A ductless filtering fume hood is a fume hood equipped with a retains chemical vapors and provides total protection.

Why use a ductless filtering fume hood ?

Handling chemicals without proper protection may be hazardous.

The various risk factors are not always identified and the mid to long term dangers are often ignored (See table below)

- Poor knowledge about TLV / OEL* and their effects.
- Routine and lack of immediate danger.
- Acclimation to toxic odors.
- Presence of a chemical odor (olfactory threshold), possibly indicating that the TLV $/ OEL^*$ has already been exceeded.

s the inventor of the ductless filtering fume hood in 1968, erlab[®] has introduced a variety of products and services to ensure the safety of users in the lab. The phenomenon of filtration and the variation in the behavior of molecules within the filters is very complex. erlab® molecular filters have been the subject of extensive research and are, in part, based on military technology. They guarantee total operator protection. The reliability of the filters makes the exhausted air purer than the ambient air normally inhaled by the operator. The **captair**[®] filtering fume hoods meet the strictest standards for molecular filtration : the AFNOR NFX 15-211. ANSI/AIHA Z9.5 and CSA Z316.5 standards.

he reduction of chemical hazards within laboratories has become a prime concern in the last few decades. erlab® has instituted a set of means (products and services) to the benefit of user safety in the laboratory.

Ductless fume hoods provide protection for a wide range of applications, protect the environment and save valuable energy by recycling large quantities of purified air.

WITHOUT PROTECTION

Your health is in DANGER ! f you breathe small quantities of ordinary chemicals every day.

ple of TLV / OEL* concentration thresholds

| Products | TLV | Risks |
|-------------------|---------|---|
| Methanol | 200 ppm | Defective vision (blindness), headaches, skin irritation |
| Acetonitrile | 20 ppm | Suspicion of embryo toxicity, skin and eye irritation, |
| | | dizziness, intoxication. |
| Toluene | 50 ppm | Memory disorders, reduction in intellectual |
| | | performance, suspected carcinogen. |
| Pyridine | 5 ppm | Anorexia, nausea, headaches, asthenia, insomnia, nervousnes |
| Hydrochloric Acid | 5 ppm | Irritation, corneal ulcers, etc. + during reaction with formald |
| | | hyde, formation of a carcinogenic product (pulmonary) |
| Chloroform | 0,5 ppm | Suspected carcinogen |
| Formaldehyde | 0,3 ppm | Allergen, headaches, asthenia, |
| | | disturbance of the menstrual cycle. |

* TLV Threshold Limit Value / Occupational Exposure Limit – authorised 8h/day for a hazar

A unique R&D laboratory

For more than 40 years, the task of the R&D laboratory has been to place erlab® at the peak of filtering fume hood technology.

• A research mission

- Advances in research in the field of molecular filtration,
- Constant improvement of filter retention capacity
- Development of detection techniques for filter saturation,
- Selection and quality control monitoring of the raw material used for molecular filtration.
- A validation of applications with the esp[™] program
- The laboratory validates and certifies the intended chemical use within the fume hood before the sale and throughout the lifetime of the unit as the chemical handlings change.

Jerlab

• A vision of improving standards

carlair

Participation in international committees specializing in the creation of new standards relating to filtering fume hoods.



A multi-lingual sales department

An international presence

erlab[®] has created 8 companies established in Germany, China, Spain, France, Italy, Malaysia, United Kingdom and USA, which work in close collaboration with a network of more than 600 distributors established in 45 countries.

- Permanent technical and sales assistance to ensure your safety
- Proposals for technical solutions suitable to your requirements in less than 48 hours, On-site meetings,
- Telephone help-line for monitoring your equipment,
- A goal to educate
- erlab® keeps users informed regarding chemical risks and available means of protection : - More than 50 conferences each year,
- Presence at more than 30 international trade fairs.

Integrated production within our 10,000m² facility

• The erlab® facility possesses all the production tools to manufacture to our high quality standards : precision metalworking, anti-corrosion coating, preparation of synthetic glass elements and manufacturing of filters. For over 35 years, the men and women of erlab have contributed to the quality and the development of our products in order to meet our customer needs worldwide.

