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LABORATORY FURNISHING SYSTEMS

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Laboratory Fume Cupboards, Enclosures and Cabins



Excellent working environment, guaranteed sustainability

Research and industrial laboratories have to meet a great variety of requirements regarding functionality, stability, flexibility, and safety. The fulfilment of all of these requirements guarantees that you will get what you need: a good working environment.

Sustainability is also of importance for laboratory buildings and their furnishings which has been discussed intensively. And with our certified fume cupboards we considerably contribute to sustainability.

A Bench-mounted fume cupboards	12
B Low ceiling fume cupboards	14
C Low level fume cupboards	16
D Walk-in fume cupboards	18
E Height-adjustable fume cupboards	20
F Special fume cupboards	22
G Enclosures / Bench-mounted units	24
H Special and XXL cabins	26
I Options	28
J Function control	31

Laboratory Fume Cupboards, Enclosures and Cabins



Fume cupboards are the central elements of a laboratory. We produce them in many executions and versions according to the respective application requirements. However, these requirements are consistently increasing as more and more laboratory tasks are relocated into fume cupboards these days due to an ever increasing amount of hazardous substances and reagents. Furthermore the requirements for fume cupboards have considerably increased due to the EN 14175 standard.

We not only produce fume cupboards in the standard sizes of 1200, 1500, 1800, and 2100 mm, but also customize their size individually. According to the great variety of applications we manufacture fume cupboards either as bench-mounted, low ceiling, low level, and walk-in fume cupboards. Worktop materials and interior linings are configured according to the specifications of the tasks to be completed, and gases and liquids to be used, or the vapours and particulates that might occur.

Requirements a fume cupboard has to meet:

- Avoidance of pollutants exhausting into the laboratory
- Discharge of pollutants to avoid an explosive or hazardous atmosphere within the fume cupboard
- Protection of laboratory staff against splashes and splinters

Our main focus to meet the safety requirements is on the design and development of our fume cupboards. As a result, our type-tested fume cupboards guarantee utmost safety.



Enclosures and cabins

In cooperation with our customers we have developed individual cabins, enclosures, and room-in-room systems for extensive test rigs we produce in our modern production facilities. Our main emphasis is on ensuring utmost safety for the laboratory staff.

Test room

As a member of the 'Test laboratories' working group we test our fume cupboards in our in-house test-laboratory on a European level. Type tests according to the EN 14175, part 3, standard are carried out in cooperation with the Institute for Industrial Aerodynamics at the Aachen University of Applied Sciences.

Our containment measurement facility allows a simulation of different room air situations. That way the fume cupboards can be adjusted for specific conditions on site in an optimal way. Many customers make use of the possibility to equip the fume cupboard in our test room with their own test rigs to determine the optimal air volume for given robustness values.

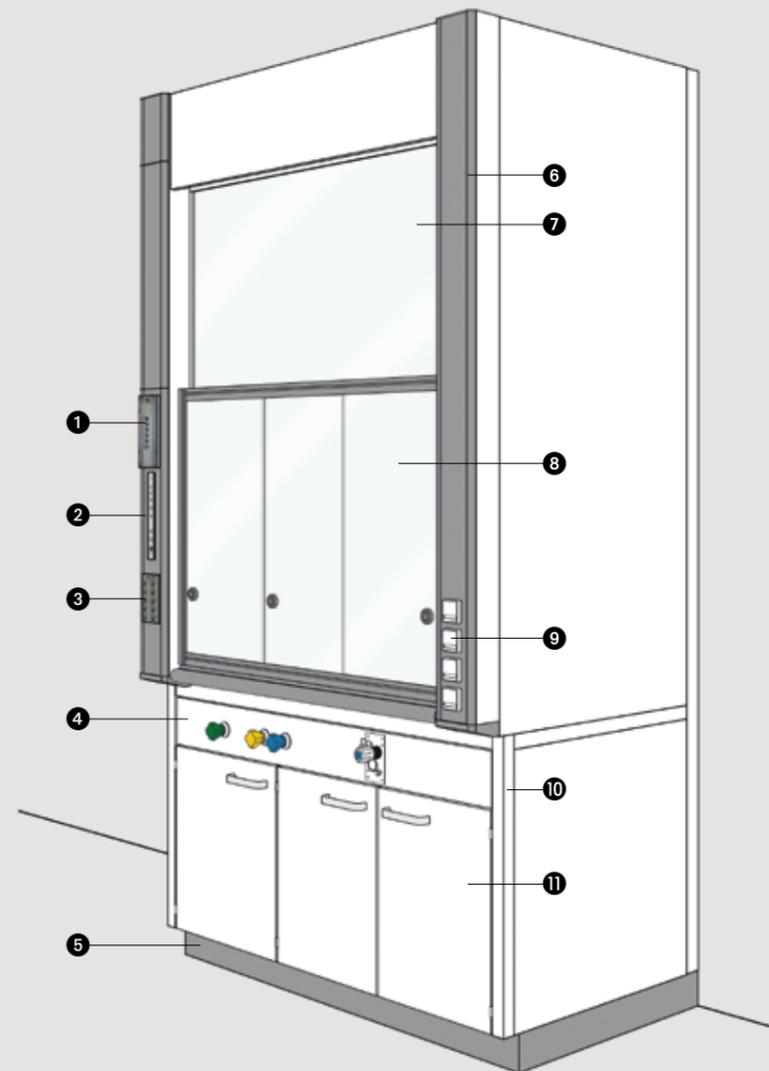
Waste disposal in the fume cupboard

When protecting laboratory staff against substances hazardous to health, safe storage of solvents, acids and bases is an important aspect. We provide a solution to dispose of aggressive substances used in the fume cupboard through special funnels incorporated in the worktop, taking them either into a disposal container in the cabinet for combustible liquids, or into an acid and base cabinet. The containers are equipped with a level control system with a clearly visible display which is incorporated in the fume cupboard pylon.

A | Bench-mounted fume cupboards according to EN 14175

Our bench-mounted fume cupboards produced according to DIN EN14175 not only feature an outstanding ventilation technology but also above average robustness values.

