Laborbau | Systeme

HEMLING.de

SCHOOL FURNISHING SYSTEMS

QME

QUALITY MODULARITY EFFICIENCY

Intelligent solutions for your science classrooms

Our children's education secures the future of our society. The modern concepts of our furnishing systems for science classrooms intend to instil students with enthusiasm for the natural sciences and to provide teachers with solutions on how to structure their teaching lessons. At the same time, we keep an eye on the structural design of the rooms and make sure that we intervene as little as possible with room architecture. Thus, we are able to reduce construction times and minimise building costs.

For decades we have been developing concepts for the design of chemistry, physics, biology and technical rooms and offer both floor- and ceiling-mounted utility supply solutions. Our overhead service carriers permit a multifunctional room design and utilisation of the room for many different subjects. Simple modifications and amendments to the furniture help to meet different requirements on lesson planning.

Our modern production facilities form the basis for a top level manufacturing quality that creates the prerequisites for the durable and sturdy design of our furnishing systems that makes them suitable for school applications.

Apart from standard sizes, we also manufacture customised designs, for instance solutions for barrier-free working environments. Our range of services extends from consulting and planning to the expert installation and maintenance of furnishings.

Laborbau | Systeme

HEMLING.de

1 Utility supply teacher

The right media in the right places

Test procedures and chemical and physical reactions are demonstrated from the teacher's workbench and require the supply of different energies and media.

Depending on the furnishing system chosen, the media (gas, water, electric power, low voltage, and data) can be supplied either at the teacher's workbench or via energy columns or media stations of the overhead service carrier.

1 Teacher's utility supply

The utility supply for teachers is provided at the teacher's workbench, which is customised in accordance with the respective teaching staff requirements and varies as far as size, facilities and equipment are concerned. When an overhead service carrier is used, the energy is supplied via the central infeed and a media station.

Floor supply

Floor supply

The floor connection point for gas, water and electricity is located in the base cabinet of the teacher›s workbench, which also accommodates the sink with multimedia fitting for gas and water tapping. Power is supplied via sockets, data sockets and selector sockets for low voltage in the electric conduit. The emergency-off buttons and the control modules are also accommodated there.

Connections for mobile fume cupboards

When a mobile fume cupboard is supplied with energy (electricity and gas) from the teacher's workbench, the connection is equipped with a multifunctional socket with function connector on a chain as emergency-off jumper when the connection is not in use, as well as with a rotating flexible socket with switching connector and connection hose.

Stop valves

The stop valves at the pipes that lead into the base cabinet constitute the performance limit between building services and laboratory builder. They are installed by building services. We then use these stop valves to connect the gas and water pipes of the taps and fittings, after which we carry out a leak test.

Ceiling supply

Utility supply via overhead service carrier LS TopFLEX

When an overhead service carrier is used, the utility supply for the teacher is provided via the central infeed and via the media station that is arranged above the teacher's workbench.

The central infeed houses the LPG gas cylinder, the solenoid valves, the mains distributor, the control modules and power tapping points as well as the power supply unit. The media station accommodates gas and where necessary water fittings, as well as 230 V sockets, EDP sockets, low voltage tapping points, emergency-off buttons. Depending on the design version, a mobile water station with integrated wastewater lifting system is used.

Floor and ceiling supply

Gas supply

Gas is either made available centrally (natural gas) or by means of an LPG gas cylinder with stop valve, pressure controller and connection hose. The respective base cabinet is equipped with ventilation gratings.

Solenoid valves

A double solenoid valve as central shutoff device and intermediate shutoff device is built in as safety device pursuant to DVGW Code of Practice G 621. A laboratory safety valve checks the "closed" position of all student gas fittings before the gas supply is enabled. If a gas fitting is open or if there is a leak in the line network, no build-up of pressure will be possible – the built-in laboratory controller closes the gas supply.

Electric conduit

The electric conduit houses the control modules, sockets, assignable function terminals and earth terminals for low voltage, empty junction boxes for customer's installations, buttons, dimmer switches and other switches.

Corresponding beamer connection sets with Cinch, VGA, HDMI and USB sockets are installed to control interactive boards, beamers or PCs that are built into the teacher's workbench.

Control modules in the electric conduit

This unit is used for the logic control and monitoring of all media in the classroom and consists of the main switch, executed as key switch with signal lamp, an emergency-off latching button and membrane keys with freely programmable signal lamps. Safety shutdowns of all media after a freely programmable time as well as a beamer time control are also integrated.

Power supply unit

Power supply units are available as built-in unit, floor-mounted unit or mobile model. They generate low voltage with infinitely variable consumption of alternating current and direct current, and are equipped with mains switch, pilot lamp and LCD displays for current and voltage. All outputs are protected by thermomagnetically operating circuit breakers. Direct voltage generation with residual ripples of 48 %, 5 % and stabilised. The installation of a selected voltage monitoring unit to check and where necessary switch off the student voltages is possible.

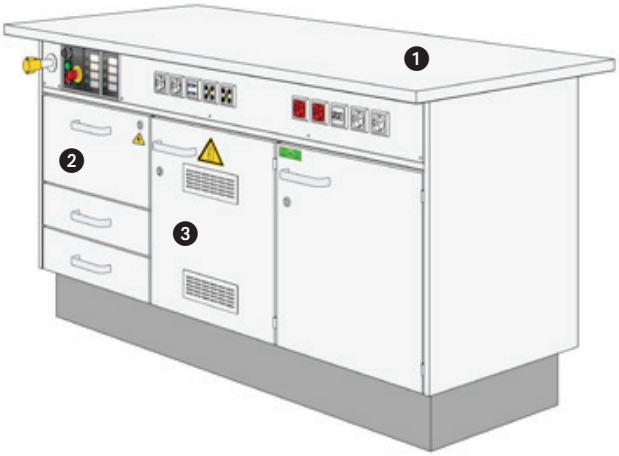
Mains distributor

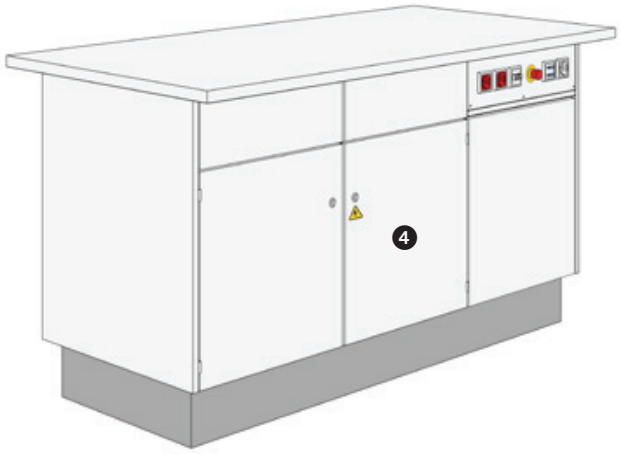
The mains distributor houses all electrical parts such as circuit breakers, ground fault circuit interrupters, contactors and electronic components. The size can be adapted to between 48 - 60 horizontal pitch units, as required. The mains distributor is compliant with VDE and bears the GS mark of conformity. An object-related terminal diagram is inserted in a bracket on the inside of the base cabinet.

1

A I Teacher’s workbench without sink

Teacher’s workbenches are the classroom’s control centre and at the same time form the basis for a professional experiment demonstration. The media at the students’ workbenches are enabled by means of a membrane keyboard. The media panels on the teacher’s workbench can be individually fitted with key switches, emergency-off buttons, sockets, data sockets, modules for the control of interactive boards and fittings.





1. When no aqueous media are required, the teacher’s workbench can be executed without sink on request.
2. An integrated power supply unit permits students to carry out low voltage experiments.
3. When no central gas supply is available, gas is supplied via a propane gas cylinder that is installed inside a base cabinet.
4. All electrical equipment of the system is protected by fuses inside a mains distributor that is installed on the student side of the teacher’s workbench.

Worktops

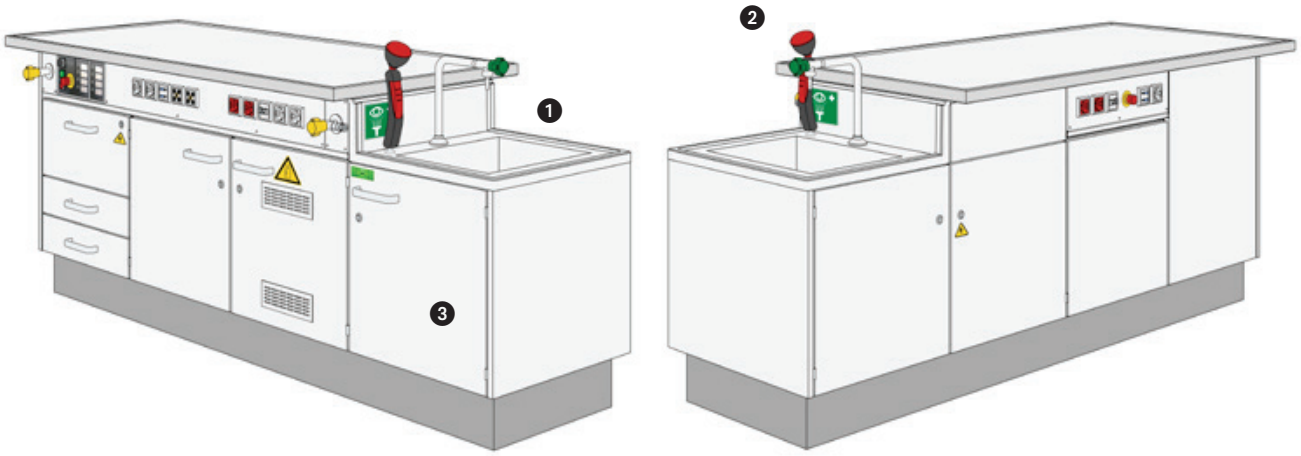
Melamine resin laminate
Solid core material
Porcelain stoneware composite
Tiles

Technical data

Worktop width	**1,360 / 1,960 / 2,560 mm**
Worktop depth	**750 mm**
Bench height	**920 mm**

B I Teacher’s workbench with add-on sink

In particular in chemistry and biology classrooms, teacher’s workbenches are equipped with water fittings. These are executed as standing column with one or multiple tapping points. A base cabinet houses the add-on sink with the fittings. The add-on sink is made from one piece, provided with a raised splash wall and easy to clean.



1. The add-on sink is available in the materials Wertalit and ceramics.
2. A hand-held eye wash as safety equipment according to EN 15154 Part 2 is installed in the area of the sink.
3. The stop valves and the solenoid valves are located inside a base cabinet.

