

**RANGE H****NF** X 15-211 classe 2

# DUCTLESS FUME HOODS Labopur®

## NF X 15-211 - MAY 2009 - CLASS 2

### WHY SHALL WE USE AN ENCLOSURE WITH RECIRCULATING AIR FILTRATION SYSTEM?

When you are using chemicals, your health might be in danger due to the emanation of harmful and toxic vapors. To protect yourself and your close environment, you must manipulate your products in an enclosure using recirculating air filtration (formerly Enclosure for Toxics using Recirculating Air Filtration or ETRAF) equipped with a molecular filter or either particulate filter (HEPA filter) nor both filters.

### WHY SHALL WE CHOOSE AN ENCLOSURE LABOPUR® WITH RECIRCULATING AIR FILTRATION?

Following its wide experience with safety cabinets and storage of dangerous products, ECOSAFE-leading manufacturer of safety cabinets-uses its entire technical knowledge to design and manufacture its fume hoods LABOPUR®. Made in EU, the ductless fume hoods LABOPUR® stand out by a high manufacturing quality and finition. The entire process being controlled with the European standard ISO 9001 -2008.

Ductless fume hoods LABOPUR® provide the user a secured work space for the repetitive manipulations of small chemicals quantities. The dangerous vapours are confined in the enclosure, then are cleaned while entering the active charcoal filter. Finally, dangerous vapors are rejected in the atmosphere without danger for the environment. Thus, the user's health is protected.conformément à la norme NF X 15.211 dans sa version de mai 2009.



### CERTIFICATION

Ductless fume hoods LABOPUR® were approved to the NF X 15-211 - may 2009 norm, by independent laboratories:

- The **MAPE** laboratory (itself approved to the ISO CEI 17025 norm by the COFRAQ) has approved the filtration part of the NF X 15-211.
- **DANTEC DYNAMYCS** approved the containment part of the NF X 15-211 norm.
- **ADM LABO SERVICES**: filter tightness and integrity testing (HEPA filter).

LABOPUR® ductless fume hoods are controlled according to quality process and procedures defined by the repository of international quality standard ISO 9001-2008, at the end of the assembly line and before their shipping to the user in order to assure a perfect functioning and efficiency.





## NORMS

### NF X 15-211 French norm (may 2009):

NF X 15-211 French norm is the most demanding regulation today. It guarantees to the user a full safety allowing him to focus on his manipulations.

Enclosures for toxic Labopur® using recirculating air filtration are classified according to 2 security levels:

- class 1: enclosure with safety reserve
- class 2: enclosure without safety reserve, the most common

Enclosures Labopur® using recirculating air filtration belongs to the class 2.

- P type: particle filtration
- VP type: vapours filtration
- PV type: particle & vapours filtration

Ductless fume hoods Labopur® are recirculating air filtration enclosures from the class 2 which could be fitted, depending on the model, with filter for particles or for vapours or both.

To be in accordance with this standard, air filtration fume hood Labopur® have to meet multiple criteria (summary):

- the enclosure must be provided with a ventilation device to maintain the air speed with a rate between 0,4 m/s and 0,6 m/s.
- rejection, downstream the filter, of 50% of the VME (mean value of exhibition) of toxics treated in the enclosure in the duration of normal filter use.

- the enclosure must have been tested by an approved and independent laboratory.

- the class 2 enclosures have to be equipped with a sound or visual alarm activated every working 60 hours and also a sampling outlet device.

- the class 2 enclosures must not reject more than 50% of the VME downstream the filter during the detection test.

## WHY USING ACTIVATED CARBON?

Activated carbon is an extremely porous black carbon allowing the absorption of molecules from chemicals thanks to the high degree of microporosity (less than 2 µm.)

Based on the chemicals you have to filter, activated carbon can be impregnated to improve the absorption capacity. A specific impregnation could fit for one product and be unadapted for another one.

## WHY USING HEPA FILTER?

Hepa filter (High Efficiency Particulate Air) is an air filter with a very high efficiency.

The Hepa filtration efficiency is controlled and approved according to the norm NF EN 1822 and divided into 5 efficiency classes. The H14 Hepa filter which is the most efficient will stop 99,97% of the particles with a diameter equal or bigger than 0,3 µm.



### You will also find in this chapter:

Labopur® Ductless Fume Hoods	NF X 15-211 - may 2009	Range H
Labopur® Ductless fume hoods for powders	NF X 15-211 - may 2009	Range H
Labopur® Ductless fume hoods for dangerous powders and vapours	NF X 15-211 - may 2009	Range H
Labopur® Ductless Fume Hoods and Storage Cabinets with Recirculating Air : PMSF	NF X 15-211 - may 2009	Range H
Labopur® Filtering Ventilation Safety Cabinets (Active coal filters absorption's capacity and filtration system tested and certified NF X 15-211)	NF X 15-211 - may 2009	Range 12.X
Labopur® Filtering Ventilation Secure Cabinets (Active coal filters absorption's capacity and filtration system tested and certified NF X 15-211)	NF X 15-211 - may 2009	Range 14.X
Labopur® Recycling Air Box (Active coal filters absorption's capacity and filtration system tested and certified NF X 15-211)	NF X 15-211 - may 2009	Range H
Atex ventilation boxes "with filter option"	ATEX Zone II	Range V
Ventilation and filtration boxes	ISO 3744	Range V

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# DUCTLESS FUME HOODS Labopur®

## NF X 15-211 - MAY 2009 - CLASS 2



Timer

Sampling outlet

Air velometer

Ergonomic hand traps

Base trough integrated

Filtralarm (Optional)

Easy replacement of filters

Filter frame and HEPA filter (Optional)

Melamine based wood work top

Glass work top (Optional)

### ADVANTAGES

#### User's optimal protection:

- Our fume hoods have been approved within the standard NF X 5-211 by an independent laboratory.
- Vapors are confined in the manipulation enclosure after being eliminated through the molecular filter.
- A front sampling outlet allows you a fast and reliable control of the filter saturation.
- A warning lamp located in facade insures you of the good functioning of the system of ventilation/filtration.
- The silent electric fans included in our hoods are in accordance with the E.U. specifications.
- A front control window indicates immediately if the filter is in place and well adapted to your work.
- A retention tank integrated under the work-top allows to get back liquids in case of accidental droppings.