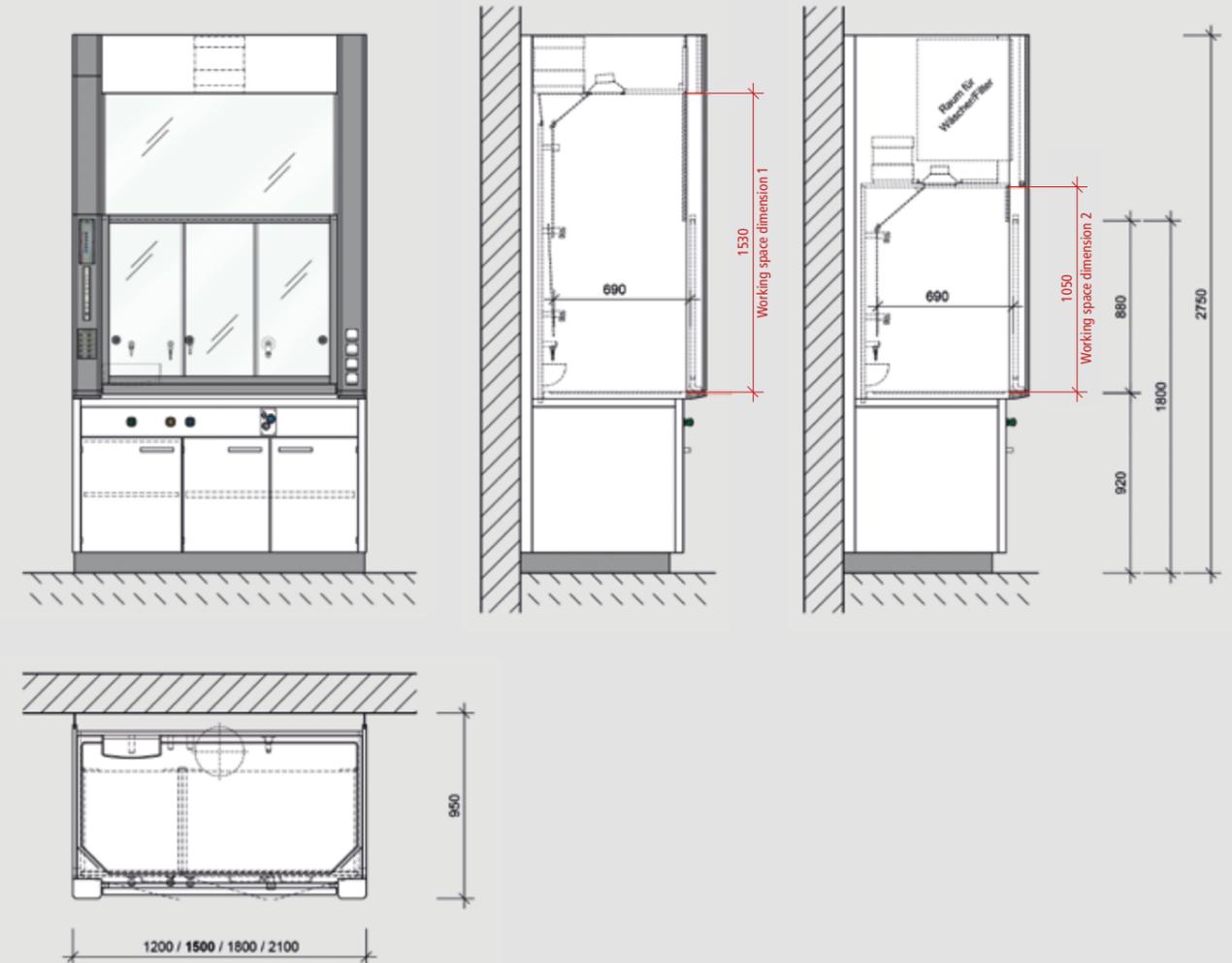
Electric installations such as function displays, control panels for the airflow controller, sockets, and automatic circuit-breakers are primarily located in the left pylon. That way sufficient space remains for high service fixtures in the service rail. An inner lining of melamine resin, a ceramics worktop, scaffold points, and lighting are part of the standard equipment. Supply of services is customized and base cabinets may be arranged as required.



Legende

1. Automatic circuit-breaker
2. Function control
3. Control panel / interior sockets
4. Service rail
5. Plinth panel
6. Pylon
7. Firm glazing
8. Front sash
9. Exterior electric equipment
10. Steel frame
11. Base cabinet on plinth

Dimensional drawing



Inner lining

Melamine resin
Polypropylene
Stainless steel
Fine stoneware
Solid grade laminate

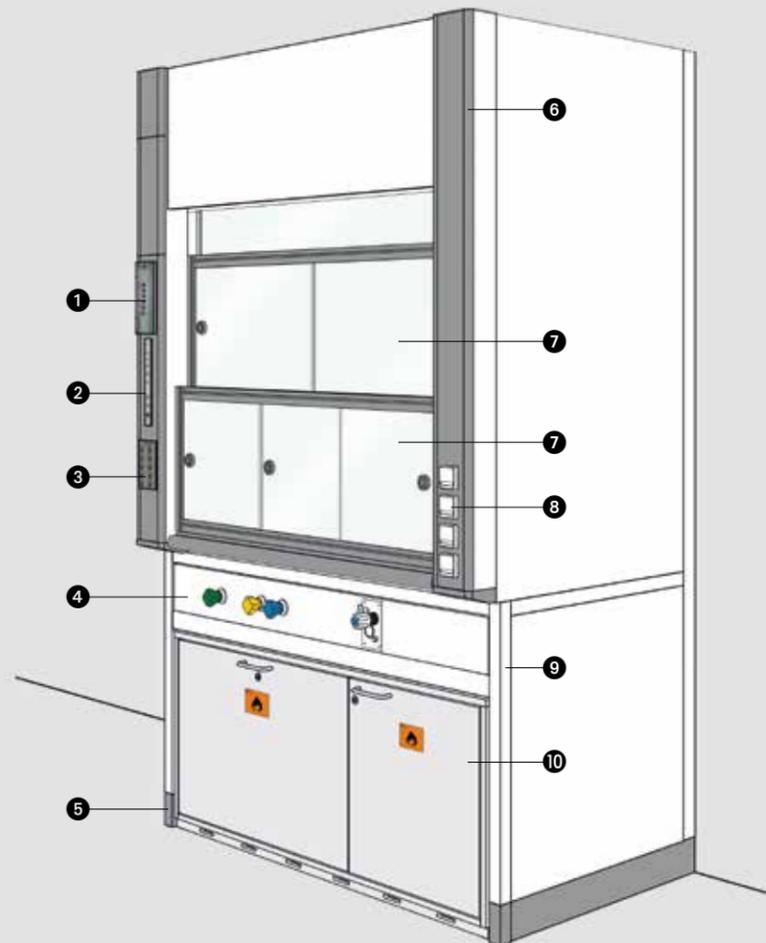
Technical data

Grid size	1200	1500	1800	2100
Overall dimension in mm	1200 x 950 x 2750	1500 x 950 x 2750	1800 x 950 x 2750	2100 x 950 x 2750
Working space dimension 1 in mm	1160 x 690 x 1530	1460 x 690 x 1530	1760 x 690 x 1530	2060 x 690 x 1530
Working space dimension 2 in mm	1160 x 690 x 1050	1460 x 690 x 1050	1760 x 690 x 1050	2060 x 690 x 1050
Recommended air exchange rate m ³ /h	400	530	660	790
Recommended air exchange rate with supportive flow in m ³ /h	350	450	560	680

B | Low ceiling fume cupboards according to EN 14175

In case it is not possible to use a standard fume cupboard with a construction height of 2750 mm, the low ceiling fume cupboard would be a suitable alternative.