An accredited international network of asura® after-sales service technicians

• The asura® network installs your equipment and provides maintenance contracts for all models of filtering fume hoods and storage cabinets. asura® permanently guarantees complete safety in use, an optimal filter lifetime expectancy and replacement before saturation.

A team of specialists completely dedicated to user protection









Ask for our catalogue asura[®] maintenance



** **(esp**[™] and asura maintenance are erlab[®] Group services



Given the current status of carbon molecular filtration technology, ductless filtering fume hoods should have a specific usage framework, regardless of manufacturer.

By observing this usage framework , the user benefits from the many advantages offered by **captair®** filtering fume hoods :



- Energy-saving capability*,
- No installation costs.
- Environmental friendliness...

Nevertheless, the user must also be aware of the limits of this usage framework. Both by their nature and their quantity, certain noxious molecules cannot be trapped by activated carbon filters.

It is therefore vital - for operator safety - that the manufacturer is able to assess the handlings to be performed in the filtering fume hood before recommending the use of a specific unit.

For this reason, the evaluation criteria for the use of a ductless filtering fume hood must be examined by specialists. It is essential to assess the interactive behaviour of the molecules handled as well as the physico-chemical interactions with the active carbon filter.

This scientific investigation will precisely determine the filter lifetime, in particular, the ability of the filtering fume hood to fulfill its function in accordance with user requirements and the criteria of the safety stan-dards in force relating to filtration efficiency, such as the **AFNOR** NF X 15-211 standard.

Under these conditions, it is difficult to imagine that the person who sells a **captair**[®] ductless filtering fume hood could also be the person who recommends the most appropriate unit. The task of acceptance of the usage framework of the filtering fume hood must be impartial and thus entrusted to a competent professional who, as an E.S.P. agent, will favour interests linked to the protection independently of commercial interests.

Based on this hypothesis, erlab[®] has decided to create the Erlab Safety Program esp[™]. This program has the responsibility of certifying use and providing constant monitoring of the filtering fume hood with regards to the handlings performed throughout the filter lifetime of your captair[®].

Without **esp**^{*} a captair[®] is only a ductless fume hood

Go further with

the services offered by **vasura**

Commissioning and user training* (on quote). Control and periodic validation of your filtering fume hoods* (on quote).

*Service only available in selected areas dy shows that, in spite of average filter consumption the savings achieved by using a **captair**® are conside and the cost of its purchase is paid off more quickly

A long-lasting commitment by erlab[®] to the safety of the operator

A combination of 3 unique services is included in the purchase of each captair® filtering fume hood in order to ensure correct operation throughout its service life

aliPass

Certificate for

ТΜ

The MaliQuest[®]service

Determine the most appropriate filtering fume hood for total safety during your handlings

Assisted by an **E.S.P** agent, you complete the investigation questionnaire, which precisely describes your anticipated chemical handlings.

This questionnaire can also be found on www.erlab.com or on CD Rom.



Our validation laboratory specialists will recommend the appropriate filtering fume hood and filter type. Personalised advice and a precise solution within 48 hours.

An approval certificate is supplied providing a real commitment of the manufacturer to operator protection.

> The MaliGuard[™]service Reinforce your safety during on going applications

Erlab Safety Program

with constant monitoring of your filtering fume hood

Periodically (about every six months), the E.S.P agent will contact you to make sure that you have not changed your handlings and that the filter is still active. The E.S.P agent will show you how to perform step by step filter saturation tests and also the procedure for filter replacement.

During this contact, if the E.S.P agent finds that there is a change in chemical handlings, you will be asked to complete a new questionnaire (See Step 1). After review, a new certificate for use (to be placed on the front of the filtering fume hood) naming the approved chemicals will be sent to you to ensure that your chemical handlings are still performed within optimum safety conditions.

www.asurafilters.com

The MaliPass[™]service

Certify and secure the usage framework of your fume hood at installation

When you receive your captair® filtering fume hood, a usage certificate will give precise details on the chemicals to be used, the filter type and an estimation of its lifetime expectancy, for which your **captair**[®] filtering fume hood has been validated. This certificate is a permanent reminder to the user or the safety officer of the data relating to their protection.

> You will also find the contact details of the E.S.P agent who will be responsible for monitoring the application.