#### Save time and energy :

- Our hoods are delivered ready to use (already mounted). All you have to do is to plug them to a power supply device.
- No connecting evacuation, no civil engineering needed (if the hood is fitted with a filter).
- It is not necessary to heat or cool the air within the workroom.

#### Confort of use:

- The transparent wall sides of the fume hood offer an optimal lighting of the work-top and a direct sight of the working products.
- The ergonomic hand traps allow secure and easy manipulations in the enclosure.
- Protective caps allow you to insert power cables of your devices into the fume hoods.
- Silent fan within our hoods allow a higher concentration for your work.
- Easy replacement of the active coal-based filter. Few minutes are enough.

#### TECHNICAL DATA

(see also the following pages)

- 15/10<sup>th</sup> steel construction.
- White epoxy painting RAL 9010 with high resistance against chemicals.
- Polycarbonate glazed walls.

# RANGE H

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▲ H410 + CORG401 (draining board not included)

Need to put your ductless fume hood on a draining board with a sink? **Use a model without bottom.**



▲ H400 + TR34 + CORG401

For a better mobility or to clear your draining board you can put your hood on a labopur **trolley**.



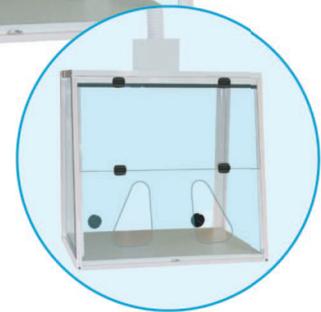
**HEPA**  
H14 ready

▲ H201 + SH200 + HEP 200 + CORG201

To handle powders you should use a ductless fume hood labopur with **H14 Hepa filter**. You can also add an **activate carbon filter** for vapors.



▲ BH400



▲ BH400 + CDV-A + KRC

No need of active carbon filter? **Use a model with one connection to the outside** (for exemple with one CDV-A box).

Flammable cabinets

Corrosive cabinets

Toxic cabinets and multirisk

Pesticide range

Fume hoods, filtering cabinets - Ventilation

Retention and Cans

Anti-fire equipments and Files cabinets

Showers and first-aid equipments

The manufacturer keeps the right to modify technical characteristics without notice. 12/2013

# RANGE H

NF X 15-211 class 2



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## STANDARD EQUIPMENTS

### TIMER



The standard timer supplied with your hood indicates you, all the time, the total use duration of your hood. After programming, every 60 hours, a sound alarm invites you to check the saturation of the active coal filter.

### AIR VELOMETER



According to the French standard NF X 15-211, your hood is supplied with an air velometer. It allows you to check permanently the velocity of the air in facade and verify that the fume hood works in depression guaranteeing the flow of vapours through the filter.

### SAMPLING OUTLET



A front sampling outlet gives you the opportunity to check quickly and in a reliable way the saturation level of your active charcoal filter, thanks to the manual pump and reactive tubes.

### ABSORBED PRODUCTS BOOKLET



Following the standard NF X 15-211, your hood is delivered with a CD-Rom information guide regarding the absorption capacity of the active coal filter in relation with various chemicals.

### PROTECTIVE CAPS



All of our fume hoods are equipped with protective caps allowing to easily insert power cable supplies or gas for instance.

### RETENTION TANK



A retention tank is placed under each work-top being part of the fume hood. In case of leak or of accidental reversals, treated liquids are retained. To clean it, you just need to lift the work-top and use an "absorbent".

### TRANSPARENT WALLS



Our fume hoods are delivered with transparent walls on every face offering you a light work surface. Suitable for exhibitions.

### H.P.L. WORK-TOP



A work-top is supplied with every fume hood. Manufactured in H.P.L., it offers an excellent resistance to chemical attacks. A tempered glass work top is optional.

## OPTIONAL EQUIPMENTS

### labopur® TROLLEY



For a better mobility or to clear your draining board you can put your hood on a trolley. It is equipped with a removable shelf. This solution allows you to accommodate your laboratory in more practical way, thus increasing your efficiency.

### labopur® TABLE/TROLLEY CABINET



With the table/trolley cabinet you can store your chemicals immediately under your ductless fume hood. Then, you use and store your chemicals in the same place.

### TEMPERED GLASS WORK-TOP



Willing to treat extremely aggressive products? Choose a tempered glass work-top instead of a H.P.L. top (in standard within the LABOPUR hoods).

### FILTERALARM



The optional Filteralarm gives you the opportunity, thanks to an electronic device, to measure the air velocity and so, allows and warns you in case the filter sealing or any disfunction of the air stream with a sound alarm.

### MANUAL PUMP AND REACTIVE TUBES



TAKE CARE OF YOUR HEALTH ! Check your active coal filter saturation thanks to the manual pump and reactive tubes. We offer you a wide range of reactive tubes depending on your products used.

### LIGHTING



We offer you a lighting setting within your hood to enlighten your working area. It's all for your comfort.

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## Labopur® TABLE / TROLLEY CABINET

### TABLE/TROLLEY CABINET ►

- Made of steel 15/10<sup>th</sup>; White epoxy paint RAL 9010.
- 1 adjustable shelf.
- 1 removable base trough on the bottom.
- Self closing wing doors with handles and locks.
- Large warning labels.
- 4 swivel table rollers (2 with jaming system).

Reference	Dimensions H* x W x D (mm)	Weight (kg)
TA20	Ext. 860 x 610 x 620	32
	Int. 735 x 600 x 420	
TA34	Ext. 860 x 820 x 620	43
	Int. 735 x 795 x 420	
TA50	Ext. 860 x 905 x 745	54
	Int. 735 x 895 x 545	
TA135	Ext. 860 x 1005 x 740	61
	Int. 735 x 995 x 540	

\* Height without rollers: 800 mm.



▲ TA20

### ◀ TROLLEY

- Made of steel 15/10<sup>th</sup>
- White epoxy paint RAL 9010.
- 1 adjustable shelf (the depth of shelf is equal to ¾ of the depth of trolley).
- 4 swivel table rollers (2 with jaming system).

Reference	Dimensions H* x W x D (mm)	Weight (kg)
TR20	860 x 610 x 620	28
TR34	860 x 820 x 620	37
TR50	860 x 905 x 745	46
TR135	860 x 1005 x 740	51
TR235	860 x 1305 x 740	65
TR335	860 x 1600 x 740	78

\* Height without rollers: 800 mm.