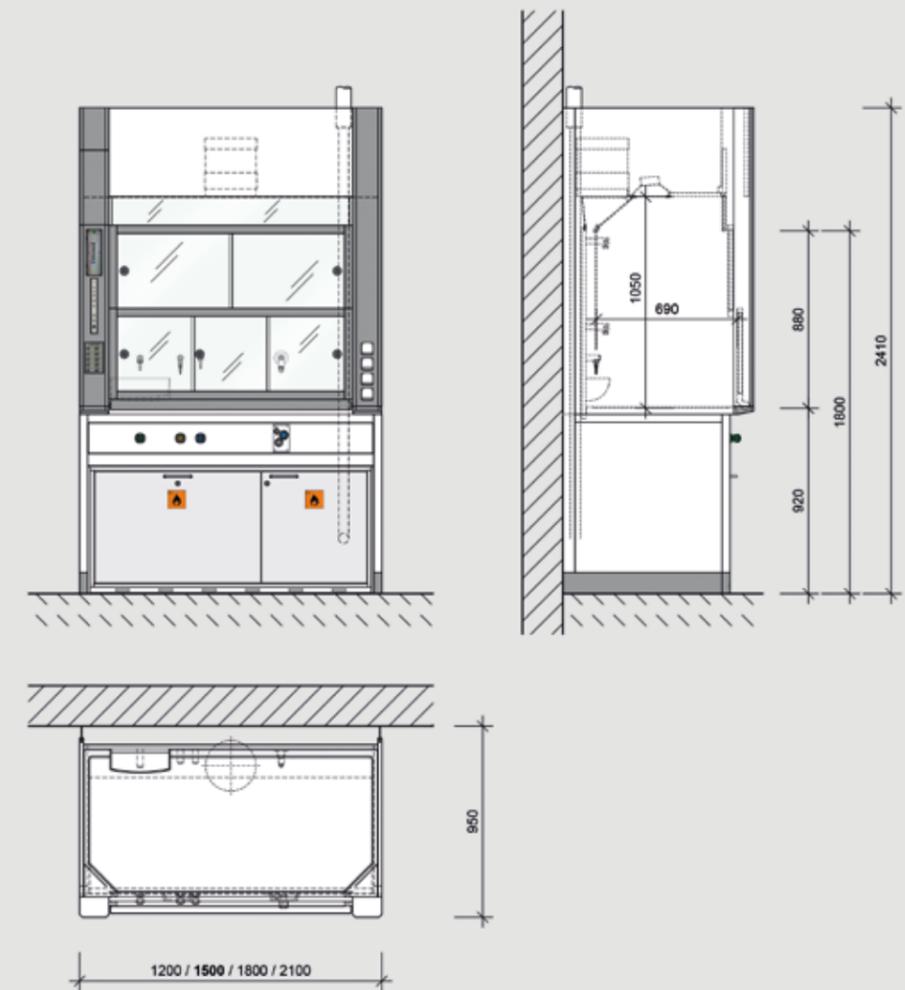
The sectionalized front sash does not project the fume cupboard carcass and allows for an overall construction height of 2410 mm.



Legend

1. Automatic circuit breaker
2. Function control
3. Control panel / interior sockets
4. Service rail
5. Plinth panel
6. Pylon
7. Front sash
8. Exterior electric equipment
9. Steel frame
10. Safety cabinet for solvents

Dimensional drawing



Inner lining

- Melamine resin
- Polypropylene
- Stainless steel
- Fine stoneware
- Solid grade laminate

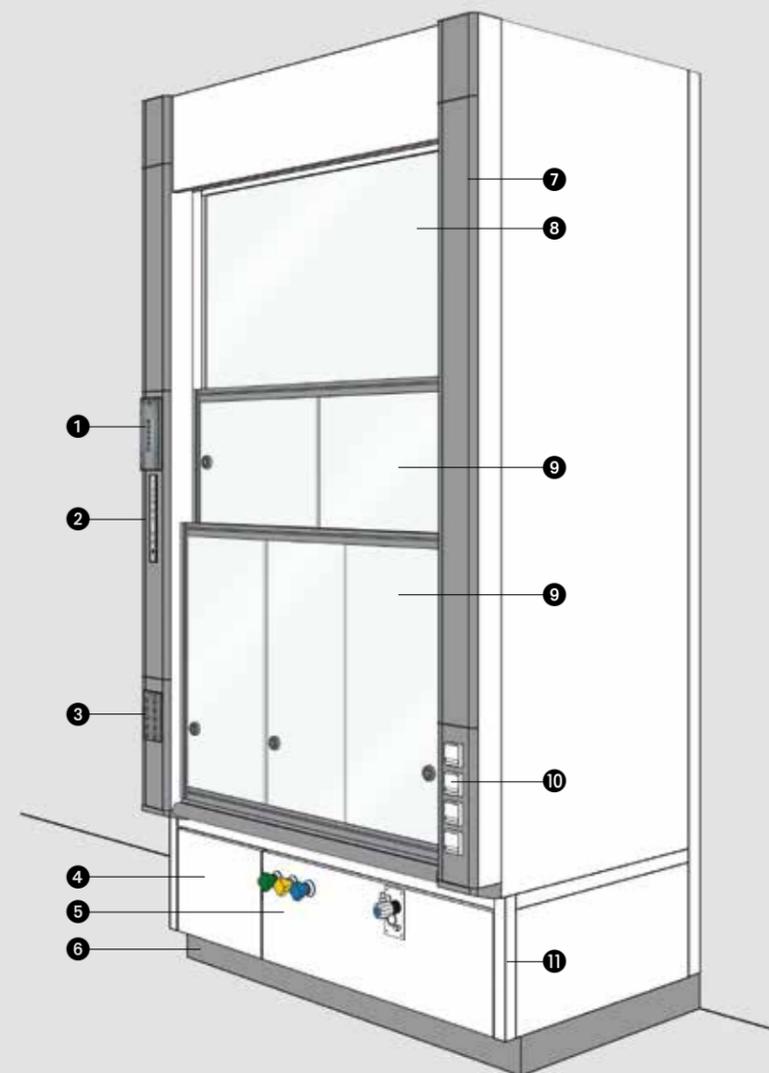
Technical data

Grid size	1200	1500	1800	2100
Overall dimension in mm	1200 x 950 x 2410	1500 x 950 x 2410	1800 x 950 x 2410	2100 x 950 x 2410
Working space dimension in mm	1160 x 690 x 1050	1460 x 690 x 1050	1760 x 690 x 1050	2060 x 690 x 1050
Recommended air exchange rate m ³ /h	400	530	660	790
Recommended air exchange rate with supportive flow in m ³ /h	350	450	560	680

C | Low level fume cupboards according to EN 14175

The requirements for high test rigs are met by the installation of the worktop at a height of 510 mm in case of an interior height of 1940 mm.

