Media Options

### DPS - Dura-Pleat

Our spun-bonded, heavy-duty, all-purpose polyester media.

### DPA - Aluminized

Our Dura-Pleat media with a conductive aluminized finish applied for static dissipation.

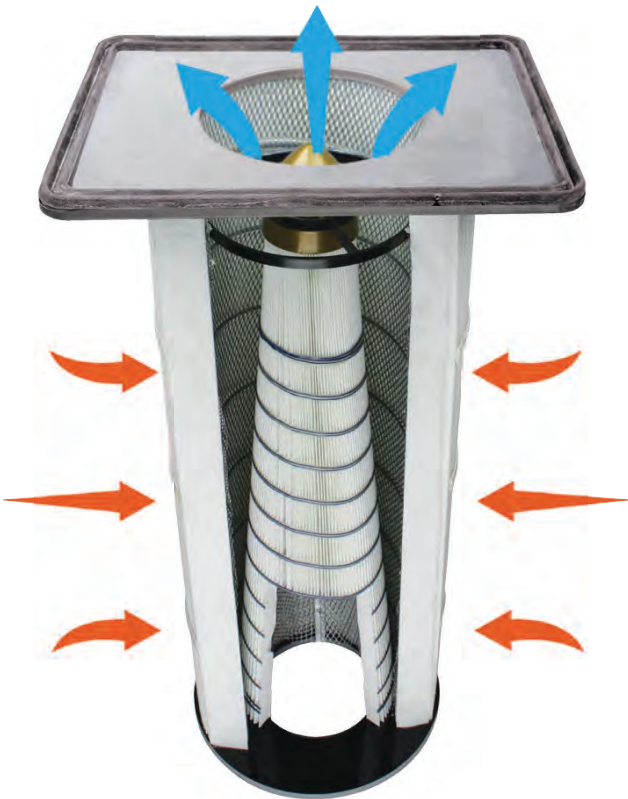
### DPO - Hydro-Oleophobic

Our Dura-Pleat media coated with an oil and water repellent finish.

### DPT - PTFE

Our Dura-Pleat media with a laminated polytetrafluoroethylene (PTFE) membrane for very high efficiencies of fine particulate and superior dust cake release.

Dura-Pleat filters are rated MERV 10 up to MERV 16 (PTFE).



## HemiPleat® Retrofit



### Advantages

- Less energy consumption
- Fewer filter change outs
- Better dust release
- Lower pressure drop
- Saving you money
- Longer filter life

**Application:** Synthetic beads are applied to our media in order to achieve even and open spacing. The open pleats create topmost utilization of media area resulting in longer lasting and highly efficient filter cartridges.

Camfil APC filter cartridges with HemiPleat technology have sizable dust loading capacity and allow for maximum dust release when pulsed. These industry superior characteristics result in a cleaner, safer and lower maintenance work environment.

## Media Options

### GR — Green

Our own blend of fibers with a moisture resistant treatment for the best dust release, long filter life and high filtration efficiencies.

### FR — Flame Retardant

Our own blend of fibers, chemically treated with a flame retardant.

### FC - FR Carbon Impregnated

Our own blend of fibers, impregnated with carbon for static dissipation and chemically treated with a flame retardant.

### SY — Synthetic

A lightweight, washable polyester media.

HemiPleat filters are rated MERV 10 and higher.

HemiPleat High Efficiency filters are available for the GR, FR, and FC media options. A microfiber synthetic melt blown laminate is applied to the surface of the base media for high filtration efficiencies and are rated MERV 16.



## Oval Retrofit



### Advantages

- Low pressure drop
  - Extended filter life
- High Filtration efficiency
  - Direct fit replacement

### Application & Dust Type

- Wood & paper dust
- Talc & cornstarch
- Sand & shot blasting
- Foundry sand
- Sanding dust
- Thermal spray
- Welding & soldering
- Fumed silica dust
- Steel grinding
- Laser cutting
- PVC dust
- Carbon black
- Toner dust

## Media Options

### FC — FR Carbon Impregnated

Our own blend of fibers, impregnated with carbon for static dissipation and chemically treated with a flame retardant.

### XF — eXtreme Flame Retardant

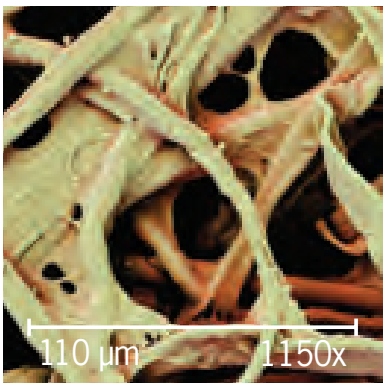
Our own blend of fibers, chemically treated with a flame retardant with the proprietary coating of nanofibers to yield the market’s most superior filtration and cleanability with an efficiency of 99.995% on 0.5 microns and larger by weight.