▲ TR34

### TUBULAR TABLE/TROLLEY ►

- Made of steel 15/10<sup>th</sup>; White epoxy paint RAL 9010.
- Available with feet or with 4 swivel table rollers (2 with jaming system).

Reference	Type	Dimensions H* x W x D (mm)	Weight (kg)
TTF20	Sur pieds	860x670x680	9
TTR20	Sur roulettes		10
TTR34	Sur pieds	860x865x680	12
TTR34	Sur roulettes		13
TTF50	Sur pieds	860x965x805	15
TTR50	Sur roulettes		16
TTF135	Sur pieds	860x1065x800	17
TTR135	Sur roulettes		18
TTF235	Sur pieds	860x1365x800	22
TTR235	Sur roulettes		23

\* Height without rollers: 800 mm.



▲ TTR34

Flammable cabinets

Corrosive cabinets

Toxic cabinets and multirisk

Pesticide range

Fume hoods, filtering cabinets - Ventilation

Retention and Cans

Anti-fire equipments and Files cabinets

Showers and first-aid equipments

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**RANGE H**

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# ACTIVE CHARCOAL FILTERS AND HEPA H14 FILTER

## ACTIVE CHARCOAL FILTERS

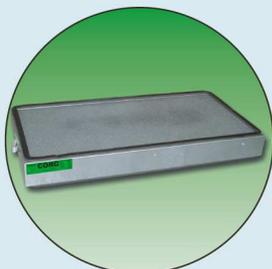


ORG200

Our filters are made with the best active charcoal. In order to offer the best guarantees, the quality of filters absorption was tested and approved by an independent laboratory. Every active charcoal filter is provided with a double anti-dust filter to insure an optimal filtration quality. Your health is protected. We offer you 3 filter types: one dedicated to organic vapors, one "Universal" for corrosive and organic vapors and one for formaldehyde vapors.

We offer 3 standard filters:

- typ ORG for organic vapors,
- typ CORG for corrosive and organic vapors (also called universal),
- typ FOR for formaldehyde vapors

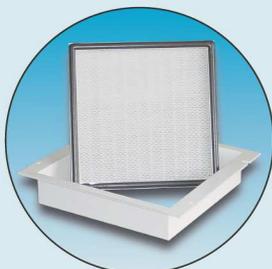


CORG201

CORG filter absorbs a large majority of commonly used chemicals : organic and inorganic acids, solvents and organics. This filter can be used in most cases.

We also offer **specialized and impregnated filters**, for exemple, for manipulation of specific chemicals. If you need further information please do not hesitate to contact-us.

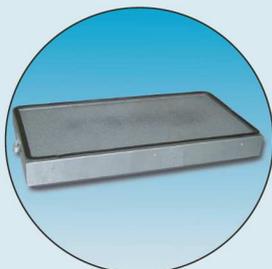
## HEPA H14 FILTER AND HEPA FILTER FRAME



SH200 + HEP200

When handling chemical powders, you have to use a standard particulate filter called HEPA. To guarantee the highest filtration efficiency, we choose a HEPA filter type H14 approved to the NF EN 1822 standards. In order to receive a HEPA filter, your ductless fume hood must be fitted with a dedicated frame type SH.

Your powder filter may need to be complemented by an additional active coal filter to provide you the best security and efficiency.



CAR200

If you want to use your ductless fume hood for powders only, a specific kit should be taken. For further information, please refer to the paragraph "Kit for using ductless fume hoods without active charcoal filter".

**N.B. : We deliver ductless fume hood only with either an activated carbon or a connecting kit for use without activated carbon filter (CAR).**

# ACTIVE COAL FILTERS SELECTION GUIDE

	Kind of filter	Filter for vapors	Reference from 2011	For	Reference before 2011		
<b>Fume Hoods</b>							
	 H 70 x W 390 x D 390 (mm)	Organic	ORG50	Range H Fume hoods : H60	-		
		Polyvalent <sup>(1)</sup>	CORG51		-		
		Formaldehyde	FOR50		-		
		Ammonia	AMM50		-		
	 H 70 x W 585 x D 380 (mm)	Organic	ORG200	Range H Fume hoods : H200, H201 H210, H211 PMSF200	ORG200		
		Corrosive	CORG201		COR200		
		Polyvalent <sup>(1)</sup>	CORG201		CORG201		
		Formaldehyde	FOR200		-		
		Ammonia	AMM200		-		
	 H 70 x W 730 x D 380 (mm)	Organic	ORG300 ORG400 ORG1300 ORG2300	Range H Fume hoods : H300, H301, H310, H311, H400, H401, H410, H411, H1300, H1301, H1310, H1311, H2300, H2301, H2310, H2311, PMSF400, PMSF1300, PMSF2300	ORG300 ORG400 ORG1300 ORG2300		
		Corrosive	CORG301 CORG401 CORG1301 CORG2301		COR300 COR400 COR1300 COR2300		
		Polyvalent <sup>(1)</sup>	CORG301 CORG401 CORG1301 CORG2301		CORG301 CORG401 CORG1301 CORG2301		
		Formaldehyde	FOR300 FOR400 FOR1300 FOR2300		- - - -		
		Ammonia	AMM300 AMM400 AMM1300 AMM2300		- - - -		
	 (2x) H 70 x W 585 x D 380 (mm)	Organic	ORG500 ORG1500 ORG2500 ORG3500	Range H Fume hoods : H500, H501, H510, H511, H1500, H1501, H1510, H1511, H2500, H2501, H2510, H2511, H3500, H3501, H3510, H3511, PMSF1500	ORG500 ORG1500 ORG2500 ORG3500		
		Corrosive	CORG501 CORG1501 CORG2501 CORG3501		COR500 COR1500 COR2500 COR3500		
		Polyvalent <sup>(1)</sup>	CORG501 CORG1501 CORG2501 CORG3501		CORG501 CORG1501 CORG2501 CORG3501		
		Formaldehyde	FOR500 FOR1500 FOR2500 FOR3500		- - - -		
		Ammonia	AMM500 AMM1500 AMM2500 AMM3500		- - - -		
	 H 100 x W 565 x D 405 (mm)	Organic	ORG203	Compliant with MF3-AS	ORG203		
		Corrosive	CORG203	Compliant with MF3-BE	CORG203		
		Polyvalent <sup>(1)</sup>	CORG203	Compliant with MF3-F	-		
		Formaldehyde	FOR203	Compliant with MF3-K	-		
	 H 100 x W 755 x D 405 (mm)	Organic	ORG303	Compliant with MF4-AS	ORG303		
		Corrosive	CORG303	Compliant with MF4-BE	CORG303		
		Polyvalent <sup>(1)</sup>	CORG303	Compliant with MF4-F	-		
		Formaldehyde	FOR303	Compliant with MF4-K	-		
		Ammonia	AMM303				
		Specific, contact-us.	Don't forget, we are able to provide specialised filters for specific applications for fume hoods, filtering ventilation cabinets, filtration boxes... in standard manufacturing and in specific manufacturing, contact-us for more information.				