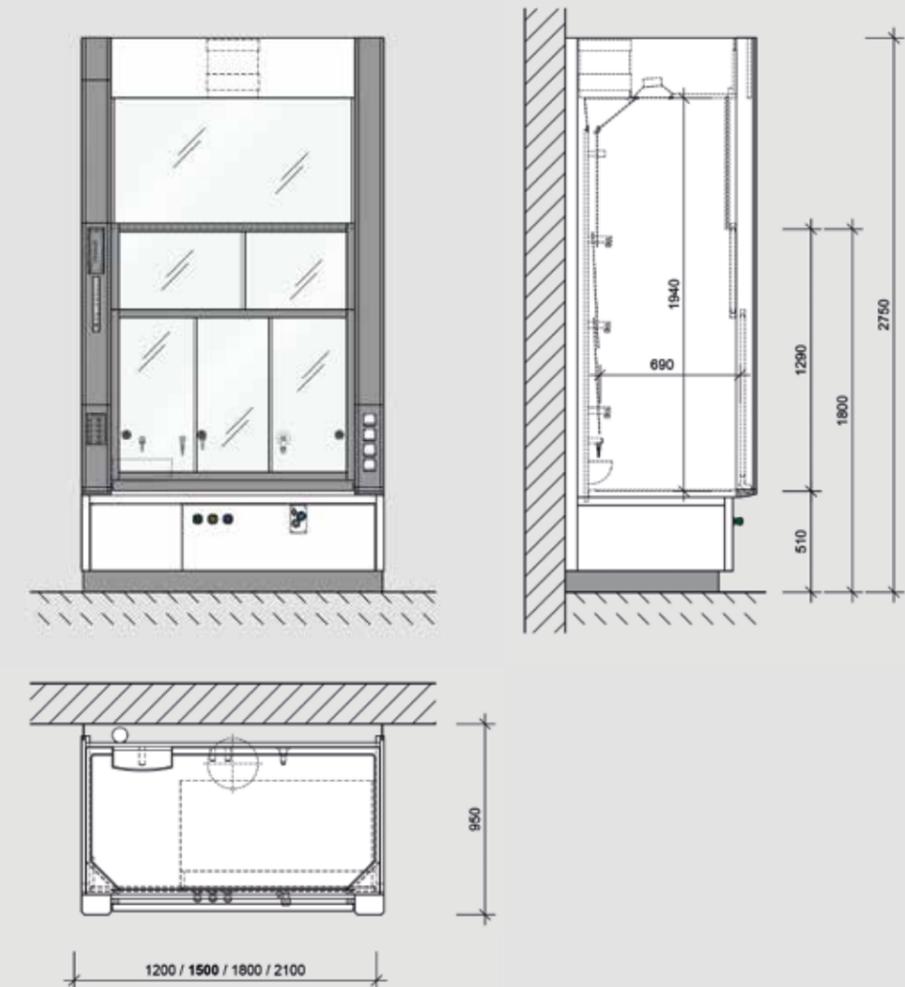
A divided sash and an optional laminated safety glazing of the side panels ensure safe operability and a clear view into the fume cupboard.



Legend

1. Automatic circuit breaker
2. Function control
3. Control panel / interior sockets
4. Installation compartment
5. Service rail
6. Plinth panel
7. Pylon
8. Firm glazing
9. Front sash
10. Exterior electric equipment
11. Steel frame

Dimensional drawing



Inner lining

- Melamine resin
- Polypropylene
- Stainless steel
- Fine stoneware
- Solid grade laminate

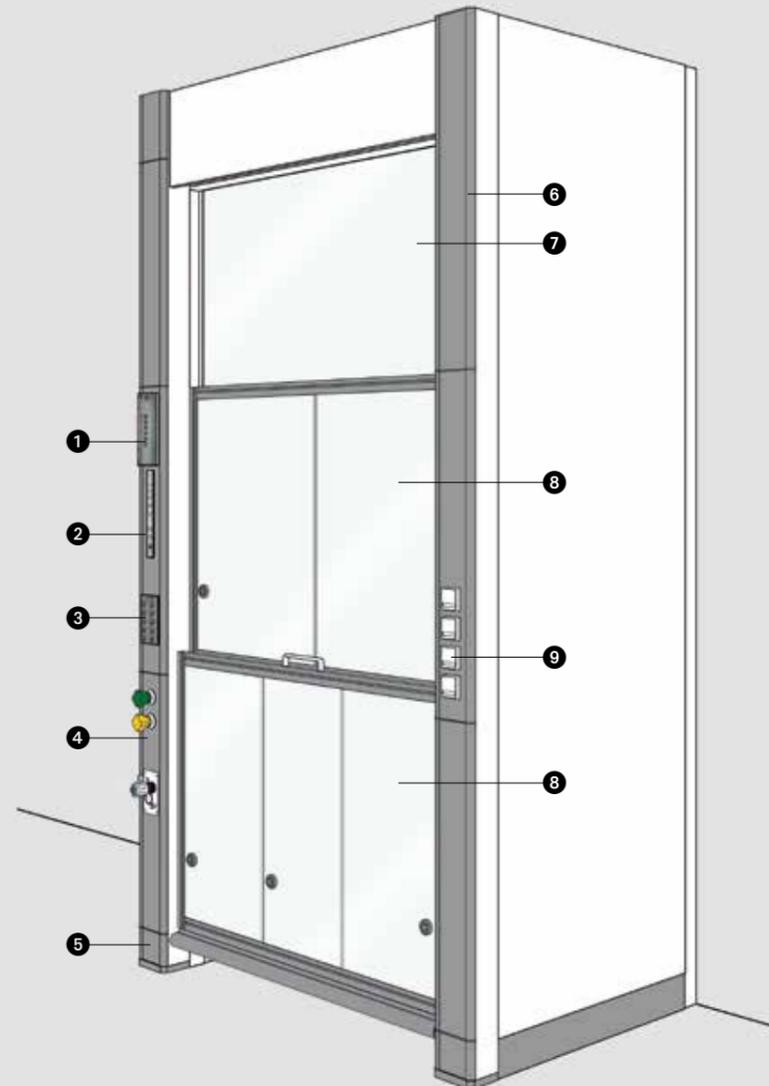
Technical data

Grid size	1200	1500	1800	2100
Overall dimension in mm	1200 x 950 x 2750	1500 x 950 x 2750	1800 x 950 x 2750	2100 x 950 x 2750
Working space dimension in mm	1160 x 690 x 1940	1460 x 690 x 1940	1760 x 690 x 1940	2060 x 690 x 1940
Recommended air exchange rate m ³ /h	500	630	760	890
Recommended air exchange rate with supportive flow in m ³ /h	450	550	660	780

D | Walk-in fume cupboards according to EN 14175

Walk-in fume cupboards allow a supply of test rigs on trolley tables. Owing to the interior height of 2450 mm even very high test rigs can be inserted.

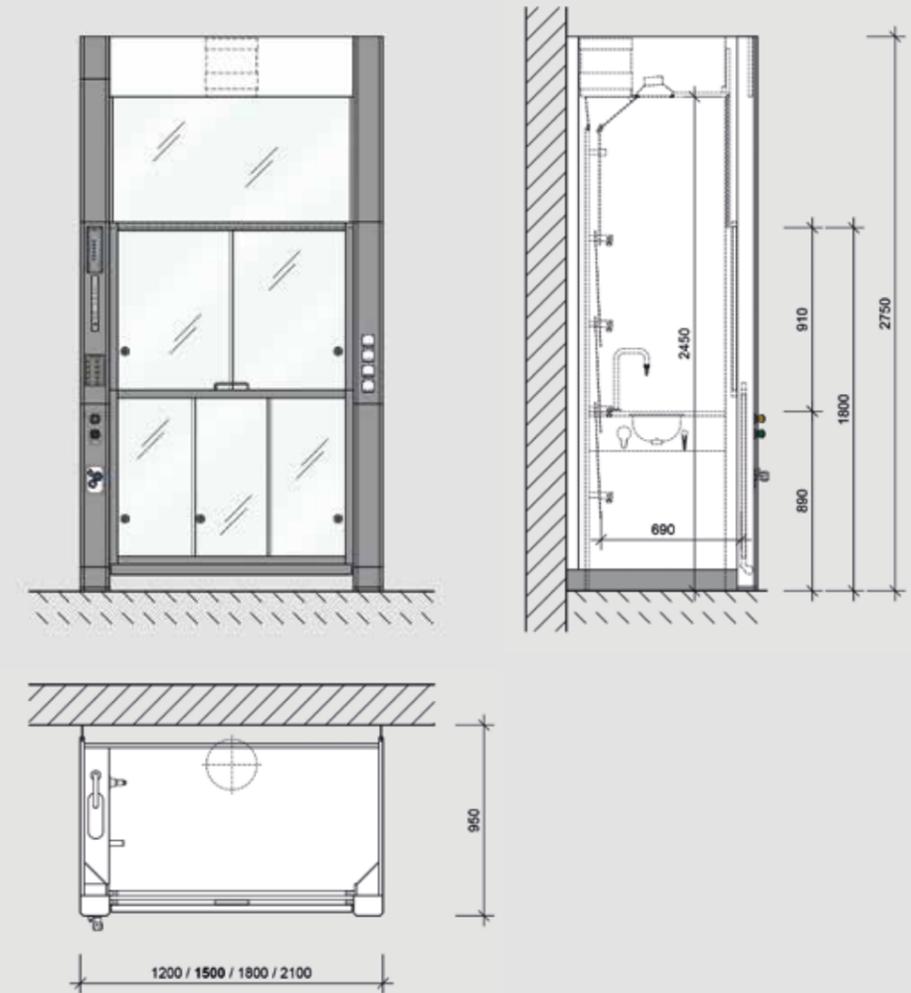
The drip cup and the fittings are located in the side panels, whereas the double-sided electric equipment is in the pylon. Interior sockets are possible.