Worktops

Melamine resin laminate
Solid core material
Porcelain stoneware composite
Tiles

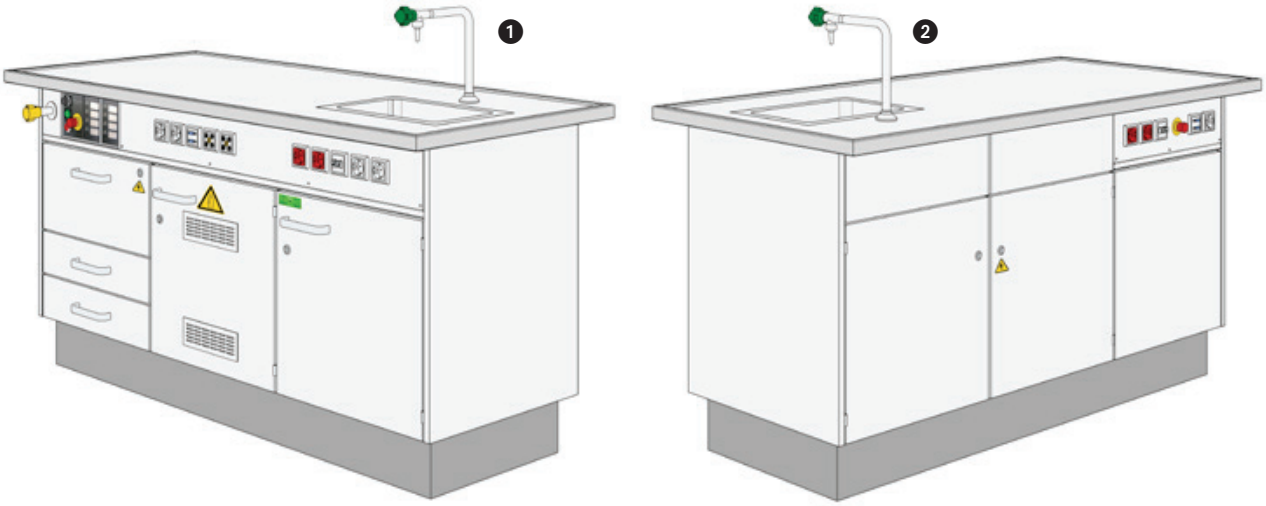
Technical data

Overall width	1,900 / 2,500 / 3,100 mm
Worktop width	1,360 / 1,960 / 2,560 mm
Worktop depth	750 mm
Bench height	920 mm

1

C I Teacher’s workbench with integrated sink

When a flush-mounted sink is required, it will be executed as integrated sink. Liquids spilled on the worktop can then be conveniently wiped into the sink.



❶ Water fittings are designed as “standing fittings”.
Gas fittings are installed as wall-mounted fittings into the frame of the teacher’s workbench.

❷ Worktops are provided with an epoxy resin marine edge that is impervious to fluids.

Worktops

Melamine resin laminate
Solid core material
Porcelain stoneware composite
Tiles

Technical data

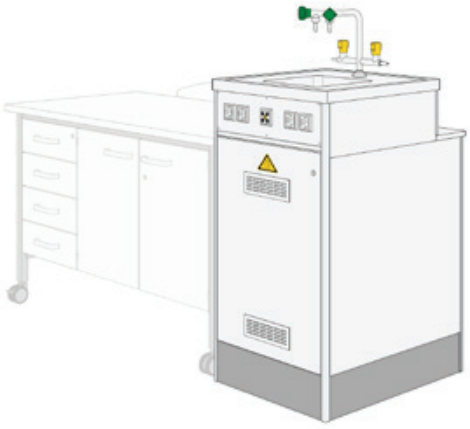
Worktop width	**1,360 / 1,960 / 2,560 mm**
Worktop depth	**750 mm**
Bench height	**920 mm**

D | Utility supply for mobile teacher's workbench

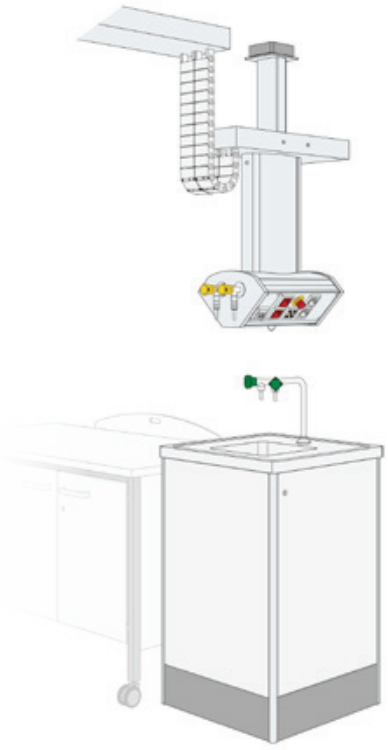
Mobile teacher's workbenches are used when the greatest possible degree of variability for the room's floor plan is a priority. This variability can be achieved because the floor plan does not need to make allowance for any floor-mounted installation points. The solution for this are ceiling-mounted systems, which permit the greatest possible degree of variability when it comes to the floor plan design. The overhead service carrier for the "teacher" media station accommodates the gas fittings and electrical tapping points. Water is made available through a stationary energy column or a mobile water station.

As a protection for students, the mobile teacher's workbench is also available with built-on, mobile safety splash protection that can be shifted sideways. Base cabinets can be selected individually.

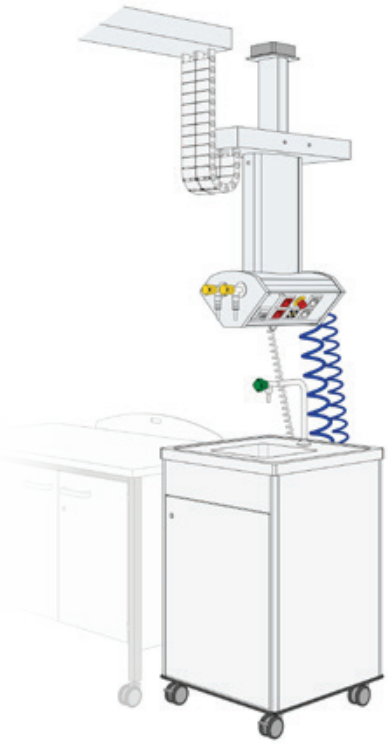
The utility supply of the mobile teacher's workbench is either provided ...



... by a stationary energy column with sink, sanitary and electrical equipment.



... by an overhead service carrier media station (gas, electricity) and a stationary energy column (water).



... by an overhead service carrier media station (gas, water, electricity) and a mobile water station with integrated lifting system.

2 Students' utility supply

Practical experience is thrilling!

Researching and discovering reactions, sequences and processes are the teaching content and one of the key aspects of science classes. For this purpose, the students' workbenches must be equipped with the necessary energy systems.

This can either be done by means of floor-mounted units but also by means of a ceiling supply.

2 Students' utility supply

Floor supply

When using energy columns or students' workbenches with centre supply, the utility supply originates in the floor. This means that the floor plan design of the experiment room has a clear structure and is more or less definite.

Multimedia fitting

Multimedia fittings are available in different equipment versions as standing columns with up to two water tapping points with hose coupling and four gas safety taps with hose sleeves or connection couplings with plug-in couplings. All fittings are approved by the DVGW.

Sink

The seamless cover of the glass fibre reinforced energy column with integrated sink is easy to clean and guarantees a long service life of the energy column.

Edge protection

The energy column is provided with an edge protection that consists of a rounded aluminium profile, thus arming it for the „tough" everyday life at a school.

Electrical equipment

The electrical equipment is housed in an electric conduit made of aluminium with detachable phenolic resin panels and is adapted to the respective requirements. The installation of 230 V-sockets, data sockets, selector sockets for low voltage or sockets that are not switched via the emergency-off switch is feasible.

Floor connection point

In the sanitary area, the performance limit between building services and the facility is the stop valve to which the gas and water lines of the furniture are connected. The position of the stop valve is accurately specified by the installation plan.

As far as the electrical installation is concerned, the performance provided by the customer ends with a 2.5 m cable outlet in accordance with the cable installation list, which is connected in the terminal box of the energy column.

Ceiling supply

Ceiling supply systems offer many options for floor plan design, because there is no restriction due to floor connection points. Thus, both a teacher-centred approach and group lessons are possible inside a classroom. It is furthermore possible to arrange the students' workbenches in U-shape. A rearrangement of furniture is possible at any time. Rooms can be used for multifunctional purposes and are not restricted to science lessons.

The use of an overhead service carrier offers advantages if reorganisation measures are to be implemented, because the entire sanitary and electrical installation from a defined point of transfer is located inside the overhead service carrier. Thus, construction times can be considerably shortened.

Central in-feed

The central in-feed is the point of transfer into the room for the media that are provided by the customer. From here, sanitary and electrical lines are routed inside the overhead service carrier to the sockets and fittings of the individual media stations.

Media stations

Media stations accommodate electrical and sanitary fittings. Gas fittings are arranged on the face side so that they can be viewed by teaching staff. Electrical mounting parts are accommodated on both long sides. Thanks to the high placement density, a media station can provide energy for up to eight students.

Infinitely variable height adjustment

An infinitely variable height adjustment of the media stations permits work to be performed while standing or sitting. The media are always made available at an optimum height that is adapted to the respective age group level. Thus, an optimum accessibility of the media is guaranteed for all students. For safety reasons, all media are automatically switched off when the supply conduit with the media stations is moved up or down. An acoustic signal is sounded during the downwards movement.

Room lighting

Two light strips routed in parallel to the supply conduit and arranged in a manner to provide optimum lighting are also available in a non-reflecting design. Room lighting calculations are carried out by us. All lamps are also available as digitally controllable model and as LEDs.

Cable holders (spirals)

Flexible cable holders guarantee a reliable guidance of electric cables and gas hoses between the media station and the electric equipment or Bunsen burners on the student's workbench.