<sup>(1)</sup> organic + corrosive. CORG polyvalent active coal filters can adsorb the most common chemical products used: organic and inorganic acids, organic compounds or solvents.

The manufacturer keeps the right to modify technical characteristics without notice. 12/2013

Flammable cabinets

Corrosive cabinets

Toxic cabinets and multirisk

Pesticide range

Fume hoods, filtering cabinets - Ventilation

Retention and Cans

Anti-fire equipments and Files cabinets

Showers and first-aid equipments

**RANGE H**

**NF** X 15-211 class 2



# Labopur® DUCTLESS FUME HOOD SELECTION GUIDE

Step 1	Step 2	Step 3		You order the following article				Model equipped (if available)	
Choose your ductless fume hood	Do you want a base trough and HPL work top?	You manipulate	Ductless fume hood model	Filters					
				Particulate filter HEPA H14 model	Active coal filter model	Must have accessories			
Explanation made on our H200	YES	Liquids	Organics	H200	-	ORG200	-	H204	
			Corrosives and/or Organics	H200	-	CORG201 <sup>(1)</sup>	-	H205	
			Formaldehyde	H200	-	FOR200	-	H203	
		Powders		H201	HEP200	CAR200	SH200	H206	
		Powders + Liquids	Organics	H201	HEP200	ORG200	SH200	H209	
			Corrosives and/or Organics	H201	HEP200	CORG201 <sup>(1)</sup>	SH200	H207	
			Formaldehyde	H201	HEP200	FOR200	SH200	H208	
		NO	Liquids	Organics	H210	-	ORG200	-	-
				Corrosives and/or Organics	H210	-	CORG201 <sup>(1)</sup>	-	-
	Formaldehyde			H210	-	FOR200	-	-	
	Powders		H211	HEP200	CAR200	SH200	-		
	Powders + Liquids		Organics	H211	HEP200	ORG200	SH200	-	
			Corrosives and/or Organics	H211	HEP200	CORG201 <sup>(1)</sup>	SH200	-	
			Formaldehyde	H211	HEP200	FOR200	SH200	-	

**N.B.:** If you take a ductless fume hood **with** a HEPA H14 filter but **without** an active coal filter you must take a "Kit for using without active coal filter" model CAR with a "H14 Hepa filter frame" model SH.

<sup>(1)</sup> The latest generation CORG filter absorbs a large majority of chemicals commonly used in laboratories: organic and inorganic, solvents and organic.

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# DUCTLESS FUME HOOD AND STORAGE CABINET WITH RECIRCULATING AIR: PMSF

Use and store your chemicals in the same place

The storage cabinet is connected to the fume hood in order to extract and purify the fumes from both items. Thus, the vapors of the cabinet and the fume hood are purified while being pulled through the active charcoal filter, then rejected into the atmosphere.

The PMSF Workstation includes:

## 1. A DUCTLESS FUME HOOD

tested and approved by an independent laboratory according to the new NF X 15-211 - may 2009 - Class II norm

Concerning the technical characteristics of our ductless fume hood, please consult our labopur catalogue.

## 2. AN ACTIVE COAL FILTER "CORG" (1)

Our new "Universal" charcoal filter

The latest generation "CORG" filter absorbs a large majority of chemicals commonly used in laboratories: organic and inorganic acids, solvents and organics. This filter is perfectly mainstream and covers the major chemicals.



PMSF400 : H400 + TA34 + CORG401 + KRPMFSF



PMSF200 :  
H200  
+ TA20  
+ CORG201  
+ KRPMFSF

## 3. A TABLE/TROLLEY STORAGE CABINET according to the regulations

- Built in steel 15/10<sup>th</sup>.
- White epoxy paint RAL 9010.
- Self closing wing doors with handles and locks.
- Large warning labels in compliance with ISO 3864, NF X08.003 norms and the European directive 92/58/CEE.
- 1 adjustable shelf.
- 1 removable retention tank on the bottom.
- 4 swivel castors (2 with locking).
- High and low vents (high outlet connected to the fume hood).

We remind that we can propose specific charcoal filters depending on your applications.

Reference	Ductless Fume Hood	Table/Trolley Storage Cabinet	Connecting kit	Active coal filters
PMSF200	= H200	+ TA20	+ KRPMFSF	+ CORG201
PMSF300	= H300	+ TA34	+ KRPMFSF	+ CORG301
PMSF400	= H400	+ TA34	+ KRPMFSF	+ CORG401
PMSF500	= H500	+ TA50	+ KRPMFSF	+ CORG501
PMSF1300	= H1300	+ TA135	+ KRPMFSF	+ CORG1301
PMSF1500	= H1500	+ TA135	+ KRPMFSF	+ CORG1501

(1) The latest generation "CORG" filter absorbs a large majority of chemicals commonly used in laboratories : organic and inorganic acids, solvents and organics.