Legend

- 1. Automatic circuit breaker
- 2. Function control
- 3. Control panel / interior sockets
- 4. Service rail
- 5. Plinth panel
- 6. Pylon
- 7. Firm glazing
- 8. Front sash
- 9. Exterior electric equipment

Dimensional drawing



Inner lining

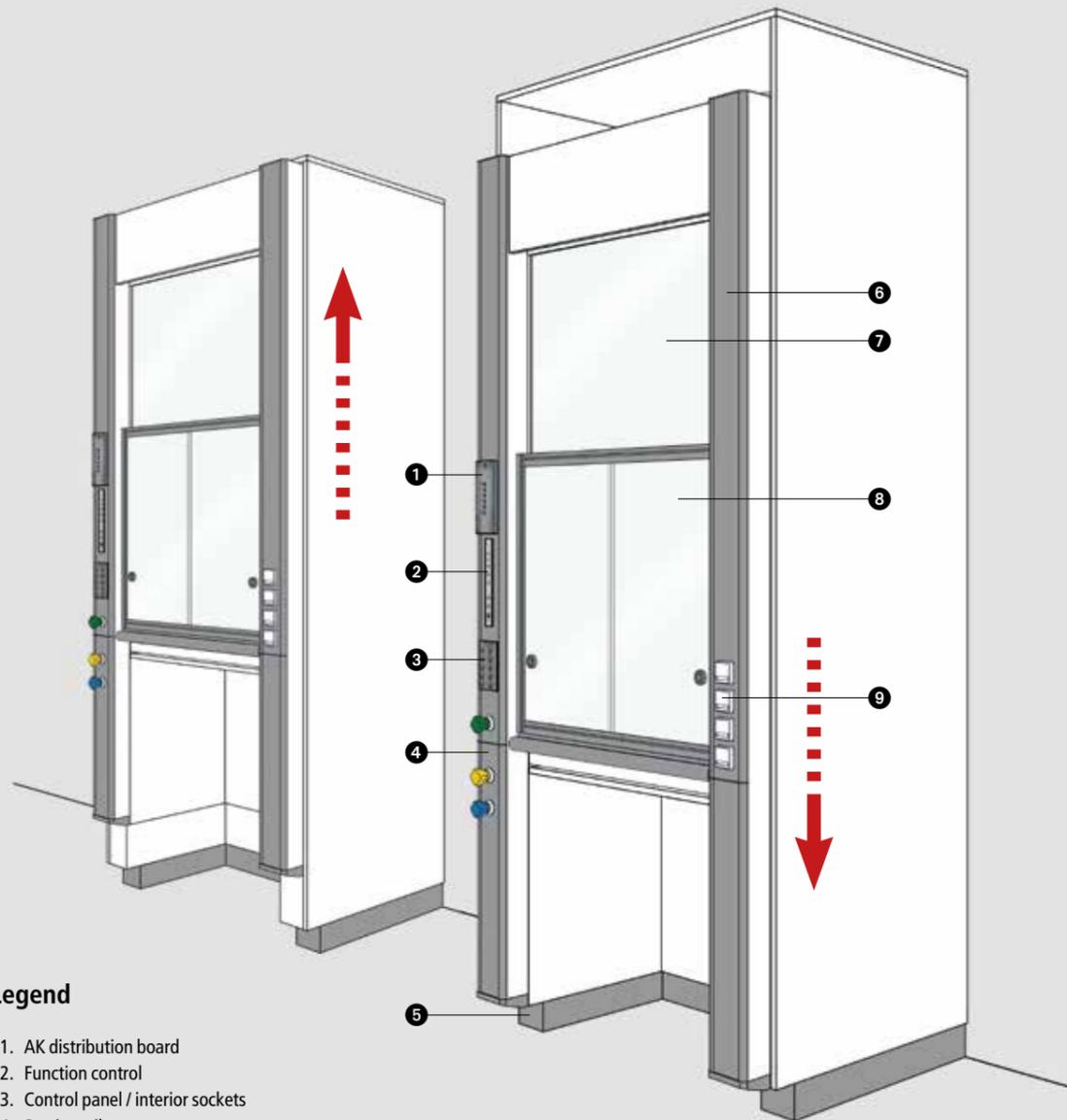
- Melamine resin
- Polypropylene
- Stainless steel
- Fine stoneware
- Solid grade laminate

Technical data

Grid size	1200	1500	1800	2100
Overall dimension in mm	1200 x 950 x 2750	1500 x 950 x 2750	1800 x 950 x 2750	2100 x 950 x 2750
Working space dimension in mm	1160 x 690 x 2450	1460 x 690 x 2450	1760 x 690 x 2450	2060 x 690 x 2450
Recommended air exchange rate m ³ /h	600	730	860	990