### XFC — XFC - eXtreme Flame Retardant Carbon Impregnated

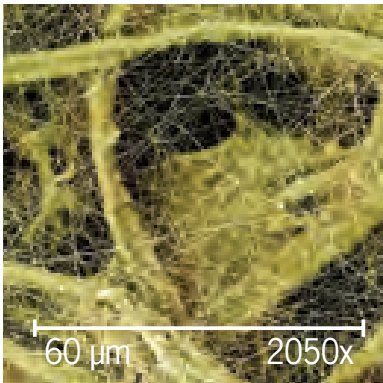
Blended media impregnated with carbon for static dissipation, chemically treated with a flame retardant, and coated with nanofibers for superior filtration and cleanability.

### Efficiency for eXtreme Media:

ASHRAE 52.2: MERV 15 Filter Class M, in accordance to independent test to DIN EN 60335-2-69:2016



Camfil APC’s Filter Media



Camfil APC’s Filter Media with eXtreme coating



# Explosion Protection Solutions

### Inlet Protection

**Fast-Acting Valve**  
Designed to close within milliseconds of detecting an explosion, the fast-acting valve installs in either inlet and/or outlet ducting. The fast-acting valve creates a mechanical barrier within the ducting, which effectively isolates pressure and flame fronts (from either direction) from being able to propagate further through the process.

**Inlet/Outlet Chemical Isolation**  
Designed to react within milliseconds of detecting an explosion, a chemical isolation system can be installed in either inlet and/or outlet ducting. The chemical isolation system creates a chemical barrier that suppresses the explosion within the ducting, reduces the propagation of flame through the ducting and minimizes pressure increases within connected process equipment.

**Stinger Isolation Valve**  
The purpose of the Stinger is to prevent a deflagration (explosion) that could occur in the dust collector from traveling back down the inlet pipe back into the workspace/process.

**Detect and Suppress**  
These systems protect the dust collector from ignition sources such as sparks or embers. It detects them and activates a suppression system that extinguishes them before they reach the collector.



### Outlet Protection

**Integrated Safety Monitoring Filter**  
The ISMF has been proven to isolate the downstream equipment from the progression of a flame front during an explosion. The Farr Gold Series® dust collector with an integrated Safety Monitoring Filter allows you to recirculate exhaust air back into the work space when your dust is explosive. The key advantage of this device is that it prevents the transmission of explosive dust (fuel) from the collector.

### Explosion Venting

**Explosion Vent**  
Designed to be the "weak" link of the vessel, explosion vents open when predetermined pressures are reached inside the dust collector allowing the overpressure and flame fronts to exit to a safe area. Explosion vents minimize damage to the dust collector caused by overpressure created by a deflagration. Camfil APC's standard explosion vents are ATEX certified and NFPA compliant.

**Flameless Vent**  
Designed to install over a standard explosion vent, the "FlamQuench SQ" extinguishes the flame front exiting the vented area not allowing it to exit the device. This allows conventional venting to be accomplished indoors where it could otherwise endanger personnel and/or ignite secondary explosions.

**Chemical Suppression**  
Designed to react within milliseconds of detecting an explosion, a chemical suppression system is installed in the collectors dirty air section.

The chemical suppression system prevents expanding a deflagration by releasing a chemical agent.