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## Labopur®



Model <b>with</b> base trough and H.P.L. work-top compatible with active carbon filter		H200	H300	H400	
Model <b>without</b> base trough and H.P.L. work-top compatible with active carbon filter		H210	H310	H410	
<b>HEPA</b> H14 ready	Model « HEPA H14 ready » <b>with</b> base trough and H.P.L. work-top and working with an H14 Hepa filter and / or active carbon filter <sup>(2)</sup>	H201	H301	H401	
<b>HEPA</b> H14 ready	Model « HEPA H14 ready » <b>without</b> base trough and H.P.L. work-top and working with an H14 Hepa filter and / or active carbon filter <sup>(2)</sup>	H211	H311	H411	
Model <b>with</b> base trough and H.P.L. work-top for connection to the outside (with for exemple a CDV-A) <sup>(6)</sup>		BH200	BH300	BH400	
External dimensions (mm)		H	950/800 <sup>(5)</sup>	700/550 <sup>(5)</sup>	950/800 <sup>(5)</sup>
		W	615	800	800
		D	620	620	620
Internal dimensions (mm)		H	755/625 <sup>(4)</sup>	505/375 <sup>(4)</sup>	755/625 <sup>(4)</sup>
		W	575	760	760
		D	575/475	570/425	575/475
Internal volume of enclosure (m <sup>3</sup> )			0,21	0,18	0,28
Average face velocity (m/s)			0,5	0,5	0,5
Nominal voltage (volts)			220-240	220-240	220-240
Power input (watts)			47	47	47
Amps absorbed (A)			0,2	0,2	0,2
Sound level dB(A) (without air flow)			49	49	49
Flow (m <sup>3</sup> /h)			202	202	202
Weight (kg)			34	33	44

## Standard equipments

Protective caps		4	4	4
Air velometer		included	included	included
Absorbed products electronic booklet		included	included	included
Timer		included	included	included
Sampling outlet		included	included	included
Transparent outlet		included	included	included
Base trough <sup>(1)</sup>		included	included	included
Melaline-based wood work-top <sup>(1)</sup>		included	included	included

## Optional equipments

Tempered glass work-top		PL20	PL34	PL34
Trolley with one adjustable shelf		TR20	TR34	TR34
Height with castors: 860 mm; Height without castors: 800 mm				
Cabinet/trolley with shelf and removable base trough		TA20	TA34	TA34
Height with castors: 860 mm; Height without castors: 800 mm				
Lighting		LU20	LU34	LU34
Manual pump		PMAF	PMAF	PMAF
Reactive tubes		contact-us	contact-us	contact-us
Filtralarm		SFA2	SFA2	SFA2
<b>HEPA</b> H14 ready	H14 Hepa filter frame <sup>(3)</sup>	SH200 (4 kg)	SH300 (4 kg)	SH400 (4 kg)
	H14 Hepa filter for powder	HEP200 (1,6 kg)	HEP300 (1,6 kg)	HEP400 (1,6 kg)
	Active carbon filter for organic vapors	ORG200 (11 kg)	ORG300 (16 kg)	ORG400 (16 kg)
	« Universal » active carbon filter for organic and corrosive vapors	CORG201 (11,5 kg)	CORG301 (15 kg)	CORG401 (15 kg)
	Active carbon filter for formaldehyde vapors	FOR200 (112kg)	FOR300 (16 kg)	FOR400 (16 kg)
	Kit for using with one H14 Hepa filter but without active carbon filter	CAR200 (2kg)	CAR300 (3 kg)	CAR400 (3 kg)
<b>PMSF</b>	Ductless fume hood for organic and corrosive vapors	PMSF200 (78 kg)	PMSF300 (91 kg)	PMSF400 (102 kg)

<sup>(1)</sup> Items that can not be used with models without base trough and H.P.L. work-top.

<sup>(2)</sup> If you want to use an H14 Hepa filter for powder you have to choose an H14 Hepa filter (HEP) and the frame (SH). If you don't want to use activated carbon filter, you have to select a connecting kit for use without activated carbon, typ CAR.

Please remember that for each specific application we can provide filters.

# RANGE H

## NF X 15-211 classe 2



H500	H1300	H1500	H2300	H2500	H3500
H510	H1310	H1510	H2310	H2510	H3510
H501	H1301	H1501	H2301	H2501	H3501
H511	H1311	H1511	H2311	H2511	H3511
BH500	BH1300	BH1500	BH2300	BH2500	BH3500
1170/1020 <sup>(5)</sup>					
900	1000	1000	1300	1300	1600
740	740	740	740	740	740
975/845 <sup>(4)</sup>					
860	960	960	1260	1260	1560
695/595	695/595	695/595	695/595	695/595	695/595
0,52	0,59	0,59	0,77	0,77	0,95
0,5	0,5	0,5	0,5	0,5	0,5
220-240	220-240	220-240	220-240	220-240	220-240
40	47	40	47	40	40
0,2	0,2	0,2	0,2	0,2	0,2
2x 43	49	2x 43	49	2x 43	2x 43
2x 86	202	2x 86	202	2x 86	2x 86
55	60	61	78	79	97

4	4	4	4	4	4
included	included	included	included	included	included
included	included	included	included	included	included
included	included	included	included	included	included
included	included	included	included	included	included
included	included	included	included	included	included
included	included	included	included	included	included
included	included	included	included	included	included

PL50	PL135	PL135	PL235	PL235	PL335
TR50	TR135	TR135	TR235	TR235	TR335
TA50	TA135	TA135	-	-	-
LU50	LU135	LU135	LU235	LU235	LU335
PMAF	PMAF	PMAF	PMAF	PMAF	PMAF
contact-us	contact-us	contact-us	contact-us	contact-us	contact-us
SFA2	SFA2	SFA2	SFA2	SFA2	SFA2
SH500 (4 kg)	SH1300 (4 kg)	SH1500 (4 kg)	SH2300 (4 kg)	SH2500 (4 kg)	SH3500 (4 kg)
HEP500 (1,6 kg)	HEP1300 (1,6 kg)	HEP1500 (1,6 kg)	HEP2300 (1,6 kg)	HEP2500 (1,6 kg)	HEP3500 (1,6 kg)
ORG500 (22 kg)	ORG1300 (16 kg)	ORG1500 (22 kg)	ORG2300 (16 kg)	ORG2500 (22 kg)	ORG3500 (22 kg)
CORG501 (23 kg)	CORG1301 (15 kg)	CORG1501 (23 kg)	CORG2301 (15 kg)	CORG2501 (23 kg)	CORG3501 (23 kg)
FOR500 (24 kg)	FOR1300 (16 kg)	FOR1500 (24 kg)	FOR2300 (16 kg)	FOR2500 (24 kg)	FOR3500 (24 kg)
CAR500 (4kg)	CAR1300 (3 kg)	CAR1500 (4 kg)	CAR2300 (3 kg)	CAR2500 (4 kg)	CAR3500 (4 kg)
PMSF500 (132 kg)	PMSF1300 (136 kg)	PMSF1500 (145 kg)	-	-	-

<sup>(3)</sup> Element that can only be fixed on the «HEPA ready» and has to be completed with a HEPA H14 filter powder (HEP) and eventually a kit for use without an activated carbon filter (typ CAR).