E | Height-adjustable fume cupboards according to EN 14175

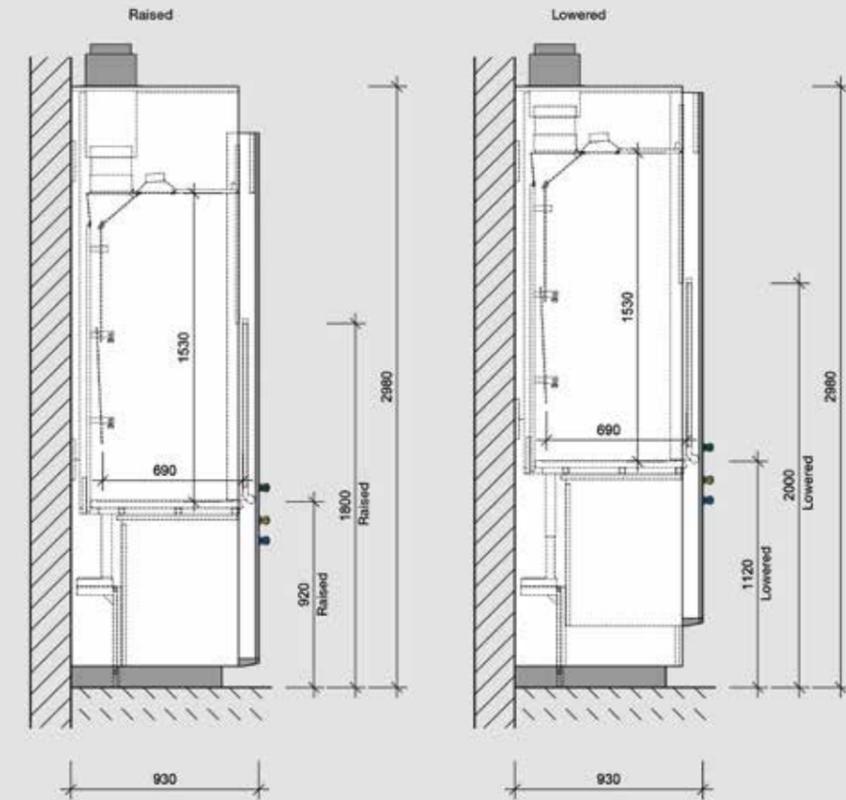
We produce height-adjustable fume cupboards in two different versions: The air inclusion fume cupboard is equipped with a height adjustment device ranging from 270 mm – 920 mm and allows unrestricted work for wheelchair users. The higher version is equipped with a height adjustment device ranging from 920 mm – 1120 mm and allows particularly tall people to work at an ergonomic height.



Legend

1. AK distribution board
2. Function control
3. Control panel / interior sockets
4. Service rail
5. Plinth panel
6. Pylon
7. Firm glazing
8. Front sash
9. Exterior electric installations

Dimensional drawing



Inner lining

Melamine resin
Polypropylene
Stainless steel
Fine stoneware
Solid grade laminate

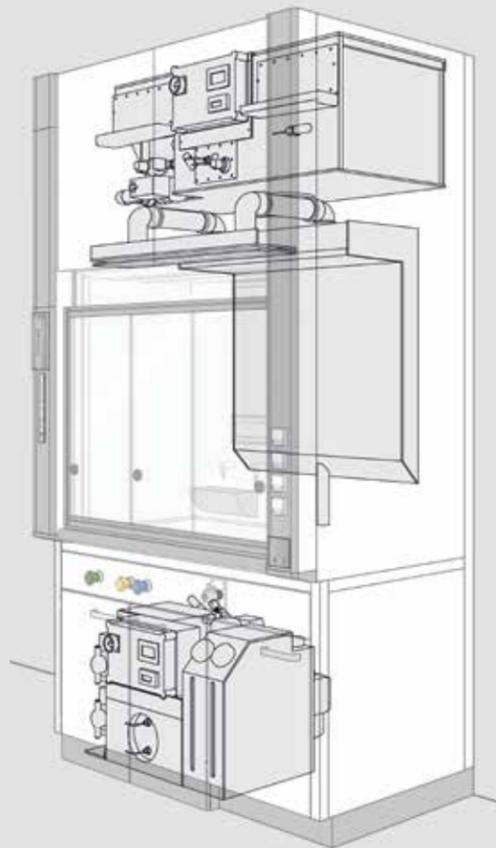
Technical data

Grid size	1200	1500	1800	2100
Overall dimension in mm*	1240 x 930 x 2980	1540 x 930 x 2980	1840 x 930 x 2980	2140 x 930 x 2980
Working space dimension in mm	1160 x 690 x 1530	1460 x 690 x 1530	1760 x 690 x 1530	2060 x 690 x 1530
Recommended air exchange rate m ³ /h	400	530	660	790

*Overall dimensions in relation to the working height of 920 mm – 1120 mm

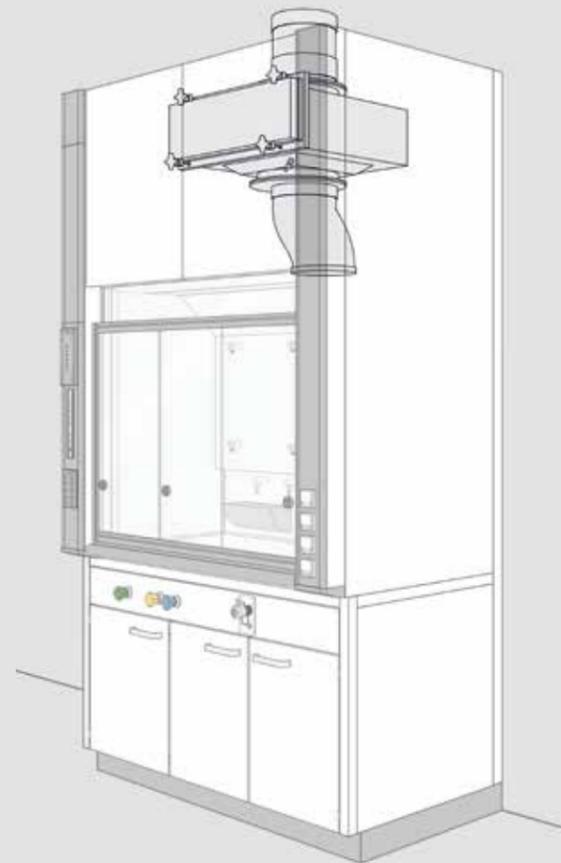
F | Special fume cupboards according to EN 14175 / DIN 25466

Special requirements ask for special fume cupboards with particular installations. Our special fume cupboards are built as bench-mounted fume cupboards with a lower interior height (see page 13) and are equipped according to the user requirements with fume scrubbers, filters, or fire extinguishing units.



Special application fume cupboards

Fume cupboards for high thermal loads and applications with acids are built according to DIN EN 14175 (part 7). Special application fume cupboards require a special design in case of applications with heat sources of 4 kW or more per metre of interior width. The same applies for fume cupboards with high acidic loads, and for perchloric and hydrofluoric acid fume cupboards. These may be equipped with a fume scrubber and, if need be, with a neutralisation device. The extract air is routed through a manifold that can be sprinkled, if need be.



Filter fume cupboards

A filter device for particles prevents harmful particles from escaping through the extract air device and from getting outdoors. A special technology allows a filter exchange without contacting contaminated particles.

Filter saturation is controlled by pressure differential measurement with corresponding indication.



FES fume cupboards

FES fume cupboards are equipped with a safety system to avoid fire. The system allows either a 24-h or an uncontrolled operation, respectively.

The FES system comprises a pressure gas generator, a thermal and/or UV flame detector, control devices, visual and acoustic warning devices, as well as a push button for manual release. In case of fire it will be damped down by emitting argon. The front sash, the extract air valve and the supply of services are closed. The system releases an acoustic and visual signal and informs the fire brigade or the building management system.



Radioisotope fume cupboards

Isotope fume cupboards are built according to DIN 25466 and meet the increased requirements for radiation protection. Linings and worktops are of stainless steel or polypropylene. The fume cupboard head unit is equipped with a two-stage filter device (filter, particle filter).

For opposite filter cabinets a quadruple filter may be used consisting of filter, particle filter, activated carbon filter, and a particulate filter. The fume cupboard is prepared for the installation of a lead protection to be provided by the customer.