Captair Chem A range of filtering fume hoods for chemical handlings

The Technology

Filtration

As far as filtration efficiency is concerned, it is not enough to assert that a fume hood is compliant with a reference standard - it is essential to prove it by filtration capacity tests. **captair[®] toxicap, captair[®] filtair**, and **captair[®] filtairXL** fume hoods are in compliance with the AFNOR NF X 15-211 standard and have a certificate from , the LNE (National Test Laboratory) (available on request).

There are 2 types of adsorption for toxics : Physical adsorption or physisorption and chemical adsorption or chemisorption.

Physisorption brings into play weak forces known as « Van der Waals » forces. A gas may form a mono or multi-molecular layer on the surface of the adsorbent

Chemisorption has distinctly different characteristics :

The adsorption energy is twenty times greater than that of physisorption, showing that the forces exerted between the adsorbent and the adsorbate are comparable to those taking place in chemical bonds. These bodies are formed by dislocation of the adsorbed molecule, a superficial combination known as adsorption. To increase the forces which are exerted between the adsorbent and certain molecules, the adsorbent is impregnated. The specific surfaces of our molecular filters are the largest available: from 1200 to 1400m² per gram of adsorbent, giving a total surface exposed to molecules of 10,000,000m² per filter cartridge.

Containment is the ability of the filtering enclosure to contain the noxious vapors and direct them towards the filter while avoiding leakage from the

front shield. The **captair**[®] fume hood enclosures have been tested and certified by renowned international laboratories : LSTM at the University of Erlangen in Germany, and the Invent UK in the United Kingdom. These laboratories are recognized for their competence by the European Commission. The test reports are available upon request.

Structure

All **captair**[®] ductless filtering fume hoods are manufactured of an anti-corrosion metallic alloy protected by a thermo-hardened polymer coating (PE). The enclosure is made up of a 6-8 mm acrylic material of type M4, fire classification NFP.92.507, providing a high level of resistance to fire. € tested and marked.



Compliance with standards

captair[®] filtering fume hoods are in total compliance with the world's most stringent standard :

through 4 specific tests and concrete results

The AFNOR NFX 15 211 reference standard that guarantees total operator protection

Containment Filtration

The air face velocity must be between 0.4 and

0.6 m/s. The average air velocity

of each captair[®] fume hood is 100 fpm and each unit is equipped with an air flow meter which precisely displays the incoming face velocity of the air. This device makes it easy to determine whether the air flow is within the

standard guidelines.

of vapours Class I filtering encloauthorised sures guarantee the release : 0.1 ppm) highest level of protec-The **captair**[®] fume tion - they must not hoods have been tested and certified by of the TLV/OEL of the the LSTM for the product handled. For containment of vapors Class 2 enclosures the in the filtering enclofilter effluent must not be greater than 50% of the TLV/OEL.

erlab[®] supplies a more than 1% Other standards saturation of each.

Germany : DIN 12 927 / Canada : CSA Z316,5 UK : BS 7258 / USA : ANSI/AIHA Z9,5 2003

Official bublication for retention capacities.

Information

100

Spinsor,

Chemical Listing with each fume hood which documents over 700 common chemicals, their retention capacity within our carbon filters, and the method used to detect filter

filtair 633

captair[®] filtair XL

midcap 633

captair[®] filtair

captair[®] midcap

filtair XL 1044

captair[®] toxicap



toxicap 808

filtair XL 1046

Version A or B

filtair XL 1344

1315 m





Version A or B (see p 11)

Version A or B (see p 11)

Total operator protection - Instant set-up - Mobile -



Version A or B (see p 11)

captair filtair

For handling small to medium quantities of chemicals



Can be installed directly in your laboratory on a work bench or on an optional mobicap[™] rolling cart.

*Saves energy by recycling purified air rather than exhausting heated or cooled air within the laboratory.

Volume of air treated m³/h Average air face velocity m/s Internal volume of filtering enclose sure m³ Total power connsul Watt Maximum Amperage absorbed A dB(A)Noise level



0.31

52

Standard Equipment



Air flow meter anent air face vela

Energy Ports

List of approved chemicals

Provides a guide to the 700 chemi cals for their retention capacity within the

carbon filters and their method required

Chemical Listing

in accordance with the

AFNOR NFX 15-211

for the passage

of cables

standard.