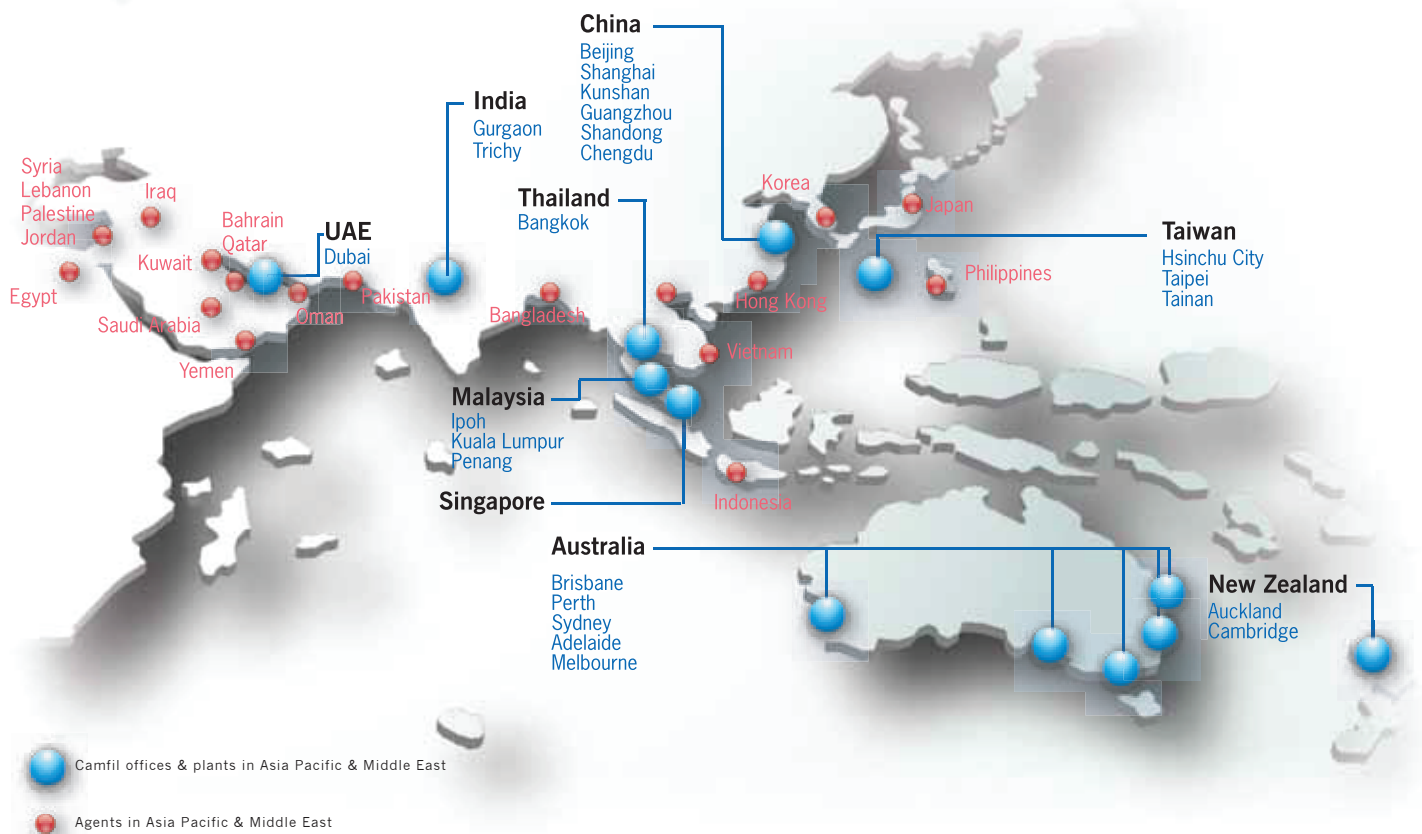
## OPTIONAL SAFETY FEATURES

### Blast Plate

A Blast Plate is a deflector mounted directly in front of the explosion relief area. The deflector is designed to restrict the flame length ejected from the collector in the event of an explosion. For vessels that are not greater than 706 cubic feet, the deflector is designed to reduce the axial (front-centerline) safe distance by 50 percent.

### Vertical Plenum

A plenum that is bolted to the dirty air section of the collector. The explosion vent is mounted to the top of the plenum which effectively transitions the pressure and flame fronts from a horizontal to a vertical configuration. A vertical configuration makes it possible to explosion vent through a roof and/or direct the pressure and flame fronts to a safe location as outlined in NFPA standards. In most cases, ducting and weather hoods are required to be compliant with NFPA standards to protect the explosion vents from the elements and other debris. Access panels are provided on the ducting so that easy inspection and/or replacement of the explosion vent is made possible without removing the ducting and weather hood.



## CAMFIL OFFICES IN ASIA-PACIFIC AND MIDDLE EAST

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Penang Tel: +604 642 5004

### New Zealand

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### Taiwan

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Tainan City Tel: +886 6 589 1217

### Thailand

Bangkok Tel: +66 2694 1480 4

### United Arab Emirates

Dubai (Plant) Tel: +971 4 886 5882

## ASIAN AND MIDDLE EAST DISTRIBUTORS

HONG KONG	JORDAN
JAPAN	KUWAIT
KOREA	LEBANON
VIETNAM	OMAN
PHILIPPINES	PALESTINE
INDONESIA	PAKISTAN
BAHRAIN	QATAR
BANGLADESH	SYRIA
EGYPT	SAUDI ARABIA
IRAQ	YEMEN

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Camfil is a global leader in the air filtration industry with more than half a century of experience in developing and manufacturing sustainable clean air solutions that protect people, processes and the environment against harmful airborne particles, gases and emissions. These solutions are used globally to benefit human health, increase performance and reduce energy consumption in a wide range of air filtration applications. Our 27 manufacturing plants, six R&D sites, local sales offices and 4,000 employees provide service and support to our customers around the world. Camfil is headquartered in Stockholm, Sweden. Group sales total more than SEK 6.7 billion per year.

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For further information please contact your nearest Camfil office.