G | Enclosures and bench-mounted modules

Enclosures protect the laboratory staff against flying splinters occurring from explosions as well as against splashing hazardous substances. These elements are generally produced individually according to specific workflows and customer requirements. Enclosures are placed onto laboratory workbenches and are equipped with vertical sashes or lateral cross slides.

Enclosures may be equipped with a lighting system on request. It is also possible to connect this element to an extract air device for which a hundredfold exchange of air is intended.



Enclosures

Our enclosures are made of a stable aluminium profile. They are equipped with up to three cross slides that allow safe corrective actions while being protective at the same time. The services are supplied from an energy spine.



Top-mounted modules

Top-mounted modules are equipped with vertically sliding front sashes. Electrical services are supplied through a laterally arranged pylon. As an alternative, the side panels are available with an inspection window. Hoses, pipes and cables may be lead through a flap valve in the side panel.

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H | Special and XXL cabins

XXL cabins are large-scale cabins to hold large-scale test plants. These units are available in wall-mounted and island versions. This type of cabin is accessible from all sides through horizontally sliding front glass doors or vertical sashes. Energy is supplied from integrated service wings or – in case of wall-mounted units – through service ducts incorporated into the rear panel. Type and amount of the services depend on the purpose of use.

The extract air is routed through manifolds in the cabin ceiling as well as through ventilation grids in the plinth area. Depending on the size of the cabin several ventilation connections are planned.

XXL cabins are generally equipped with an individual lighting device.



Options

To optimize workflows and to increase the safety in the laboratory our fume cupboards may be equipped with lots of useful additional installations and design versions.

Glazing

Side panels glazed with safety glass improve visibility of the test rigs.

As an alternative to firm glazing two cross slides ensure optimal access in case of high test rigs.

The three cross slides at the bottom are routed in two grooves as a standard. An alternative version with three grooves provides a larger point of access to the fume cupboard if the front sash is closed as the panes may be arranged in tandem. The same applies for fume cupboards with four cross slides in four grooves.

Flap valve

A lateral flap valve or brush sealing allows hoses, cables and lines to be put through from the workplace on the side or the adjacent fume cupboard.



Legend

1. Frame with cross slides
2. Glazing version
3. Lateral glazing
4. Flap valve

Linings

Apart from the standard lining of melamine resin coating we also provide linings of solid grade laminate, polypropylene, stainless steel or fine stoneware (ceramics), depending on the chemicals and reagents used.

Fume cupboard with sink

Also laboratory sinks of different sizes may be integrated in the fume cupboard worktops. The outlet valves are in wall-mounted execution. According to DIN EN 14175 the operating elements of the utility valves are arranged at the outside on the service rail.

Explosion protection

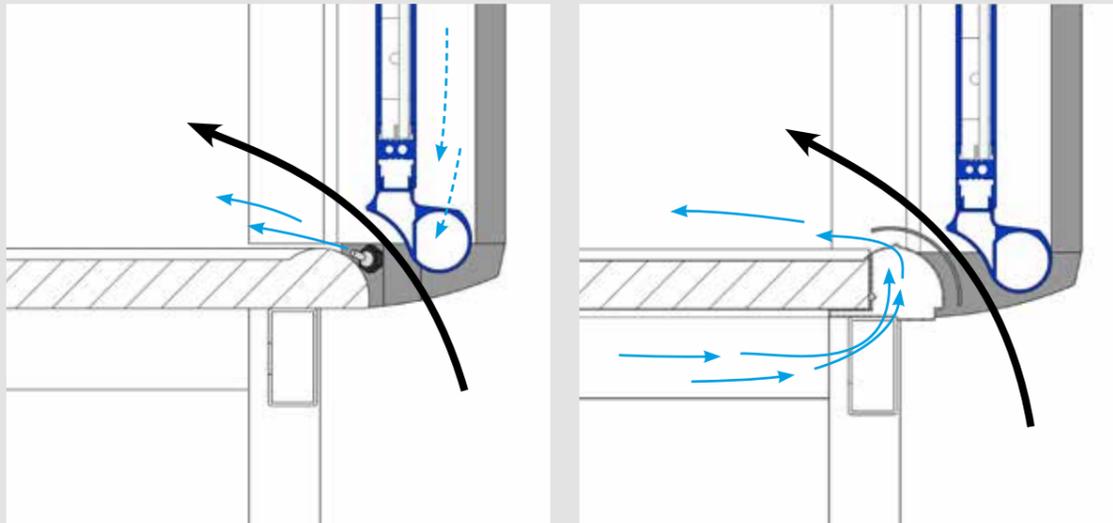
If the fume cupboard interior is defined as an explosion-proof zone the lighting and the interior sockets are installed in explosion-proof execution, and the extract air is routed in an electrically conductive polypropylene pipe. The function display and other electric components are installed in a separate electric trunking outside the fume cupboard.

If the entire room is defined as an explosion-proof zone all electric components are installed in explosion-proof execution. Therefore the operating device of the function display is placed in the pylon, for example, whereas the function display electronics is located outside the room.



Options

Flow behaviour



Containment tests in our measuring track clearly show the optimized containment behaviour of the fume cupboard due to the use of the supportive flow technology.

Supportive flow technology

Good reasons for using supportive flow technology:

- a. **Reduction of the extract air exchange rate**
 - Reduces energy consumption and operating costs
 - Improves sustainability of the fume cupboard
- b. **Increase in safety**
 - Improved robustness of the fume cupboard
 - Pollutant concentrations or volumes from the fume cupboard do not get into the laboratory
 - Better protection of laboratory staff

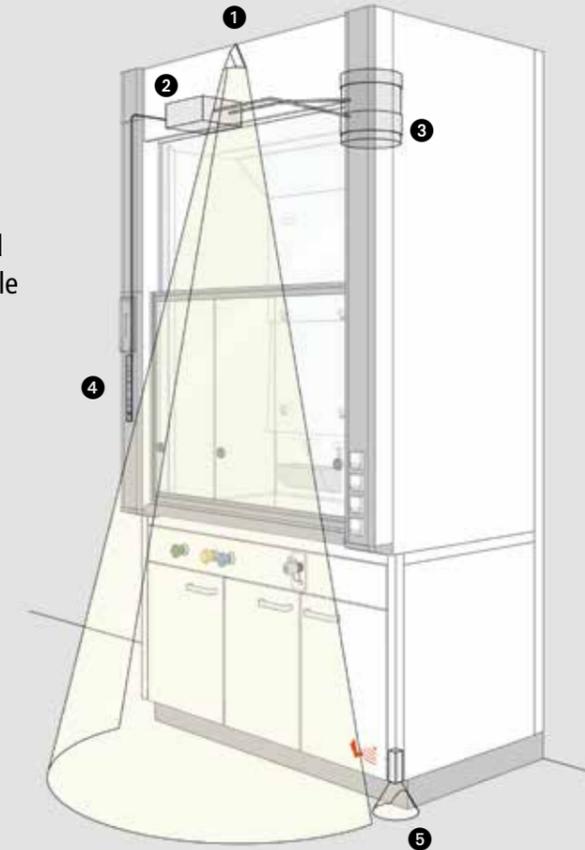
The supportive air is supplied to the fume cupboard either through two jets that are fixed to the fume cupboard side panels, or through a supportive air profile that is attached to the front edge of the worktop.