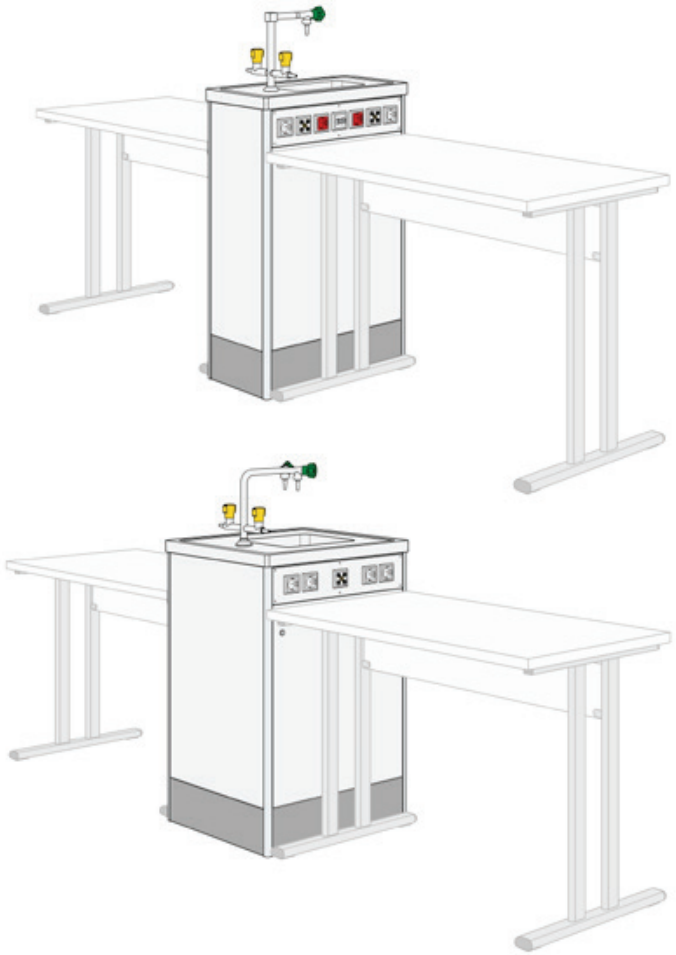
2

A | Students' energy columns

When the floor supply concept is used, students are supplied with energy via energy columns that are individually equipped. Electric tapping points such as sockets, data sockets and low voltage are housed in the two electric conduits placed on both long sides.

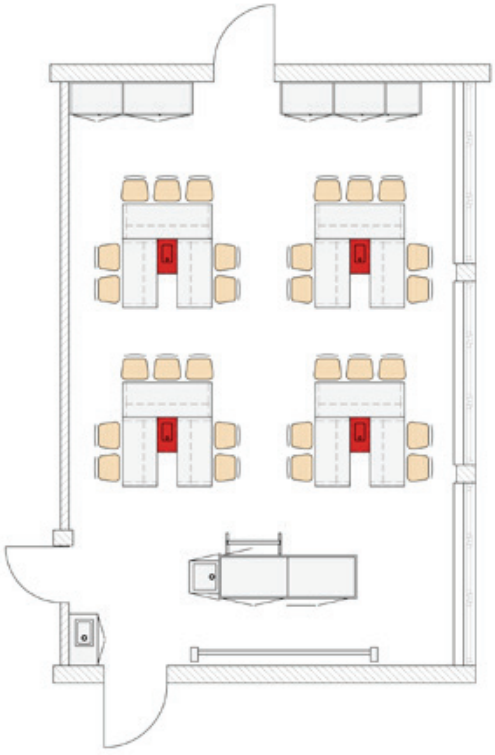
When it is used for physics classes, the energy column is as a rule not equipped with any sanitary fittings and then receives a cover made of table top material. For the fields of biology and chemistry, multimedia fittings for gas and water tapping are used. The cover with integrated sink is made from easy to clean, glass fibre reinforced plastic.

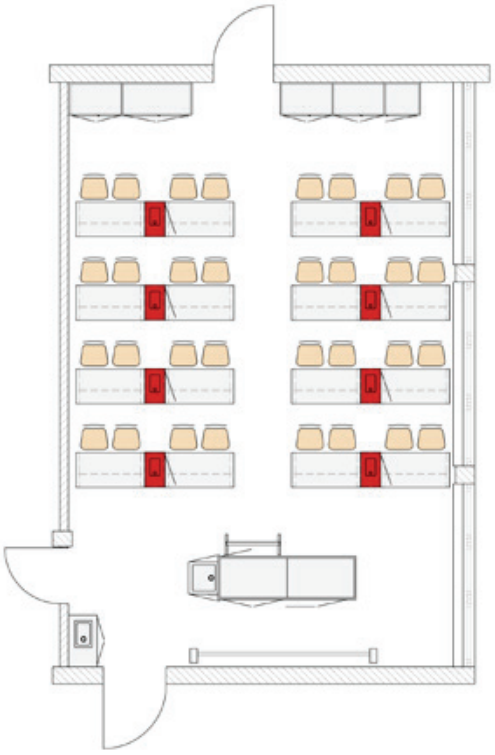
Depending on the required size of the sink, energy columns are available in widths of 350 mm or 610 mm.



Technical data

Energy column	350 x 610 x 978 mm
Energy column 2	610 x 610 x 978 mm
Worktop depth	600
Bench height	805



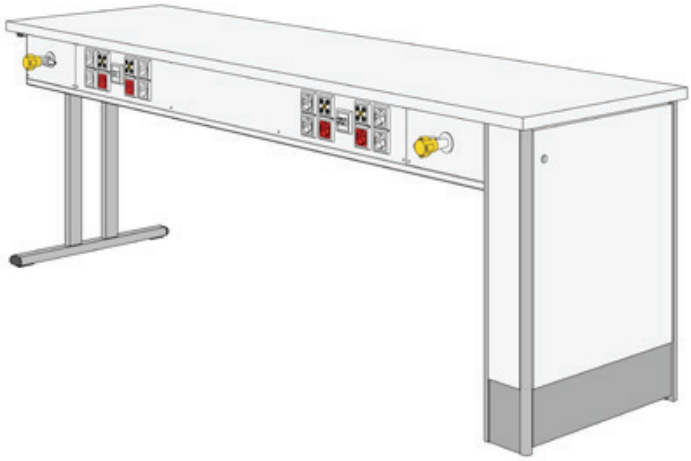


2

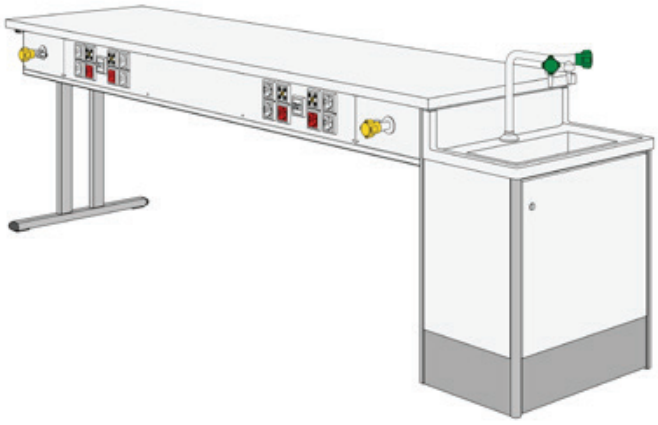
B I Students' workbench with lateral supply

With this equipment version, a students' workbench is equipped with electrical installations and gas fittings, while the workbench that is placed in the same row is additionally equipped with a lateral add-on sink.

Depending on the special field, the room's floor plan and the number of students, these workbenches are available with different worktops and in different lengths and equipment versions.



B I Students' workbench with add-on sink

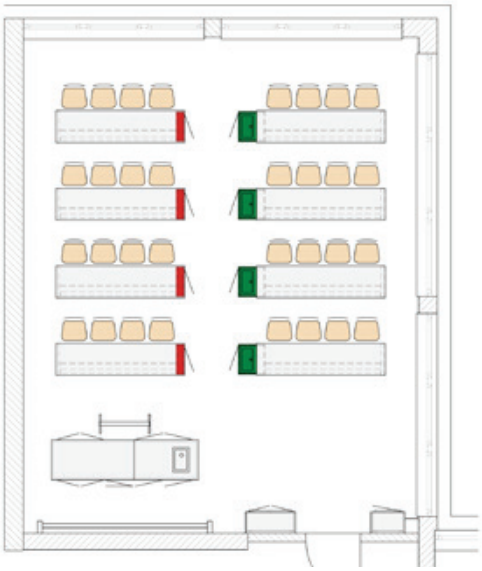


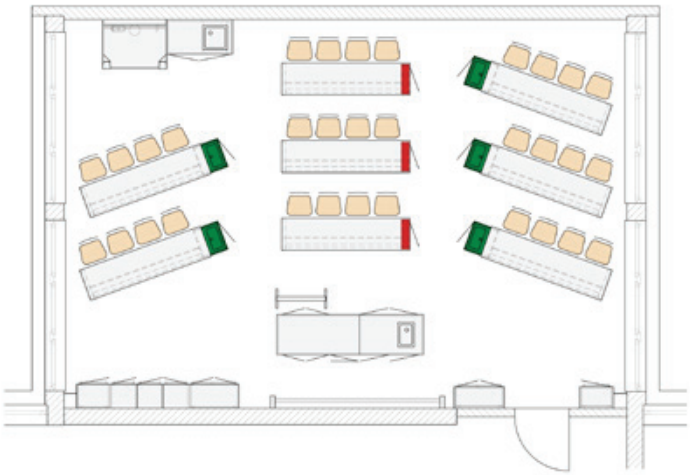
Worktops

Melamine resin laminate
Solid core material
Porcelain stoneware composite
Tiles

Technical data

Worktop width	**1,200 / 1,800 / 2,400**
Bench width incl. sink	**1,535 / 2,135 / ,.735**
Worktop depth	**600**
Bench height	**805**





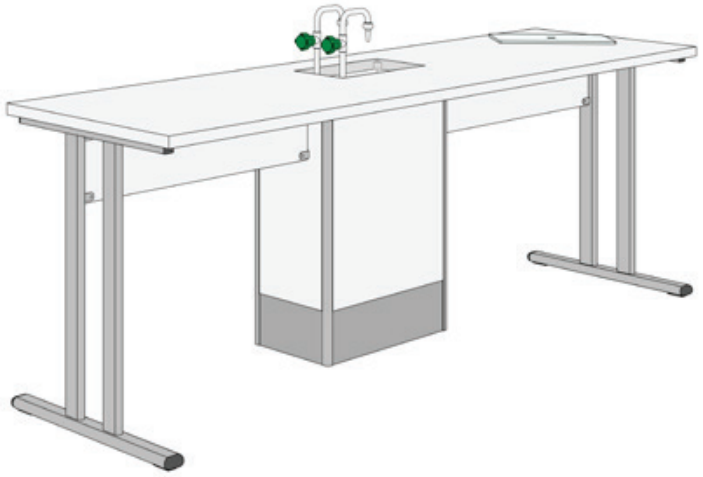
2

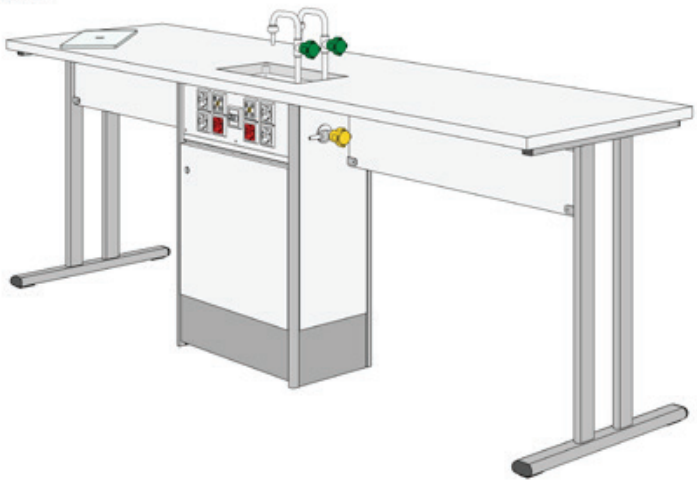
C | Students' workbench with centre supply

On this space-saving version, the utility supply for the students' workbenches takes the form of a centre column. This design is also used for group workbenches.