<sup>(4)</sup> Internal High for model «HEPA ready» with the H14 Hepa filter frame (typ SH).

<sup>(5)</sup> External High for model type BHxxx with connection to the outside.

<sup>(6)</sup> Models with one connection to the outside are not in compliance with the NF X 15-211 norm.

The manufacturer keeps the right to modify technical characteristics without notice. 01/2014

Flammable cabinets

Corrosive cabinets

Toxic cabinets and multirisk

Pesticide range

Fume hoods, filtering cabinets - Ventilation

Retention and Cans

Anti-fire equipments and Files cabinets

Showers and first-aid equipments



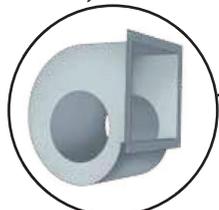
**RANGE H**

**EN 12469 ISO 14644-1 class 3**

# LAMINAR FLOW CLEAN BENCHES, HORIZONTAL AND VERTICAL



Control system



High performance blower



ULPA Filter



Work top in stainless steel



▲ FLH1200 + THF1200 with castors (option)

▲ FLV1200 + TVF1200 with castors (option)

## INTRODUCTION

Laminar flow clean benches are designed to prevent contamination of semiconductor wafers, biological samples, or any particle sensitive device. Air is drawn through a ULPA filter and blown in a very smooth, laminar flow towards the user. Such hoods exist in both horizontal and vertical configurations.

Laminar Fumehood are equipped with a germicidal UV lamp to sterilize the workplace when do not work on it. But you must switch off this light while you are working, as it will burn your skin and generate cataracts to your eyes. Nothing can be stored in the fumehood to allow the sterilization

## CONFORMITY

- Cabinet performance: EN 12469 (type-tested for cross contamination and product protection using the microbiological testing methods adapted from this biological safety cabinet standard) and IESTRP-CC002 norms.

- Air Quality: ISO 14644-1 Class 3 norm.

- Filtration: EN 1822 (H14), IEST-RP-CC001, IEST-RP-CC007 and IESTRP-CC034 norms.

Electrical safety: IEC 61010-1 and EN 61010-1 norms.

## ADVANTAGES

- ULPA filters tested to a typical efficiency of >99.999% for 0.1 to 0.3 micron particles are superior to HEPA filters.
- Stainless steel work surface with a curved front edge is designed for maximum operator comfort.
- Lighting provides excellent illumination of the work zone and reduces operator fatigue.
- All surfaces painted with an antimicrobial coating.

## TECHNICAL DATA

- Built in galvanized steel with anti-bacteria epoxy paint.
- Work top in 304 stainless steel.
- Anti-UV tempered glass side panels.
- Control system to switch on/off light and to control the airflow.

## ADDITIONAL OPTIONS - Contact-us

- Germicidal UV lamp and transparent front cover (LUH/LUV).
- Electrica outlet (PEH/PEV).
- Petcok for air, gas and vaccum (ROH/ROV).
- Tubular table with castors.

Flammable cabinets

Corrosive cabinets

Toxic cabinets and multirisk

Pesticide range

Fume hoods, filtering cabinets - Ventilation

Retention and Cans

Anti-fire equipments and Files cabinets

Showers and first-aid equipments

The manufacturer keeps the right to modify technical characteristics without notice. 01/2014

# RANGE H

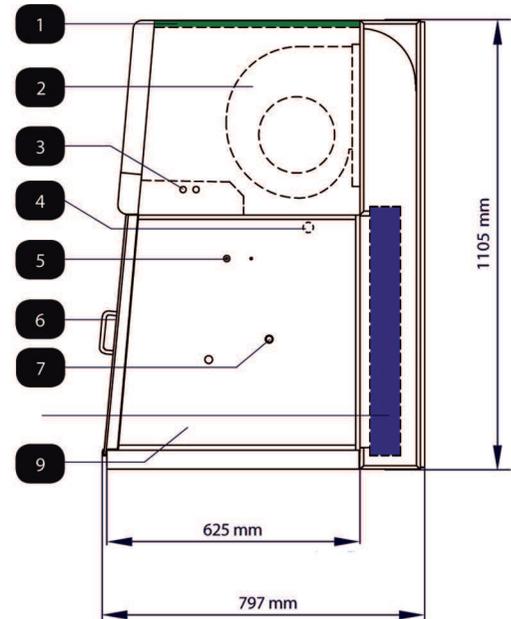
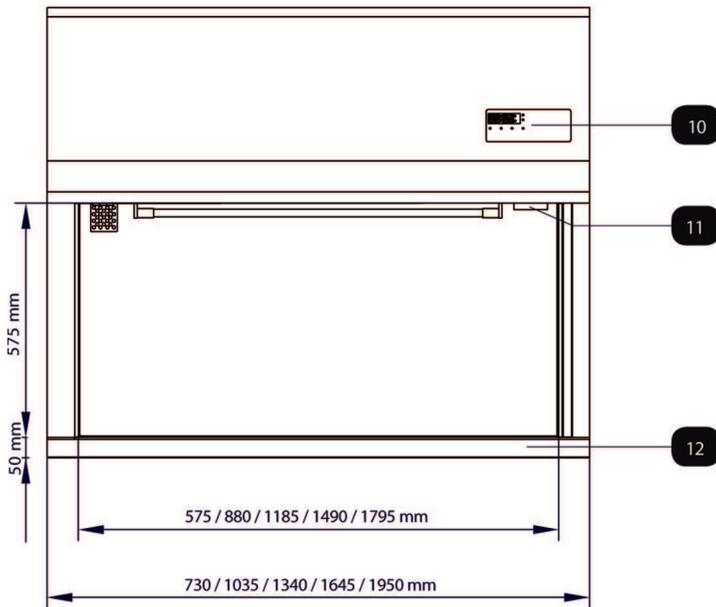
EN 12469 ISO 14644-1 class 3

## LAMINAR FLOW CLEAN BENCHES, HORIZONTAL

### OPERATING PROCESS

Air is taken in from above the cabinet and passed through a ULPA filter. Air is then going through the main chamber of the clean bench. In a horizontal laminar (unidirectional) air stream and is exhausted through

the front opening of the cabinet. In horizontal laminar flow clean benches there is a slightly reduced level of turbulence compared to vertical flow clean bench due to the airflow not striking the work surface.