J | Function control and control components

Laboratory furniture, ventilation unit and MCA technologies acquire a comprehensive view. An extensive ventilation concept therefore is the basis of safely operating laboratories and laboratory fume cupboards. Depending on the ventilation concept and the amount of air consumers in the room our fume cupboards are equipped with a laboratory fume cupboard monitoring device or with a constant or variable laboratory fume cupboard control device.

Legend

1. Passive infrared detector
2. Control / monitoring device
3. Measuring/controlling device
4. Function display
5. Front sash sensor



Laboratory fume cupboard monitoring device

A clearly visible function display with visual and acoustic alarming signal is incorporated into the fume cupboard pylon. This device shows the correct functioning of the airflow in the fume cupboard.

Laboratory fume cupboard control device

To reduce energy consumption in case of varying sash opening heights fume cupboards are operated with variable air exchange rates. Microprocessor-controlled airflow control devices are used to trigger the control valve in the extract air spigot.

Automatic sash closing device

To benefit from the advantages that are provided by a reduced air exchange rate when the fume cupboard is not in use, the fume cupboard front sash should be closed. The sash controller automatically closes the fume cupboard sash as soon as no person is within the visual field of the movement detector. The delay time for the closing process can be set individually.

A horizontal light barrier at the closing front sash ensures an accident-free work.

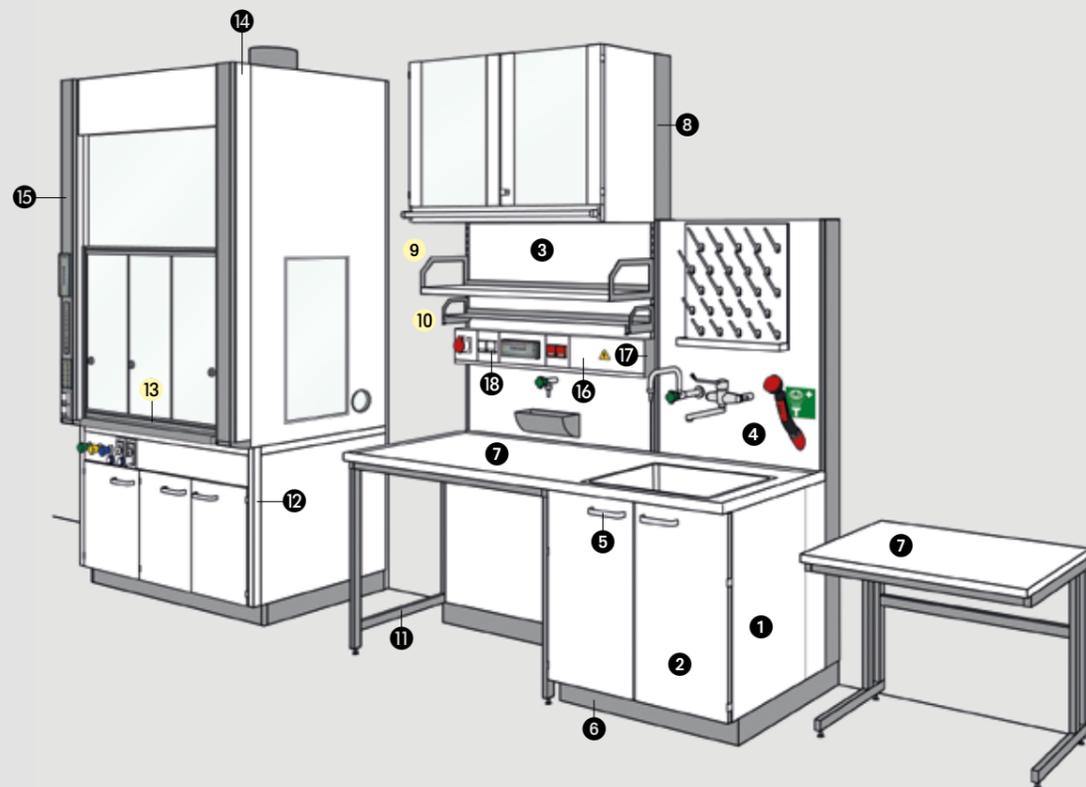
Automatic sash opening device

Motor-driven fume cupboard sashes can be opened by slightly tipping the sash or by triggering a touch-free foot sensor.

7

A | QME Colour Concept

The colour concept for laboratory furniture is of great importance for the well-being in laboratory rooms. The QME laboratory system colour concept creates a bright and friendly atmosphere. QME colours and possible alternatives are listed in the following:



RAL 9010 pure white	RAL 7037 dust grey	RAL 7035 light grey	RAL 9003 signal white
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Accent colours

RAL 1033 yellow dahlia	RAL 3001 signal red	RAL 5015 clear blue	RAL 6018 yellow-green
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Information: Printed RAL shades may deviate from the original. Material samples are available on request.

No.	Component:	Standard	Possible alternatives	Surcharge
Furniture and panels:				
1	Carcass	effect similar to RAL 9010	effect similar to RAL 7035	yes
2	Fronts	effect similar to RAL 9010	effect similar to RAL 7035	yes
3	Melamine panels	effect similar to RAL 9010	effect similar to RAL 7035	yes
4	Solid grade laminate panels	effect similar to RAL 9010	effect similar to RAL 7035	yes
5	Bow-shaped handles	anodized aluminium	stainless steel RAL shades according to range of colours	yes
6	Plinth panel	effect similar to RAL 7037		yes
Worktops:				
7	Melamine laminate	effect similar to RAL 9010	effect similar to RAL 7035	no
	Solid grade laminate / TopLab	effect similar to RAL 9010	effect similar to RAL 7035	no
	PP	light grey similar to RAL 7035		
	Ceramics	polar white similar to RAL 9003	aluminium grey similar to RAL 7035	no
	Fine stoneware compound	polar white similar to RAL 9003	aluminium grey similar to RAL 7035	no
	Epoxy marine edge	grey	white	no
Metal parts of laboratory furniture (powder coated):				
8	System pillar	dust grey RAL 7037	pure white RAL 9010	yes
9	System shelf support	dust grey RAL 7037	RAL shades according to accent colour or pure white RAL 9010	no yes
10	Reagent shelf support	dust grey RAL 7037	pure white RAL 9010 or RAL shades according to accent colours or pure white RAL 9010	no yes
11	H-/C-frames	dust grey RAL 7037	RAL shades according to accent colours	yes
	Trolley table frames	dust grey RAL 7037	RAL shades according to accent colours	yes
Metal parts of fume cupboards (powder coated):				
12	Frame	pure white RAL 9010	light grey RAL 7035	yes
13	Front sash	dust grey RAL 7037	RAL shades according to accent colours	no
14	Pylon	pure white RAL 9010	light grey RAL 7035	yes
15	Pylon cover	dust grey RAL 7037	pure white RAL 9010	yes
Electric services:				
16	Electric trunking	pure white RAL 9010	light grey RAL 7035	yes
17	End caps of electric trunking	dust grey RAL 7037	pure white RAL 9010	yes
18	Electric panel of solid grade laminate	effect similar to RAL 9010	effect similar to RAL 7035	yes
	Sockets / switches	white similar to RAL 9010	agate grey similar to RAL 7038	yes

The components marked in yellow can be changed to accent colours without surcharge. RAL shades deviating from the accent colours available on request.



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