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

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

Why molecular filtration?

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

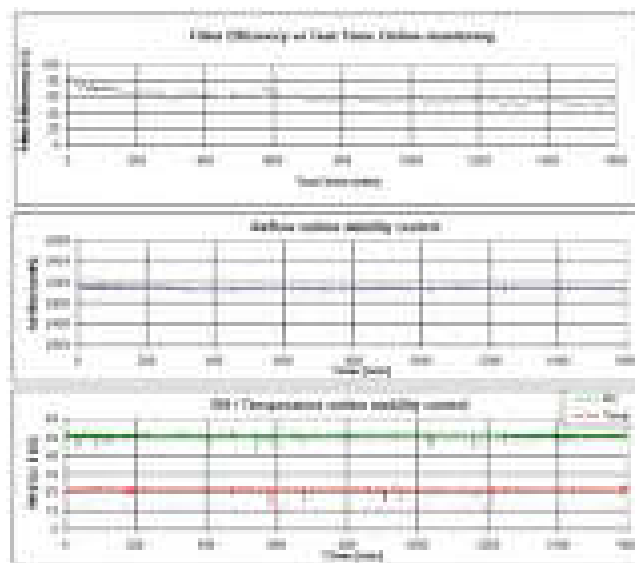
Molecular gaseous compounds are invisible and all around us. Some of these compounds are so toxic, and yet so hard for us to detect, that they can do us harm without even realizing we have been exposed.

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 services 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.

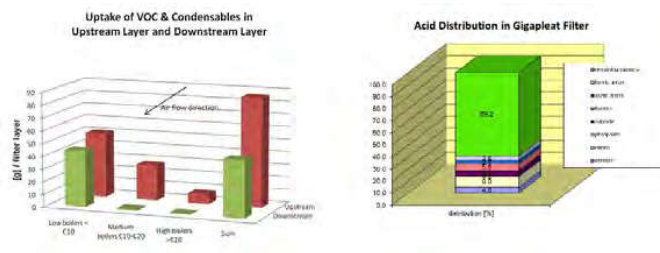


On-line corrosion monitoring

(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 (NH_3), Nitrogen Oxides (NO_x), Sulfur Dioxide (SO_2), Hydrogen Sulfide (H_2S) 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 NO_x and NH_3 , UV fluorescence detectors for SO_2 and H_2S , 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.



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

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 used on their own or blended with activated carbon.



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.

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.

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 ₂ S, SO ₂ , formaldehyde, ethylene, low mol. wt. aldehydes.	Activated alumina with chemical impregnation.
CamPure 8	High capacity for H ₂ S, SO ₂ formaldehyde, ethylene, low mol. wt. aldehydes.	Activated alumina with chemical impregnation.
CamPure 9	High capacity for H ₂ S, SO ₂ formaldehyde, ethylene, low mol. wt. aldehydes.	Activated alumina with chemical impregnation.
CamPure 10	High capacity for H ₂ S, SO ₂ 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				

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 ₂ S)	< 3	< 10	< 50	50
	Sulfur dioxide (SO ₂)	< 10	< 100	< 300	300
	Sulfur trioxide (SO ₃)				
	Chlorine (Cl ₂)	< 1	< 2	< 10	10
	Nitrogen oxides (NOx)	< 50	< 125	< 1,250	1,250
B*	Hydrogen fluoride (HF)	< 1	< 2	< 10	10
	Ammonia (NH ₃)	< 500	< 10,000	< 25,000	25,000
	Ozone (O ₃)	< 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 m³/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 m³/h to 5,000 m³/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 (m ³ /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