The sink is equipped with retractable fittings so that the sink can be closed when the fittings are not in use, thus increasing the work surface.

The equipment with sanitary and electrical fittings is freely selectable.



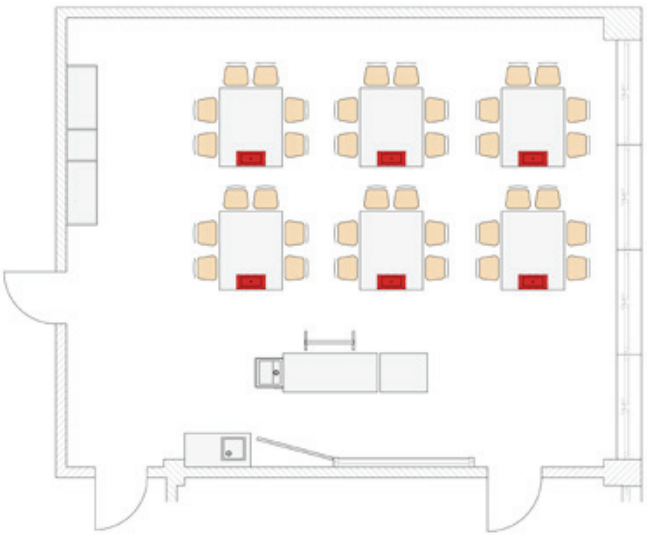


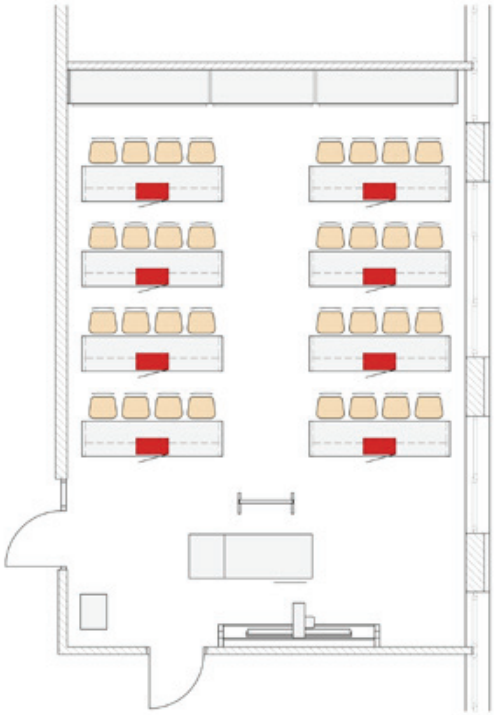
Worktops

Solid core material
Porcelain stoneware composite
Tiles

Technical data

Worktop width	**1,800 / 2,400 mm**
Worktop depth	**600 mm**
Bench height	**805 mm**
Column width	**600 mm**





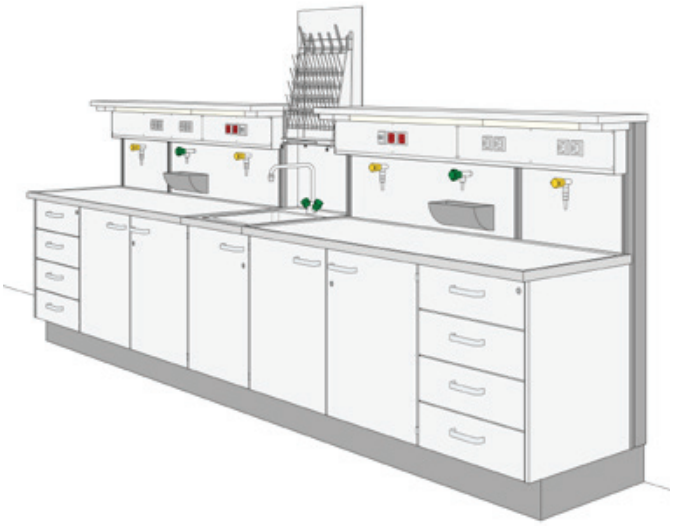
2

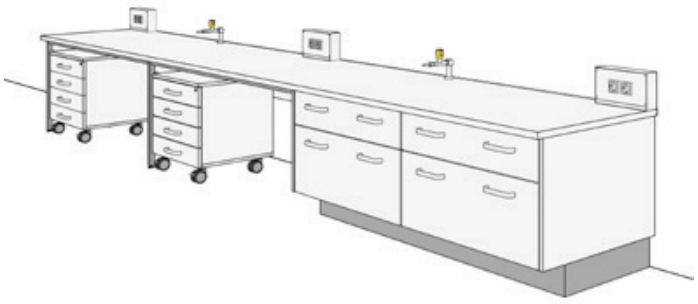
D | Wall-mounted experimenting stations

Wall-mounted experimenting stations are used to facilitate the greatest possible degree of floor plan variability even in rooms with floor supply. This arrangement keeps the central area of the classroom free from floor connection points so that it can be equipped with students' workbenches without utility supply.

Wall benches consist of a media spine with glass shelf, an electric conduit with customised equipment, gas and water fittings in wall-mounted design with sink, base cabinets in many designs as well as the worktop that consists either of melamine resin laminate, solid core material or ceramics. It is also possible to integrate laboratory sinks in these rows of workbenches. Optionally, these workbenches can be equipped with workplace lighting.

These experimenting stations are also available without service spine. The electrical supply is provided by electrical cubes mounted on the worktop. Gas and water tapping points executed as standing fittings, and a polypropylene sink are inserted in the worktop.



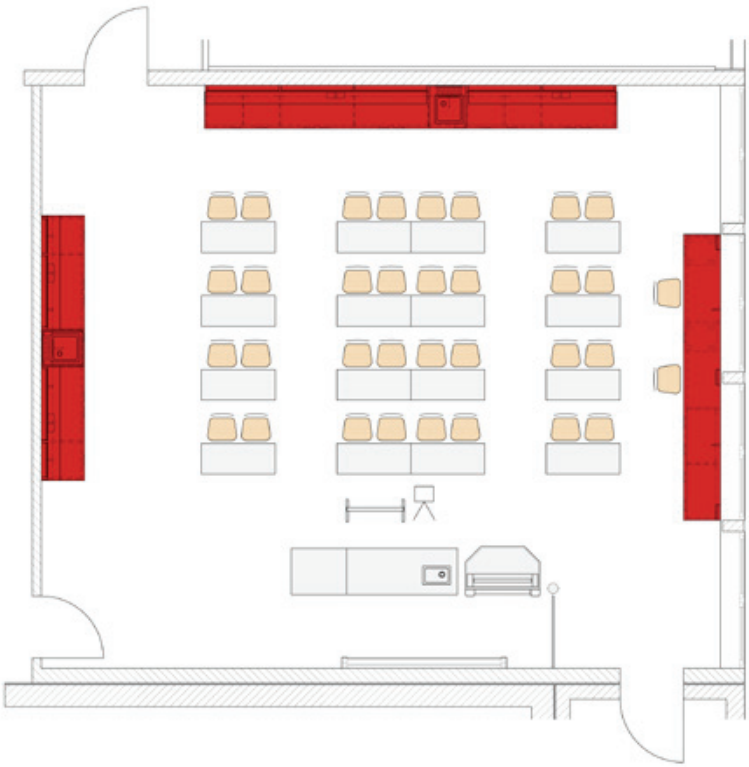


Worktops

Melamine resin laminate
Solid core material
Porcelain stoneware composite
Tiles

Technical data

Grid widths	600 / 900 / 1,200 / 1,500 mm
Worktop depth	650 / 750 mm
Bench height	724 / 920 mm



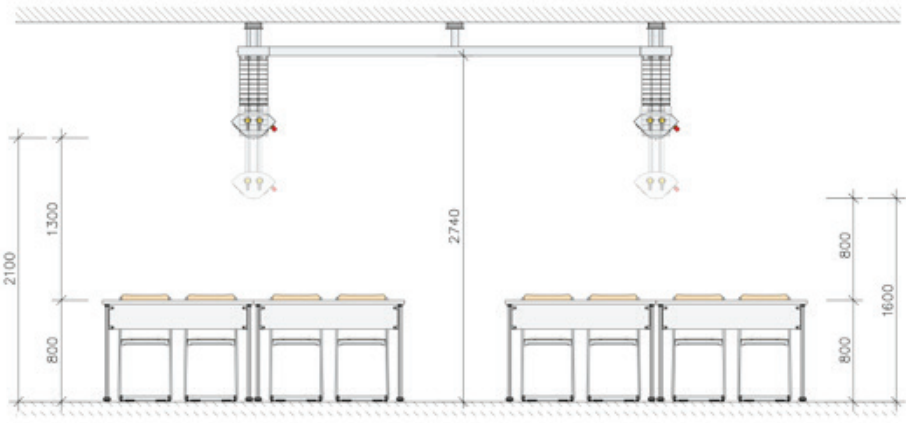
2

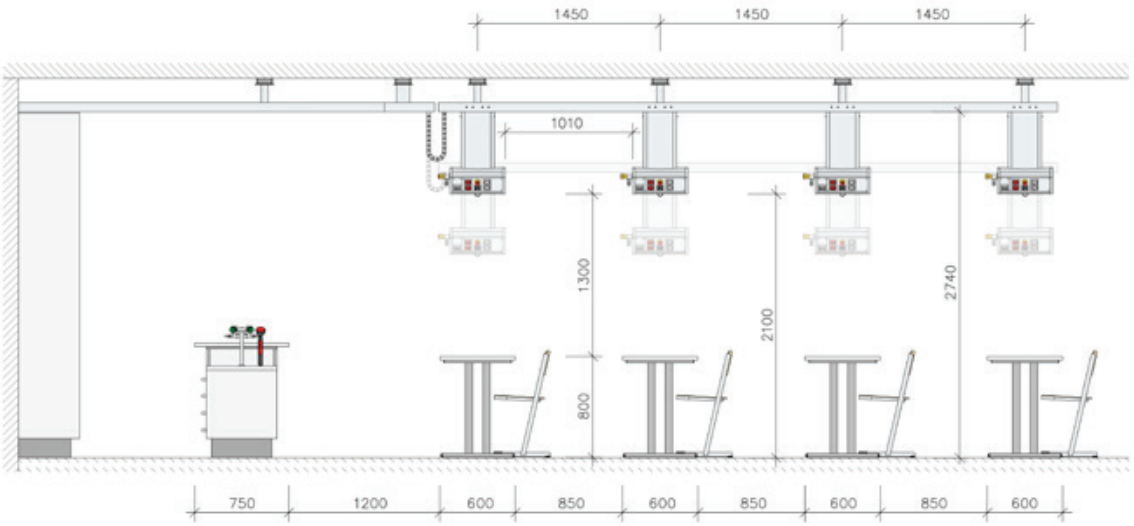
E I Ceiling supply LS TopFLEX with central infeed

The ceiling supply system is available in different design versions and can be adapted to the respective room specifications.