Interactive Alarm Periodic reminder for the filter saturation test

Sampling port



broviding access to filter effluent in order to deternine filter saturation through the use of colorimetric chemical detection tubes (equipment not subplied). (not available on the midcab 633)

> Ergonomic openings for a secure working position.

to determine filter saturation. **Optional Equipment**

Securifilter™ Visual and audible alarm to detect filter saturation by

vdrocarbons Work surface

tempered safety glass with spill retention tray





Pivoting lighting (500 lux, 11 watt)

adjustable for targeted lighting and may be attached to either side of the enclosure

Mobicap™

rolling cart Equipped with an inte nal retractable shelf making it possible t



captair filtair XL

Large size filtering enclosure for equipment and instrumentation



Standard Equipment

Work surface tempered safety glass with spill reter ion tray





Periodic reminder for the filter saturation test.

Sampling port

allows operator to test the air emitted by the filter at any time through colorimetric chemical detection tubes (tubes obtional).



Ergonomic openings for a secure working position.

Optional Equipment



Pivoting lighting (500 lux, 11 watt) adjustable for targeted lighting and may be attached to either side of the enclosure.



Mobicap[™] Rolling Cart

Equipped with an internal retracto ble shelf making it possible to work hen sitting.



captair® filtair XL

Drawings, photos and technical data are not contractual.

94

0.62

51

captair toxicap

Designed to handle medium to large quantities of chemicals high retention capacity - high protection level

OF THE LINE

Strong Points

Compliant with CLASS I

of the AFNOR NFX 15-211 standard

The 4 phases of the standard :

| | Phase I | Phase 2 | Phase 3 | Phase 4 |
|--------------------------|---|---|---|--|
| | Normal operation phase | Detection time phase | Safety operation | Safety« Accident » phase |
| | The filter adsorbs the quantities indicated by the manufacturer | The monitoring system detects filter saturation | The user may finish the chemical handling in progress after the saturation of the filter has been detected. | A required chemical issing documents the total amount of each chemical to be present within the fume hood. If this quan- tity is to spill within the enclosure after fitter saturation has taken place the user is still guaranteed to be kept at the TLV/OEL |
| Filtration efficiency | Emissions must not exceed 1% of the TLV or OEL. | Emissions must not exceed 1% of the TLV or OEL. | Emissions must not exceed 50% of the TLV or OEL. | Emissions must not exceed 100% of the TLV or OEL |

Filtration principle

2 filtration levels

Revolving system Patent N°4946480 /hen the main filter is saturated it is repl d by the safety filter and a new safety ter is installed in the safety position.

- 2 molecular filtration levels (1 main filter and 1 safety filter level) • A phase transformer (elimination of vesicular effects) • Particulate filter (toxicap[®] NU version)
- Detection chamber to determine saturation of the primary filter layer

Total operator protection

Filtration safety : all captair® toxicap filtering fume hood models are compliant with the AFNOR NFX 15-211 Class 1 standard .

Containment of the chemical vapors within the enclosure guaranteed by the face velocity monitor.

Alarm system notification in case of ventilation failure : Fan Failure alarm.

Sampling port and Chemical Detection Kit allow the user to perform filter saturation testing

Acrylic door and front shield provide protection from chemical spills. (Fire classification, NF P.92.507 standard).

Ergonomics and Comfort

Arm openings designed to allow the operator a large range of movement within the enclosure (two access levels to the filtering enclosure, upper access for use when standing and lower access for use when seated).

Ports for the introduction of electrical or power cables into the filtering enclosure. Angled front sash offers excellent visibility of the chemical handling.

Very low noise level (56 dBA).

Transparent panels and internal lighting (2 X 18 W) provide excellent viewing within the enclosure.

Rolled edge provides an area to relax arms and wrists. Tempered glass work surface and spill retention tray may be removed for easy cleaning.

Easy installation / Energy savings

No duct work required, a standard electrical outlet is all that is necessary. Can be installed directly on your lab bench or on our optional mobicap[™] rolling cart.