- |                                    |   |   |
|------------------------------------|---|---|
| 1. Pre-filter                      | 6. Front cover (option)   | 10. Control system                                    |
| 2. Blower                          | 7. Service fixture Retrofit Kit provision (2 penetrations on each side) | 11. Standard electrical outlet Retrofit Kit provision |
| 3. Fluorescent lamp                | 8. ULPA filter  | 12. Stainless steel work top                          |
| 4. UV light Retrofit Kit provision | 9. Tempered glass side panels   |   |
| 5. IV bar Retrofit Kit provision   |   |   |

Reference		FLH600	FLH900	FLH1200	FLH1500	FLH1800
External dimensions	H	1105	1105	1105	1105	1175
	W	730	1035	1340	1645	1950
	D	797	797	797	797	804
Internal dimensions	H	575	575	575	575	575
	W	575	880	1185	1490	1795
	D	625	625	625	625	632
Internal volume of enclosure (m <sup>3</sup> )		0,36	0,55	0,74	0,94	1,13
Average velocity (m/s)		0,45	0,45	0,45	0,45	0,45
Nominal voltage (volts)		220-240	220-240	220-240	220-240	220-240
Power input (watts)		203	228	312	380	636
Amps absorbed (Ampères)		2	2	2	2	5
Sound level dB(A) (without air flow)		54	55	57	59	60
Flow (m <sup>3</sup> )		530	815	1100	1380	1670
Weight (kg)		100	125	150	160	200
Fluorescent lamp intensity (Lux)		1530	1490	680	1390	1510

### Standard equipments

	FLH600	FLH900	FLH1200	FLH1500	FLH1800
Fluorescent lamp	included	included	included	included	included
Control system	included	included	included	included	included
ULPA filter	included	included	included	included	included

### Optionnal equipments

	ULH600	ULH900	ULH1200	ULH1500	ULH1800
ULPA filter replacement	ULH600	ULH900	ULH1200	ULH1500	ULH1800
Tubular table ( hauteur : 860 mm)	THF600	THF900	THF1200	THF1500	THF1800

The manufacturer keeps the right to modify technical characteristics without notice. 01/2014

# RANGE H

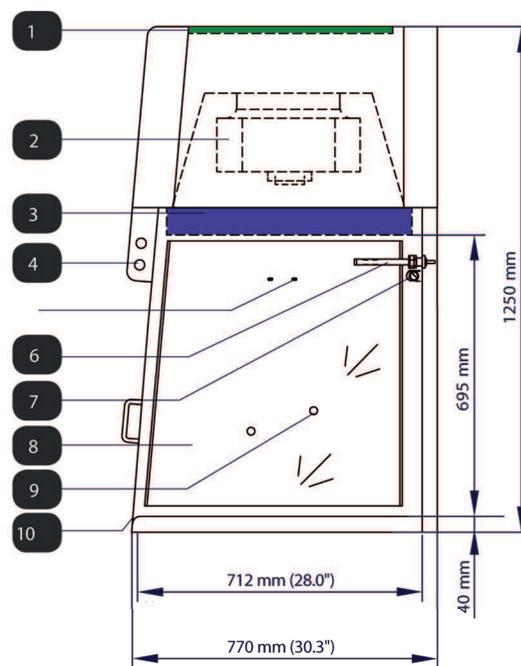
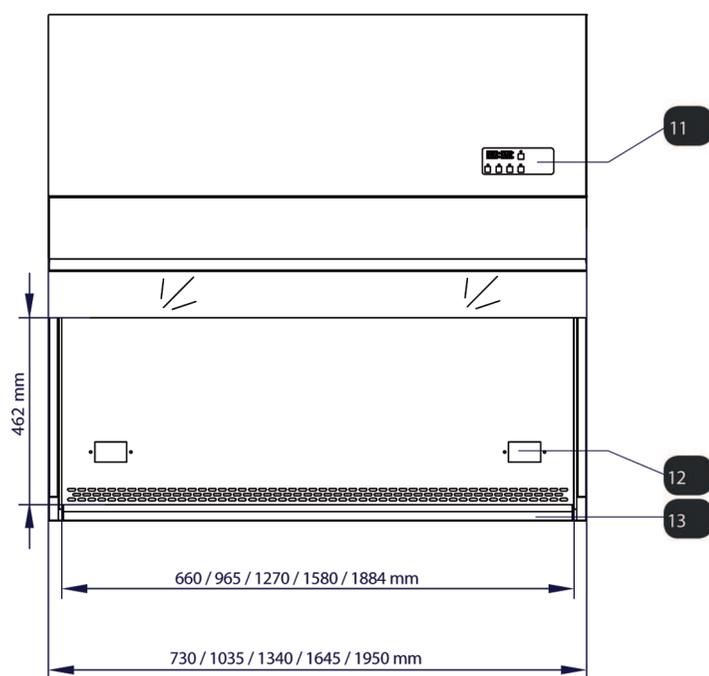
EN 12469 ISO 14644-1 class 3

## LAMINAR FLOW CLEAN BENCHES, VERTICAL

### OPERATING PROCESS

Air is taken in from above the cabinet and passed through a ULPA filter. Air is then going through the main chamber of the clean bench. In a vertical laminar (unidirectional) air stream and is exhausted

through the front opening of the cabinet. Vertical laminar flow clean benches generate less turbulence around large pieces of equipments as compared to horizontal laminar flow clean benches.



- |                                  |   |  |
|----------------------------------|---|--|
| 1. Pre-filter                    | 6. Airflow & temprature sensor  | 10. Front cover (option)                     |
| 2. Blower                        | 7. UV light Retrofit Kit provision                                      | 11. Control system                           |
| 3. ULPA filter                   | 8. Tempered glass si de panels  | 12. Electrical outlet Retrofit Kit provision |
| 4. Fluorescent lamp              | 9. Service fixture Retrofit Kit provision (2 penetrations on each side) | 13. Stainless steel work top                 |
| 5. IV bar Retrofit Kit provision |   |  |