The classic floor plan for a room with 32 pupils is the twin conduit media supply with two by four media stations for the students, front cross member and central infeed at the face side. The teacher's workbench is as a rule designed as stationary model with floor connection point, but can also be designed as mobile teacher's workbench with separate utility supply via energy column and/or media station.

When the media are not used, the media stations with the two supply conduits are moved upwards. The electrical and sanitary fittings are then out of reach, so that an unobstructed view of the blackboard or interactive board is provided.





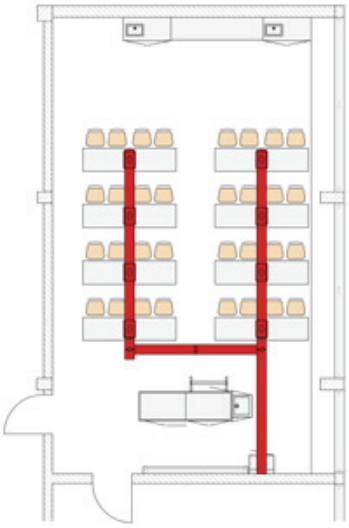
2

F | Floor plan versions LS TopFLEX

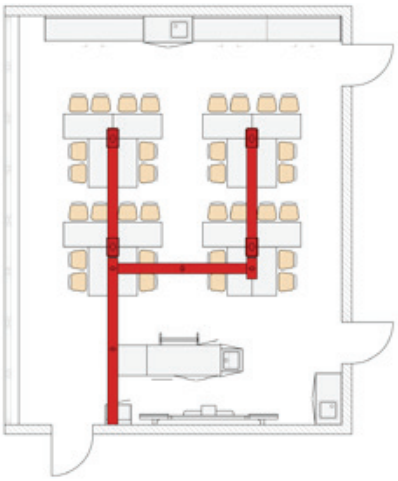
Various floor plan versions can be implemented with LS TopFLEX, depending on requirements and spatial conditions. Whether twin- or triple-conduit design, central infeed on the face or at the side, or supply of the teacher's workbench via a permanently mounted or lowerable media station, whether a room is to be equipped with four, six or eight media stations or whether feed conduits and cross bar are dispensed with and lines intended for this room are laid in the suspended ceiling, or whether the system is to be equipped with room lighting: Everything is possible with LS TopFLEX.

The following floor plan examples provide an overview of the many options offered by LS TopFLEX.

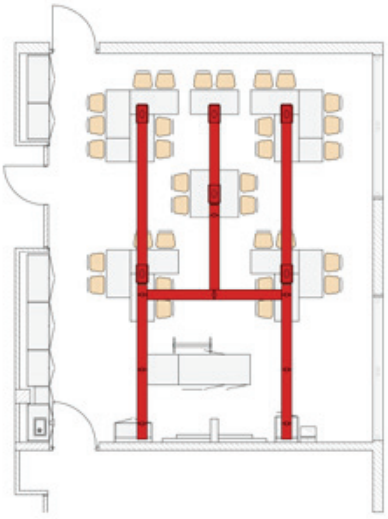
Planning examples



two supply conduits
eight media stations



two supply conduits
four media stations



three supply conduits
five media stations

2

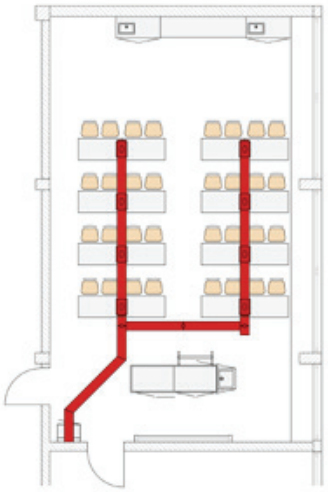
F I Floor plan versions LS TopFLEX

When an overhead service carrier is used, the teacher's workbench can be designed in different ways:

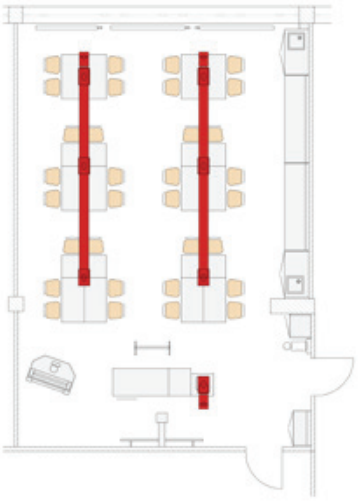
a. Mobile workbench with utility supply via a media station. This station can be fitted at a fixed height, but can also be of individually lowerable design.
b. Conventional stationary teacher's workbench in different designs with floor connection point.

The room lighting can be designed with LS TopFLEX. The installation consists of two twin light conduits designed as round profile with acrylic glass reflector and is on both sides mounted parallel to the roof system on the lamp holder. We compile detailed 3D light calculations for each room with corresponding diagrams and ensure that the 500 Lux required according to the Workplace Ordinance DIN EN 12464-1 is attained at every point of the room.

Planning examples

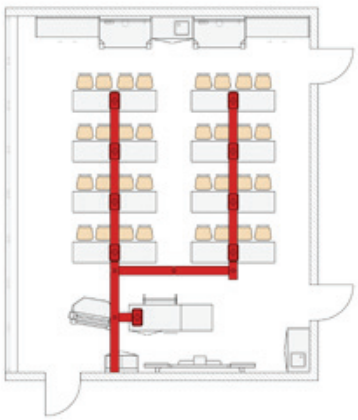


Laterally offset central infeed



Supply conduit and cross member in suspended ceiling

Lateral central infeed



Utility supply teacher's work-bench via media station

2

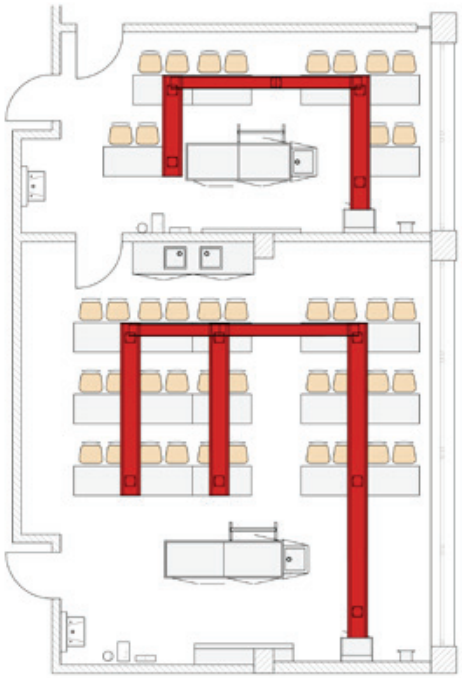
G | Ceiling supply LS Top

The system LS Top has been designed in the style of the overhead service carriers found in different laboratories. It consists of media supply conduits that are permanently installed at a fixed height. These are then individually equipped with sanitary fittings, 230 V sockets, selector sockets for low voltage, EDP sockets and emergency-off buttons.

Media transfer point for the room is the central infeed. From there, all lines and cables for the respective tapping points are routed in the media supply conduit.

The system can be equipped with room lighting or workplace lighting.

Different floor plan versions can also be implemented with LS Top.



3 Utility supply preparation

Good preparation is (almost) everything

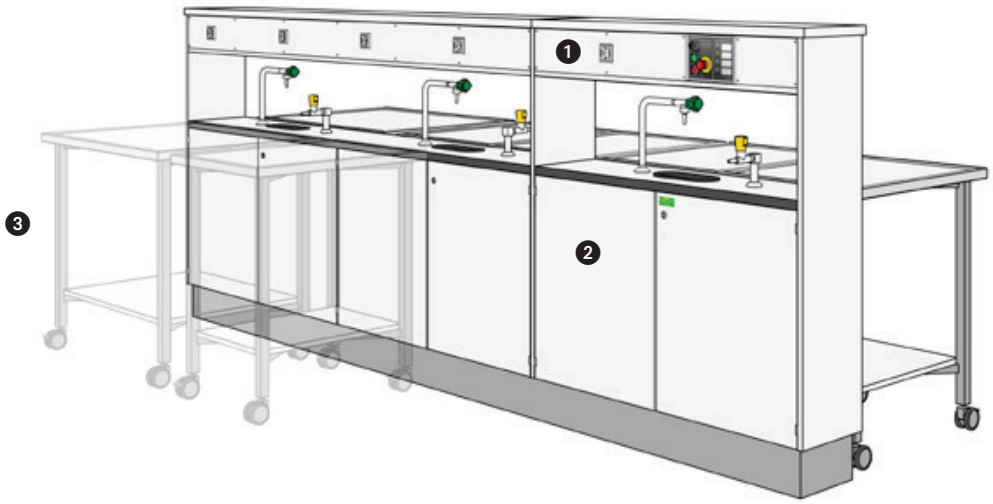
Vivid experimental classes requires preparation rooms, where teachers are provided with the opportunity to carry out their own experiments, to personally carry out experiments proposed by the schoolbook and to set up test arrangements on mobile workbenches in such a manner that they can be demonstrated in the classroom later on.

The energy is supplied via utility modules that make available sanitary and electrical media and sinks for the wastewater as well as via complete laboratory island benches and wall benches.

3

A I Utility module

The utility module is a narrow utility supply unit that is individually equipped with sanitary fittings and accommodates the entire control system to monitor all the media in the preparation room in electric conduits at both sides of the centre. The centre comprises the main switch executed as key switch with pilot lamp, the emergency-off latching button and freely programmable membrane keys.