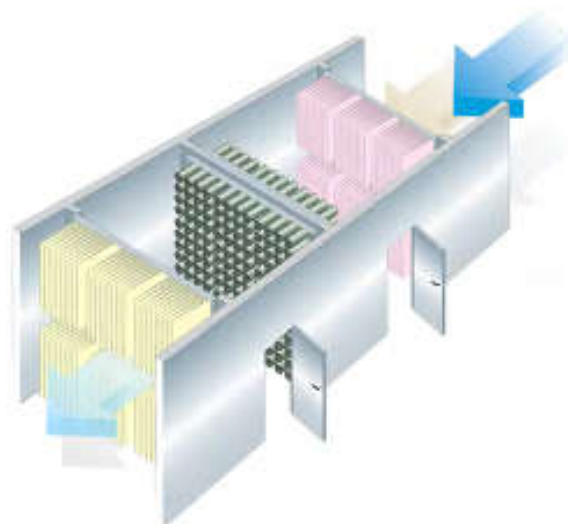
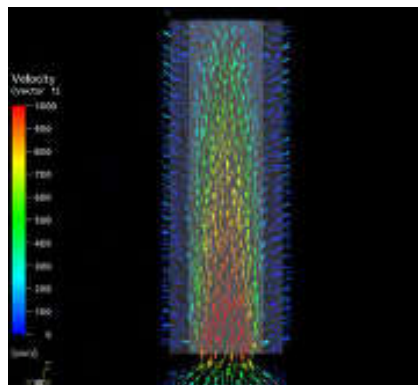
The CamCarb cylinders can be emptied and refilled with new media. This service offers lower operational cost compared to the replacement of the whole cylinder.

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 m ³ /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.

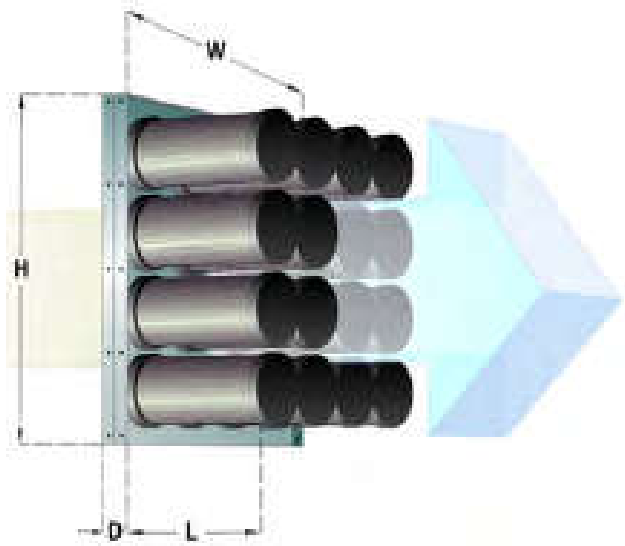
Media: Activated carbon, Impregnated Activated Carbon, Activated Alumina.

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



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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:

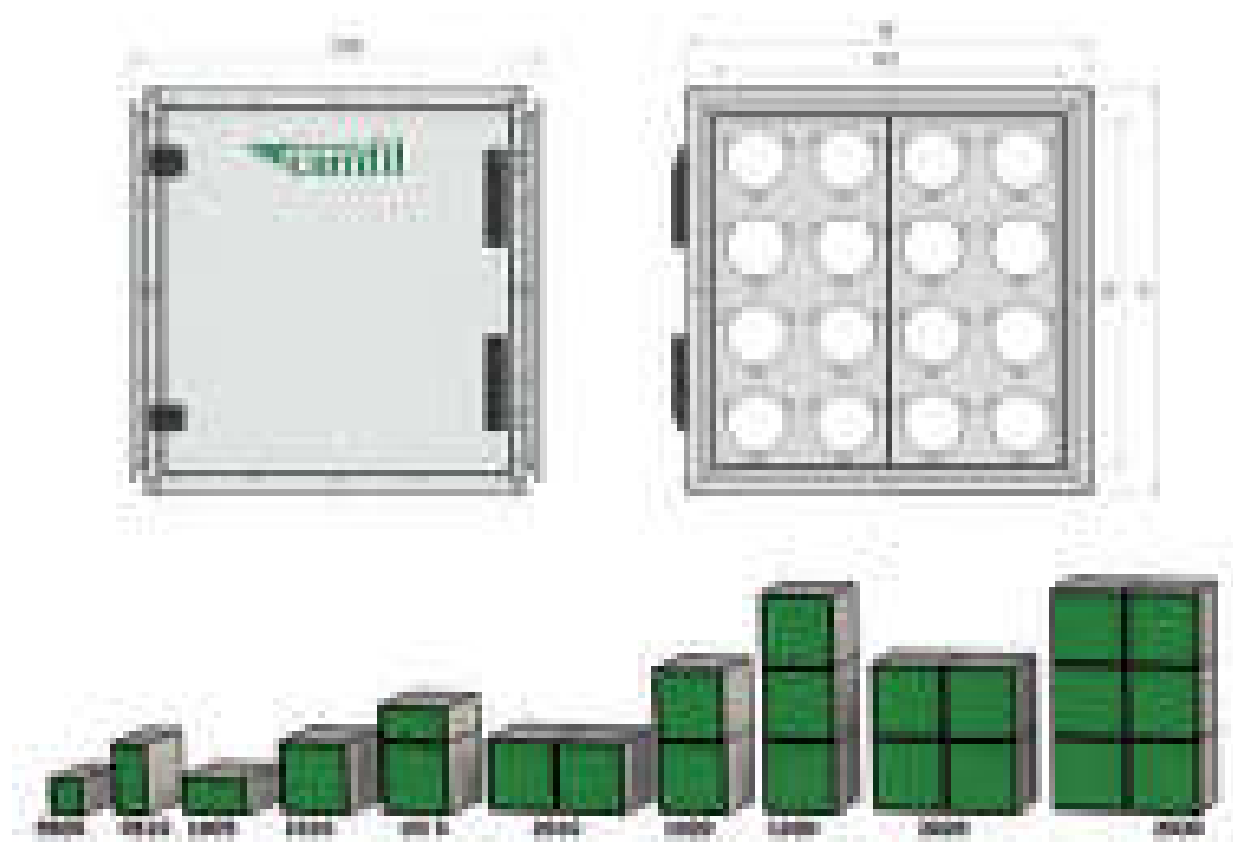
Leakage class C, according to the EN 15727:2010 standard