*Saves energy by recycling purified air within the laboratory rather than exhausting heated or cooled air.

| Version A Trapezoid opening | |
|--------------------------------|--|

Safety filte

Detection chambe Main filter

Particulate filte



EXT 800 x 1482 x 770

C and NU Filter

31 ^{1/2"} x 58 ^{1/3"} x 29

170

0.51

0,43

135

0.6

| C 0 | r TYPE NU | 1 |
|---------------------|---|-------------|
| or rs ut e | Gas or vapours with smoke and particles | |
| s | NT AS + NTP | |
| E : (| NT BE+ NTP NT F+ NTP NT K+ NTP NT G+ NTP | · |
| | | (mm) (in) W |

Specifications Tests and marking (E

Types

of front openings

Version **B**

Oblong openings

TYPE

NT/

NT

NT

NT

Two

types of filter

available

Acid vapours

Formaldehyde

Radioactive iodin

Organic vapours

| Volume of air treated | m ³ / |
|------------------------------------|------------------|
| Average air face velocity | m/s |
| Internal volume of filtering enclo | sure m |
| Total power consumption | Wat |
| Maximum Amperage absorbed | А |
| Noise level | dB(|
| | |

| oxicap | |
|--------------|---|
| - | 1. |
| | |
| 5 | |
| | |
| р 808 Н D | toxicap 1016 Version A (mm) (in) W H D |
| 915 x 676 | INT 920 x 915 x 676 |

EXT 1000 × 1482 × 770

C and NU Filter

375

0.51

0,55

240

1.05

60

39^{3/8°} x 58^{1/3°} x 29

| | 1010 | |
|-----------------------|------|------------------------|
| | | 1 |
| | - | - |
| а, | | 12 |
| | | - |
| 6 Version A or E D | (mm) | oxicap 132 (in) W H |
| | INIT | 1225.01 |

D 15×676 **EXT** 1315 × 1482 × 770

324

xicap

| C and NU Filter |
|-----------------|
| 440 |
| 0,52 |
| 0,73 |
| 240 |
| 1,05 |
| (0 |



9

Standard Equipment

Air flow meter Permanent monitoring system for the air face velocity

> Energy ports for the passage of cables

in accordance with the

NFX 15-211 standard

Gives information on the retention and the detection sys

tem for more than 700 chemicals.

Fan Failure alarm

notification in case of

entilation failure.

Alarm system

Internal

lighting

2x18 W.

500 lux

...

Intercative Alarm Periodic reminder for the filter saturation test

Sampling port

allows oberator to test the ir emitted by the filter at any me through colorimetric mical detection tubes



Ergonomic openings for a secure working position.

Tempered glass work surface and spill retention tray may be removed for easy

Detection kit

cleaning

captair[®] tubes to perform periodic manua filter saturation detection sts (see chemical listing).

Optional Equipment



For better visibility in the filtering enclosure. Ideal for dem

The molecode™ detector Visual and audible ectronic alarm to letect filter saturation vdrocarbons.

Mobicap™

Rolling Cart equipped with a retractable internal shelf making it possible to work in the seated bo

toxicap 1624 Version A or B

(mm) (in) W H D **INT** 1520 x 915 x 676 **EXT** 1600 × 1482 × 770 63" x 58 ^{1/3}" x 29 C and NU Filter 440 0,52 0,91 240 1.05 62

For your safety **INSIST UPON**

compliance with the AFNOR NFX 15-211 standard. The test report from the LNE nal Test Laboratory is available on request



captair[®] toxicap

version on CD Rom or on our website at the following address : www.erlab.com. The ValiQuest® questionnaire for the **esp** program is available as an electronic

| E-Ma | |
|--------------|----------------|
| Tel. : | e-mail : |
| Salisb | Tel : |
| UK at St The | Post code : |
| ERL | Address : |
| | Name of user : |
| | Company : |





e-mail : Tel :

| | Name of the chemical |
|--------------|---|
| | Container |
| Document | Open or closed ? |
| | Dilution |
| npleted, ph | Temperature °C |
| otocopied an | Handling frequency |
| | Quantity handled ml, g or kg |
| | Handling Duration In ^{minutes} |
| | Type of application |