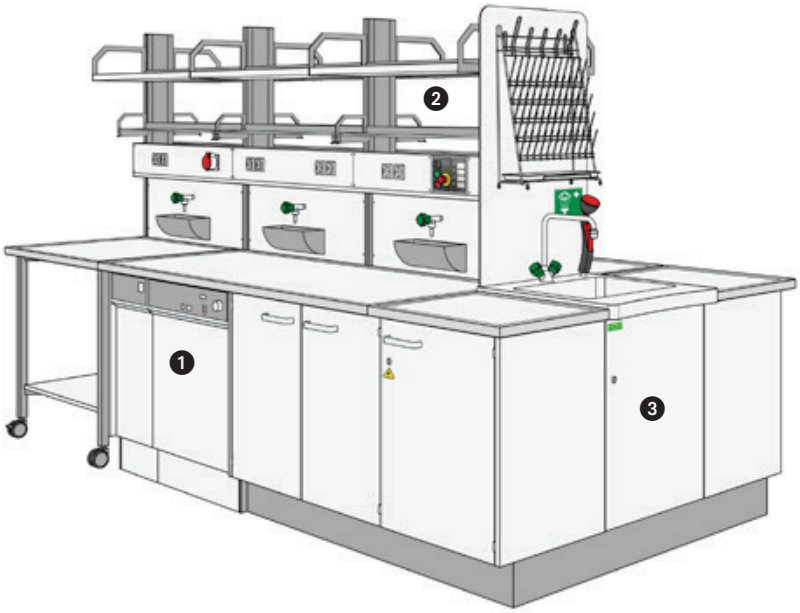
1. Sockets, data sockets, empty junction boxes and sockets for low voltage tapping are also installed in the electric conduits.
2. The solenoid valves that are also compulsory in preparation rooms are accommodated in the service spine, as is the mains distributor for installation of all electrical components such as circuit breakers, ground fault circuit interrupters, contactors and electronic components.
3. Mobile benches are attached to the utility module and serve to prepare experiments for later demonstration in the classroom.

Technical data

Grid width	900 / 1,200 mm
Utility module depth	300 mm
Bench height	920 / 1,430 mm

B I Service spine laboratory island bench

A service spine offers a lot more design options for experiment preparation. This floor-mounted media supply system accommodates fittings as well as electric conduits with customised equipment.



1. A laboratory island bench makes sense in particular when built-in units such as dishwashers, refrigerators or drying cabinets are to be integrated or when sink modules are to be arranged on the face side.
2. The system supports of the laboratory island bench accommodate shelves and can be extended so that additional storage space can be gained with the installation of hanging cabinets.
3. Laboratory island benches can be compiled into different designs when they are combined with base cabinets placed in front or with worktops, add-on benches or mobile benches.

Worktops

Solid core material
Porcelain stoneware composite
Tiles

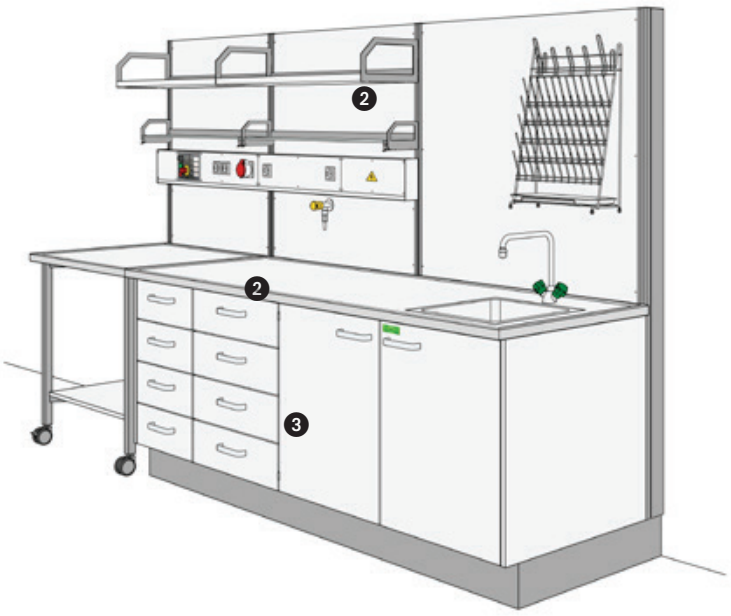
Technical data

Grid width	600 / 900 / 1,200 / 1,500 mm
System support height	1,980 mm
Worktop depth	650 / 750 mm
Bench height	920 mm
Width of sink at face side	1,420 / 1,620 mm

3

C I Service spine wallmounted workbench

Combined with laboratory bench models, the service spine adds up to a typical wall-mounted laboratory bench. The spine is equipped with a glass shelf and system shelf and houses the electric conduit for the built-in electrical appliances. The electric conduit also houses the room control system with main switch and freely programmable membrane keys.



❶ A sink element with associated drainage board and boiler or flow heater can be integrated. Installation of a dishwasher is feasible.

❷ Depending on the specific field and the requirements, the material used for the worktops differs: melamine resin worktops as equipment storage spaces, ceramics when the focus is on chemical resistance, phenolic resin as sturdy „all-round board".

❸ A double solenoid valve as safety device or central or intermediate shutoff device is housed inside the base cabinet. In case there are several gas tapping points, a laboratory safety valve that checks the closed position of all gas fittings before they are enabled is also provided.

Worktops

Solid core material
Porcelain stoneware composite
Tiles

Technical data

Grid width	600 / 900 / 1,200 / 1,500 mm
System support height	1,980 mm
Worktop depth	650 / 750 mm
Bench height	920 mm

D | Window working desks

Documentation and evaluation activities are carried out at desk workplaces that are located near windows or are wall-mounted. They consist of an H-feet or C-feet steel frame with table top, base cabinets and electric power supply.

❶ The electric conduit is mounted on the bench and is equipped with 230 V sockets, selector sockets for low voltage, data sockets or sockets that are not switched via emergency-off.

❷ The entire electrical control system for the room can be installed in the electric conduit and consists of the main switch executed as key switch, emergency-off latching button and membrane keys that are freely programmable for different media.

Worktops

Solid core material

Technical data

Grid width	600 / 900 / 1,200 / 1,500 mm
Worktop depth	650 / 750 mm
Bench height	724 mm

4 Benches and sinks

Always the right work station for students and teacher

There are different requirements on workbenches and sinks, depending on the field. This is why students' workbenches, mobile workbenches, desk tops and sinks are available in different sizes, heights and with many different worktop materials.

4

A I Students' benches

We offer students' benches in three different frame designs with T-feet, 4-feet and C-feet with different worktop materials and in different sizes. Height-adjustable students' benches are available as an alternative.

All students' benches can be optionally upgraded or retrofitted with book storage baskets, a device to hang up a chair and briefcase hooks.

Students' bench with T-feet:
This bench is suitable for short group work, as several students can sit on all sides of the bench because it has no lateral margins.

Students' bench with 4-feet:
4-feet benches consist of a steel frame made of 40 mm circular tube with welded cross members and are characterised by a particularly high load carrying capacity.

Students' bench with C-feet:
Thanks to the position of the vertical double column, the C-feet bench offers a large degree of legroom and is thus preferably used for higher grades.

Worktops

Melamine resin laminate
Solid core material
Porcelain stoneware composite
Tiles

Design

Breite:	**600 / 1,200 / 1,800 mm**
Höhe:	**805 mm**
Tiefe:	**600 mm**

B I Mobile benches, add-on benches, desks

In preparation rooms, mobile benches are often placed at utility modules or service spines of laboratory benches and are used to set up test arrangements on mobile workbenches so that they can be demonstrated in the classroom later on. A multitude of bench models with different dimensions and worktop materials is available.

Add-on benches create additional storage and working surfaces in preparation rooms and classrooms. Desks are used as simple documentation and evaluation stations in the preparation room or even in the classroom.

Mobile benches:
Consist of a sturdy steel frame, a worktop in different materials, a storage shelf, four steering rollers of which two are lockable, load bearing capacity 180 kg.

Add-on benches:
The steel frame is equipped with levelling feet. Worktops are available in different materials with and without marine edge.

Desks
Desks consist of a steel frame and the worktop, optionally with rear upright edge profile. The power supply is effected by means of an electric conduit or individual electricity cubes. Mobile base cabinets with hinged door and/or drawers supplement the desk.

Worktops

Melamine resin laminate
Solid core material
Porcelain stoneware composite
Tiles

Design

Width	**600 / 1,200 / 1,800 mm**
Height	**724 / 920 mm**
Depth	**600 / 750 mm**

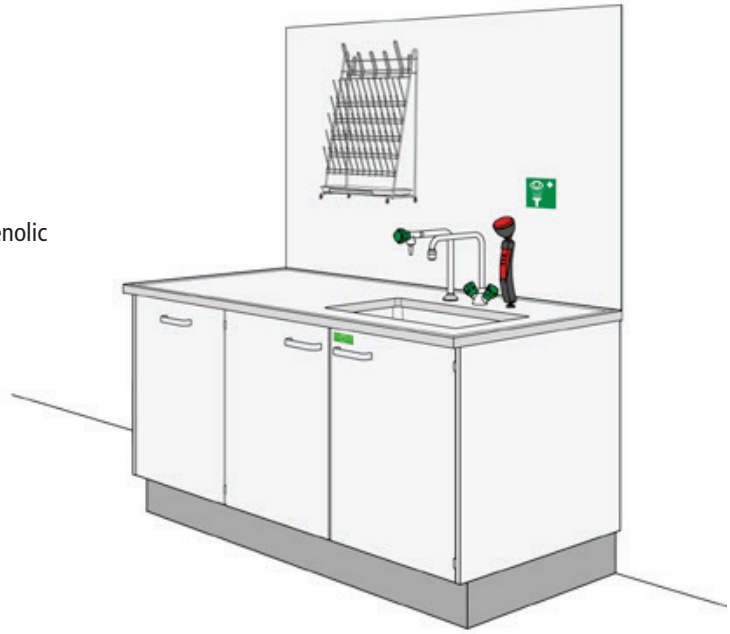
4

C I Sinks

Sinks in science classrooms and preparation rooms are available in three different designs: wall-mounted, integrated into a row of laboratory workbenches or cabinets or as end sink unit. Different worktop and sink materials are available for the sinks.

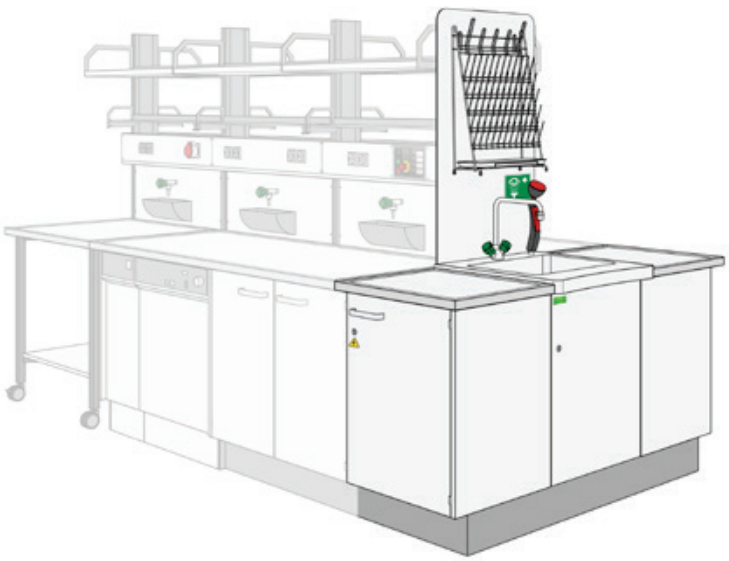
Fittings are available as standing or wall-mounted fittings. Each sink can be equipped with a single-hand eye wash facility that can be extended from the bench. The sinks can be optionally equipped with waste collector, flow heater, boiler and drainage board for laboratory glassware.