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 (m ³ /s)	Contact time 0.2 (m ³ /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



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 (m ³ /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

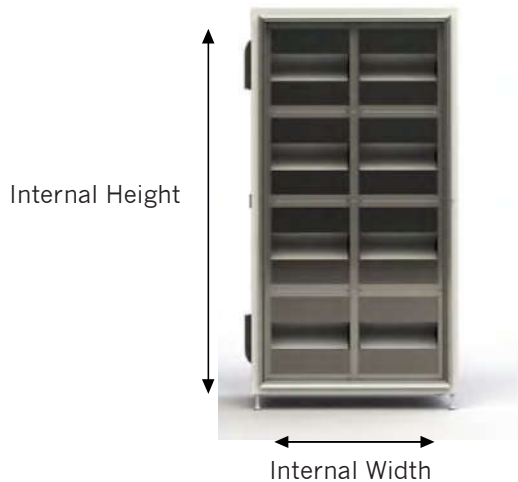
Type	Flow rate (m ³ /h)/(CFM)	Face Velocity (m/s) (FPM)	No. of Modules High	No. of Modules Wide	Internal Width (mm) (in.)	Internal Height (mm) (in.)
VG440-0402	3200 (1880)	2.5 (500)	4	2	600 (23.6)	600 (23.6)
VG440-0602	4800 (2820)	2.5 (500)	6	2	600 (23.6)	900 (35.4)
VG440-0802	6400 (3760)	2.5 (500)	8	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				

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

GigaPleat NXP



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.

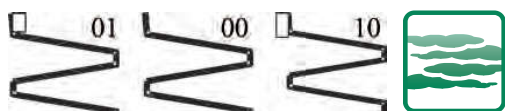
Gasket: 01= downstream, 10 = upstream.

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)
NXP H A3	592x592x292	3300/60	12
NXP H A3	592x287x292	1600/60	6.5
NXP H B2	592x592x292	3300/50	12
NXP H B2	592x287x292	1600/50	6.5
NXP H C3	592x592x292	3300/60	12
NXP H C3	592x287x292	1600/60	6.5
NXP H L4	592x592x292	3300/60	12
NXP H 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				

GigaPleat NXPC



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

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.

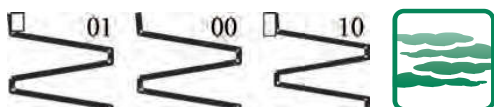
Gasket: 01 = downstream, 10 = upstream.

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				