Reference		FLV600	FLV900	FLV1200	FLV1500	FLV1800
External dimensions	H	1250	1250	1250	1250	1250
	W	730	1035	1340	1645	1950
	D	770	770	770	770	770
Internal dimensions	H	695	695	695	695	695
	W	660	965	1270	1580	1884
	D	700	712	712	712	712
Internal volume of enclosure (m <sup>3</sup> )		0,39	0,59	0,79	0,98	1,18
Average velocity (m/s)		0,45	0,45	0,45	0,45	0,45
Nominal voltage (volts)		220-240	220-240	220-240	220-240	220-240
Power input (watts)		280	294	333	340	544
Amps absorbed (Ampères)		2	2	2	2	4
Sound level dB(A) (without air flow)		55,5	55,5	56,5	57	57
Flow (m <sup>3</sup> )		603	903	1204	1506	1806
Weight (kg)		106	127	152	171	201
Fluorescent lamp intensity (Lux)		1590	970	1110	890	980

### Standard equipments

	FLV600	FLV900	FLV1200	FLV1500	FLV1800
Fluorescent lamp	included	included	included	included	included
Control system	included	included	included	included	included
ULPA filter	included	included	included	included	included

### Optionnal equipments

	FLV600	FLV900	FLV1200	FLV1500	FLV1800
ULPA filter replacement	ULV600	ULV900	ULV1200	ULV1500	ULV1800
Tubular table ( hauteur : 860 mm)	TVF600	TVF900	TVF1200	TVF1500	TVF1800

The manufacturer keeps the right to modify technical characteristics without notice. 01/2014

Flammable cabinets

Corrosive cabinets

Toxic cabinets and multirisk

Pesticide range

Fume hoods, filtering cabinets - Ventilation

Retention and Cans

Anti-fire equipments and Files cabinets

Showers and first-aid equipments

**RANGE H****EN 12469 ISO 14644-1 Class 3****BIOLOGICAL SAFETY CABINET - CLASS 2****USE AREA**

Through the manipulation of micro-organisms or products of pathogens, it should implement a protection of the operator and the environment. Ambient air is drawn directly through perforations located towards the work plan. It does not contaminate the clean room air handling. He then joined the latter contaminated air. These combined air are then returned to about 32% outward job security, to advance through a HEPA filter to protect the operator and 68% to the working chamber also passing through a HEPA filter to protect the elements manipulated. The air inflow and downflow combined and form an effective barrier preventing contaminated air from entering the working chamber but also contaminated air out of the chamber.

**CONFORMITY**

- Performance security post: EN 12469.
- Air Quality: ISO 14644-1 Class 3.
- Filtration: EN 1822 (H14), IEST-RP-CC034, IEST-RP-CC007 and IEST-RP-CC001 norms.
- Electrical Safety: IEC 61010-1 and EN 61010-1 norms.

**ADVANTAGES**

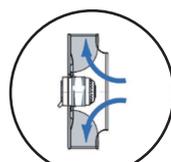
- HEPA filter with a filtration efficiency of 99.999% of particles between 0.1 and 0.3 microns by providing increased protection.
- Plan of multi-piece stainless steel work allows access to simplify the work surface to be decontaminated.
- Large opening of the protective glass improving access to the area of handling without compromising safety.
- UV absorbing tempered glass (5mm), colorless and transparent.

**TECHNICAL SPECIFICATIONS**

- Built in galvanized steel with antimicrobial epoxy paint.
- Worktop in stainless steel.
- Walls transparent tempered glass.
- Control panel including the speed of air flow.

**ADDITIONAL OPTIONS - Contact us**

- UV germicidal lamp • Electrical outlets • Faucet small diameter for water, gas or vacuum tube • Tabular table.



High performance fan



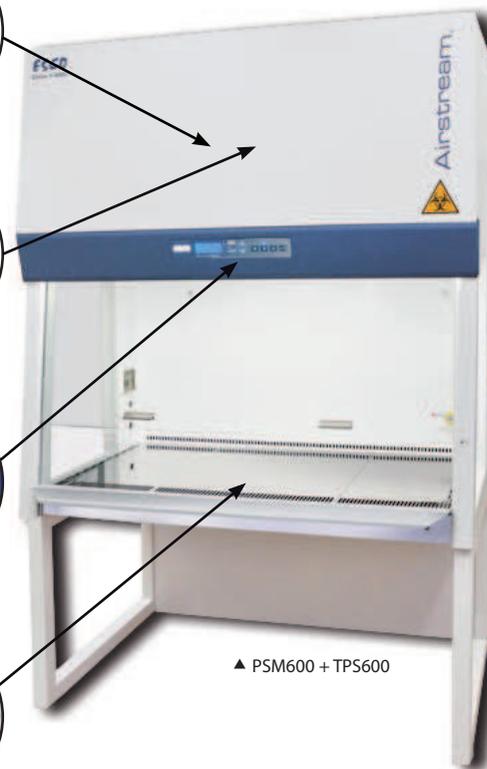
HEPA Filter



Control system



Worktop in stainless steel



▲ PSM600 + TPS600

Reference		PSM600	PSM900	PSM1200	PSM1500	PSM1800
External dimension	H	1400	1400	1400	1400	1400
	W	730	1035	1340	1645	1950
	D	810	810	810	810	810
Internal dimension	H	660	660	660	660	660
	W	610	915	1220	1525	1830
	D	580	580	580	580	580
Internal volume of enclosure (m <sup>3</sup> )		0,27	0,42	0,56	0,71	0,86
Average velocity (m/s) - inflow / downflow		0,45 / 0,30	0,45 / 0,30	0,45 / 0,30	0,45 / 0,30	0,45 / 0,30
Nominal voltage (volts)		220-240	220-240	220-240	220-240	220-240
Power input (watts)		271	291	289	333	549
Amps absorbed (Ampères)		2	2	2	2	4
Sound level dB(A) (without air flow)		59	58	59	59	60
Air flow volume (m <sup>3</sup> ) - Inflow / Downflow / Exhaust		173 / 369 / 173	259 / 553 / 259	346 / 738 / 346	432 / 922 / 432	519 / 1107 / 519
Weight (kg)		116	173	230	288	346
Fluorescent lamp intensity (Lux)		859	1279	1404	1227	1384

**Standard equipments**

	PSM600	PSM900	PSM1200	PSM1500	PSM1800
Fluorescent lamp	included	included	included	included	included
Control system	included	included	included	included	included
HEPA filter	included	included	included	included	included

**Optionnal equipments**

	PSM600	PSM900	PSM1200	PSM1500	PSM1800
HEPA filter replacement	ULP600	ULP900	ULP1200	ULP1500	ULP1800
Tabular table ( hauteur : 860 mm)	THF600	THF900	THF1200	THF1500	THF1800