Wall-mounted sink:
We recommend the installation of phenolic resin panels to protect the walls from splash water.



Integrated sink:
Here the sink forms an integral part of a wall system or wall bench.

End sink unit:
The end sink unit is installed at the face end of an island bench in the preparation room.



Worktops and sinks

Polypropylene
Porcelain stoneware composite
Ceramic sink module

4

D I Worktop materials

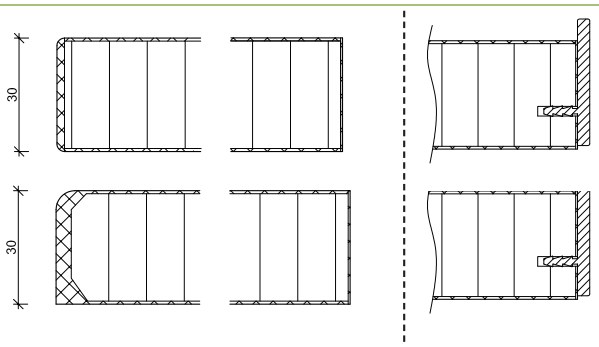
Resistance against chemicals and reagents, scratch resistance, load capacity per square metre, cleaning and hygiene standards, surface hardness and temperature stability are the most important criteria when choosing the right worktop material.

The following materials are available to choose from:

1. Melamine resin laminate worktops

1a High-density particle board, E1, high-pressure laminated (HPL) on both sides, 2 mm front edge

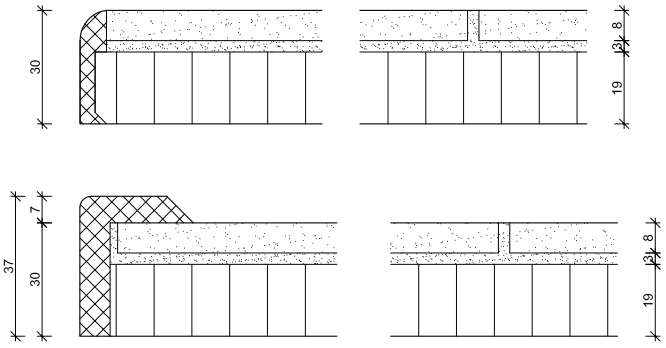
1b High-density particle board, E1, high-pressure laminated (HPL) on both sides, polyurethane (PUR) front edge



2. Porcelain stoneware composite worktops

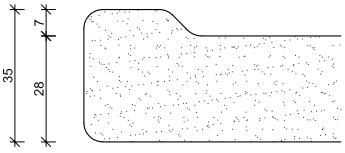
2a Porcelain stoneware composite worktop , 8 mm porcelain stoneware, base material high-density particle board, both sides coated with melamine resin, with polyurethane (PUR) edge

2b Porcelain stoneware composite worktop , 8 mm porcelain stoneware, base material high-density particle board, both sides coated with melamine resin, with epoxy marine edge



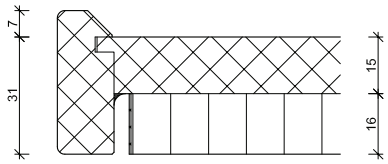
3. Porcelain stoneware worktop

3 Porcelain stoneware worktop with marine edge



4. Polypropylene worktops

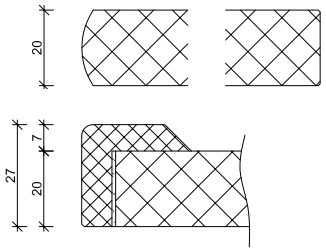
4 Polypropylene worktop with marine edge,
Base material: high-density particle board,
both sides coated with melamine resin



5. Solid core material worktops

5a Solid core material worktop, chamfered,
high-pressure laminated (HPL) on both
sides

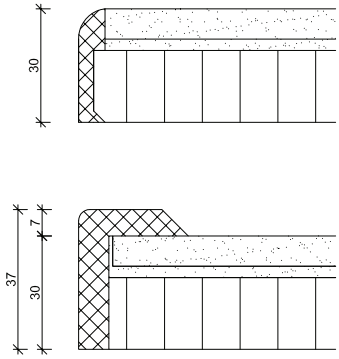
5b Solid core worktop with epoxy marine
edge, high-pressure laminated (HPL)
on both sides



6. Tiled worktops

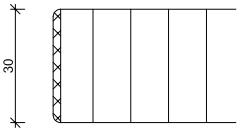
6a Tiled worktop, 8 mm glazed tiles or
8 mm unglazed tiles (colour: red),
Base material: high-density particle board,
both sides coated with melamine resin,
with polyurethane edge (PUR)

6b Tiled worktops, 8 mm glazed tiles or
8 mm unglazed tiles (colour: red),
Base material: high-density particle board,
both sides coated with melamine resin,
with epoxy marine edge



7. Beech multiplex worktops

7 Solid plywood board, surface painted
with multiplex real wood edge



5 Fume cupboards

Top grade fume cupboards

Fume cupboards in different designs are indispensable both for the demonstration of chemical reactions and for practical student experiments.

We set great store to provide the greatest possible safety against toxic emissions and subject all fume cupboard models to extensive tests and inspections in our own aerodynamics testing and measurement facility. All fume cupboards excellently comply with the requirements of EN 14175 or DIN 12924 Part 3.

5 Fume cupboards

In science classrooms, fume cupboards are the most important components when it comes to the safe execution of tests and experiments. This is why fume cupboards are manufactured in many designs and versions in accordance with the requirements and the spatial conditions.

We offer fume cupboards as wall-mounted fume cupboards in different sizes, as hatch fume cupboards between preparation and classroom, as stand-alone fume cupboards with different geometries or as mobile units.

At the same time, the safety of students and teachers takes top priority. All fume cupboards are type-tested and bear the GS-mark of conformity. We manufacture at modern, GS-tested production facilities and only use high-quality materials.

All fume cupboards can be customised as far as their equipment with sanitary and electrical components is concerned, but also with regard to the worktop materials and the design of the base cabinets.

Test room

We are a member of the European Test Laboratories Working Group and test and measure our own fume cupboards at our in-house test laboratory. Type tests are executed according to EN 14175 in cooperation with the Institute for Industrial Aerodynamics at the University of Applied Sciences in Aachen.

Our aerodynamics measurement facility allows us to simulate various room air situations so that fume cupboards can be optimally adjusted to concrete on-site conditions.

Fume cupboard monitoring

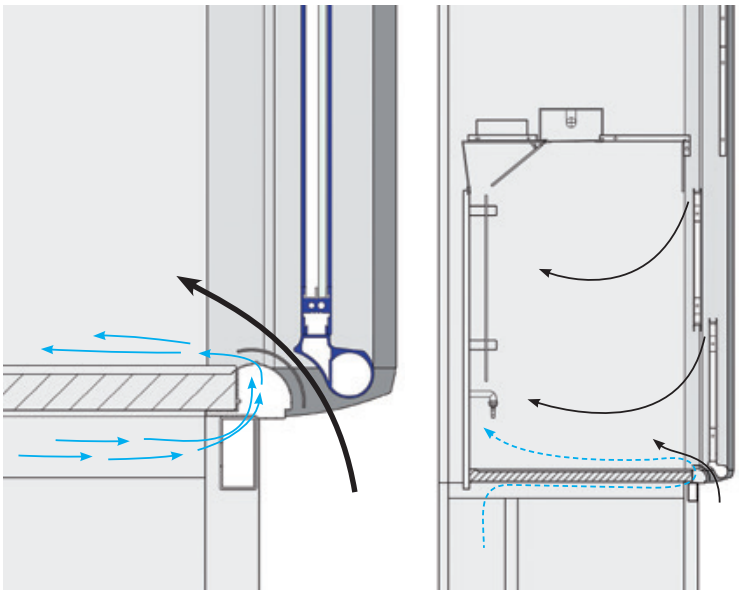
All fume cupboards are equipped with an air flow monitoring system acc. to EN 14715m which emits a visual and acoustic alarm if the flow rate falls short of a specified value, thus creating unsafe conditions for teacher or students.

Exhaust air installations

When required, exhaust air installations for individual fume cupboards that are equipped with their own fan or frequency-controlled fans that extract the air of several fume cupboards are provided. We specify the pipe routing, calculate pressure losses and determine the output volume of the exhaust air installation. Fans are either mounted on the building roof or in the attic.

Support jet technology

Protection against toxic emissions can be improved by employing the support jet technology. A support jet section is attached to the front edge of the worktop, through which a low supply air flow is blown into the fume cupboard, thus reducing the toxic substances emitted by the fume cupboard.



Disposal systems

We offer complete systems for the disposal of spent acids. The acids are filled into disposal cans by means of a funnel. The cans are equipped with a fill level monitoring system and are placed into a base cabinet with extraction system, with polypropylene lining and collection tray. If there are solvents to be disposed of, a hazardous substance base cabinet is used.

Hazardous substance base cabinets

Fume cupboards can also be equipped with hazardous substance cabinets. Base cabinets for acids, lyes or combustible liquids are connected to a permanently active exhaust air installation. In case of a fire, the latter closes automatically and is fire-resistant for up to 90 minutes.

Retractable exhaust air connection

For mobile fume cupboards, a ceiling-mounted retractable exhaust air connection with removable exhaust hose for docking onto the mobile fume cupboard is available. The system can optionally be equipped with a multifunctional socket with function connector for electric power and a rotating flexible socket with switching connector and connection hose for the gas supply.