Uest® Investigatory questionnaire about manipulations

Speaify if the recipient is mainly open or closed during handling. tion, conductimetry, conductivity, PC, cryoge-nics, culture, TLC tank, BOD, COD, density, desiccation, dialysis, hot digestion, cold digestion, dilution, dissolution, disty, etc

Handling frequency nonth

manipulations/mor Frequencies to use :

| II to 20 /month, | 5 to 10 /month, | 3 to 4 /month, | 2 to 3 /month, | < to 1 /month, | |
|------------------|-----------------|----------------|----------------|----------------|--|
| | > to 100 | 51 to 100 | 31 to 50 | 21 to 30 | |
| | /month. | /month | /month | /month | |

Handling quantity in ml or g

G

Indicate the average quantity of product used per manipulation (in ml for liquids and in grams for solids) Scale of values.

0 to 5 ml (or g), 6 to 10 ml (or g), 11 to 25 ml (or g), 26 to 50 ml (or g), 51 to 75 ml (or g),

0

Open or closed

tributor, funnel.

dessicator, dispenser, distank, spectrometry tank ultrasound tank, basin,

dish, pot, nebuliser, syrin-ge, spray, cup, thermocy-cler, tube, watch glass, vial, etc

phy column, cup, cruci-

crystallising dish,

tube, weighing scoop, paper, wash bottle, plate, cell culture plate, flat

llector, chromatogra-

В

icro-syringe, micro-

jar, slides, micro-pipette

ated filter flask, flask,

dish, glassjar, cell, impre gnated cloth, fraction

ottle,

<, bath, bowl, barrel, ker, Petri dish, jar, dish, evaporating

uner, wash

flask, evaporator, sink, phial, filter flask, soxhlet

ctractor, filtration,

cuum filter flask, cali-

test tube, Erlenmeyer the list below

ing funnel, bulb,

76 to 150 ml (or g), 151 to 250 ml (or g), 251 to 500 ml (or g), 501 to 1000 ml (or g), > to 1 Liter (or kg)

_ thin layer chromatogra-phy, paper chromatogra-phy, chromatography, gas chromatography, liquid) Type of handling colorimetry, concentrachromatography, staining heating, hot air bath, combinatorial chemistry bath, dry bath, sand bath water bath, Bunsen burner, grinding, calcination, es, centritugation ition, test applive, oi

oxidation-reduction, wei-ghing, pH, PH-metry, photometry, pipetting, flash point, fusion point, welding, spectrometry, sifting, titration, transfer, soaking, turbidity, viscosimicro-titration, minerali-sation, MVS, cleaning, oxidation-reduction, wei-Kjeldahl, washing, lea-ching, mixing, suspended solids, microscopy, sampling, preparation phase, rinsing, drying, engraving, histology, HPLC, Karl Fischer, tration, flocculation, poration, extraction, filphoresis, inoculator, fluxing, muffle furnace

The 🚩 aliQuest[®] questionnaire of the

How to complete the investigation questionnaire?

priate filter type and the means of determining filter saturation for your unique chemical handlings.

esp program

A free service offered by the **erlab**®s group to validate and approve the chemical handlings to be performed in the **captair®** ductless filtering fume hoods.

⋗ Chemical name - Indicate the chemical(s)

D Dilution - Indicate a mass conce

If the product name is a commercial name, it is necessary to send us the safety data sheet provi-ded by the manufacturer at the same time as the questionnaire.

The container Indicate the most fre-

Π

The temperature - Give this in °C

For operations

temperature, indicate 22°C

₪

(in the list of products, do not forget to indicate the organic solvents used). If the product is undiluted indicate 100%; if it is very dilute, 1%; otherwise indicate the approximate percentage. **H** Duration of the application

I to 20 minute21 to 30 minute31 to 45 minute Scale of v 0 to 2 3 to 5 6 to 10 minute

46 to 60 minutes, 61 to 90 minutes, 91 to 150 minutes, 151 to 320 minutes, > 320 minutes.

n, assay, electro



A Green (Perlab) product 100 % energy saving*

80.000 **Captair**[®] throughout the world since 1970

Mobile and disposable isolation enclosure



HFPA filte enclosures

Our other products

Replacer of all brands

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