5

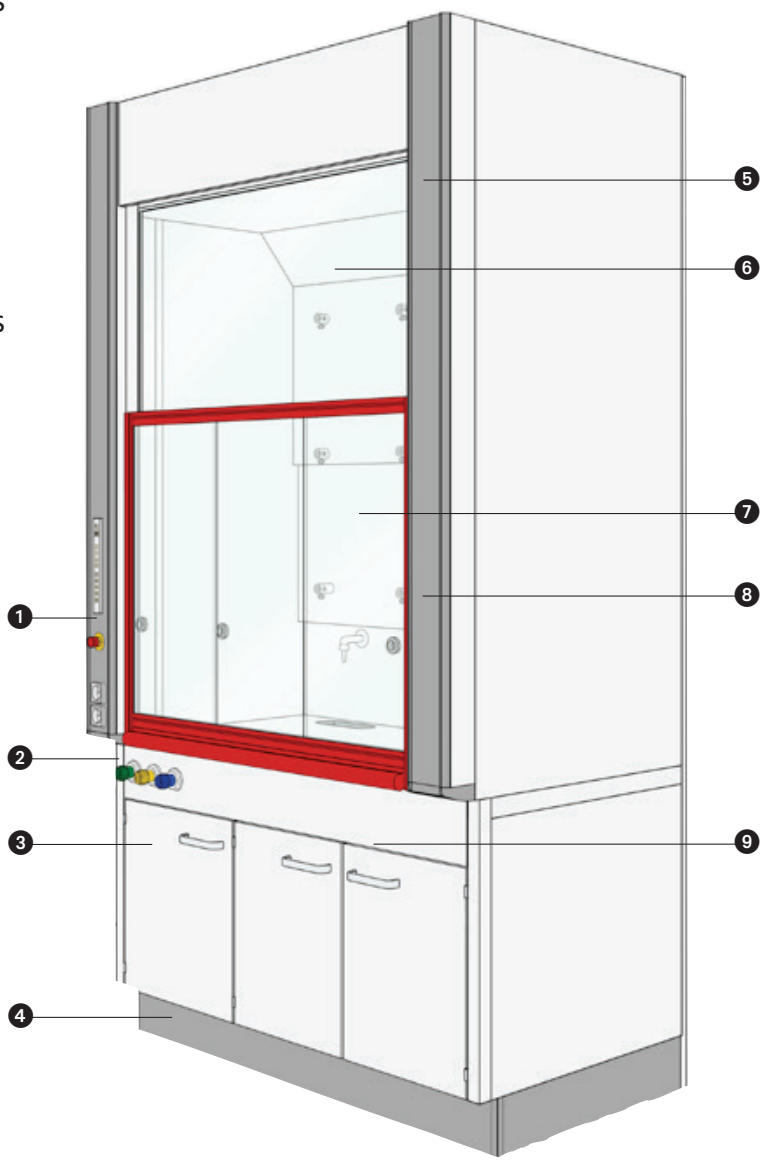
A | Fume cupboard designs

5

A | Bench-mounted fume cupboards according to EN 14175

By means of their design and air routing, fume cupboards – according to the protection objective definition – are to prevent gases, fumes and dusts inside the fume cupboard from getting into the laboratory room in dangerous concentrations or quantities. In addition they are to prevent a dangerous explosive atmosphere from forming. Furthermore, the closed front slide is to protect laboratory personnel against splashing hazardous substances and hurled glass splinters. Compliance with all the requirements is guaranteed by the special design of our fume cupboards.

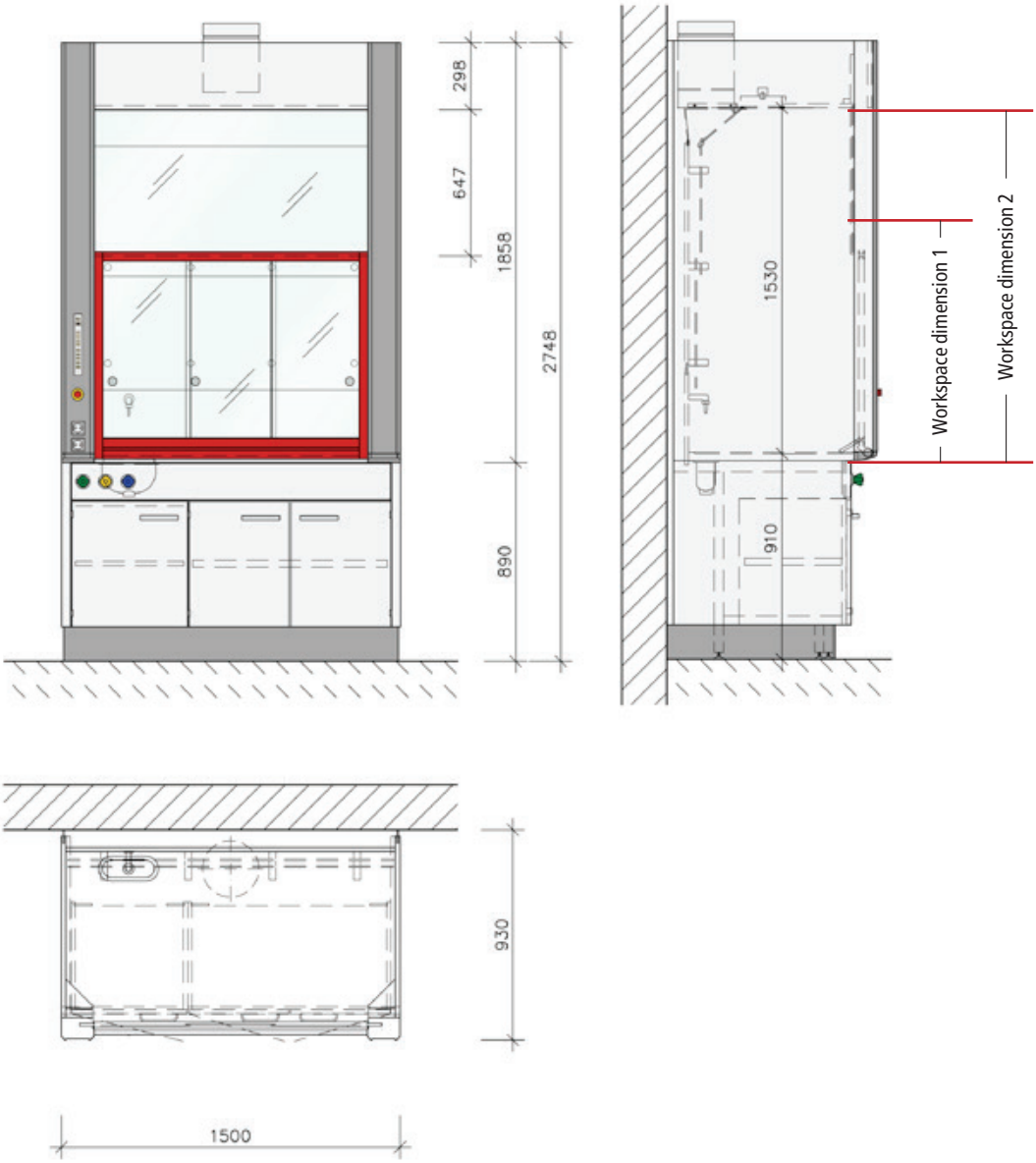
By default, the fume cupboard is provided with a melamine resin internal lining, a worktop made of composite ceramics, tripod brackets and illumination. The equipment with media fittings (water, gas, pure gas) and sockets is adapted to customer requirements. The base cabinets can be arranged according to requirements.



Legend

1. Electrical equipment
2. Steel frame
3. Base cabinet on plinth
4. Plinth panel
5. Pylons
6. Glass pane
7. Front sliding window
8. Flow rate monitoring system
9. Fitting installation panel

Dimensional drawing



Technical data

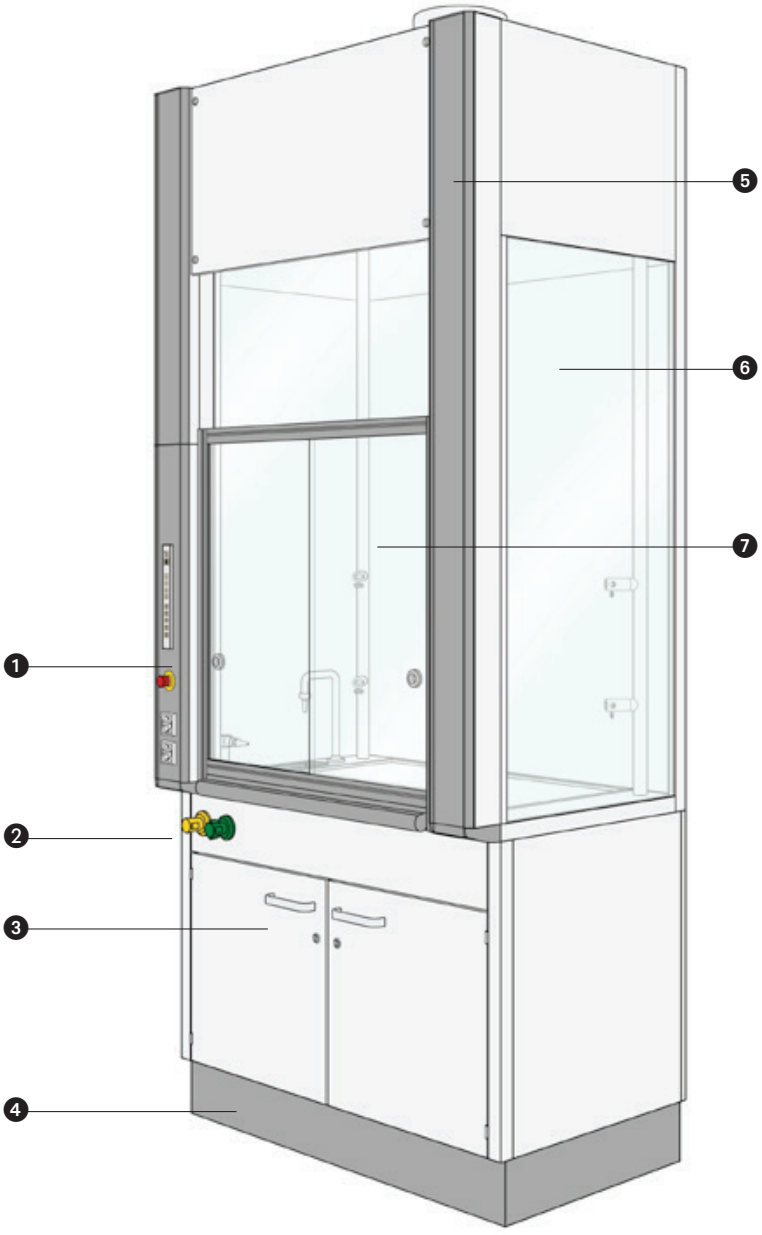
Width	1,200	1,500	1,800	2,100
Overall dimension	1,200 x 930 x 2,748	1,500 x 930 x 2,748	1,800 x 930 x 2,748	2,100 x 930 x 2,748
Workspace dimension 2	1,160 x 740 x 1,530	1,460 x 740 x 1,530	1,760 x 740 x 1,530	2,060 x 740 x 1,530
Recommended flow rate m^3/h	400	530	660	790
Recommended flow rate with support jet m^3/h	350	450	560	680

5

B I Stand-alone fume cupboard

Der freistehende Demonstrationsabzug wird im naturwissenschaftlichen Unterrichtsraum meist neben dem Lehrertisch platziert. Durch seine vierseitige Verglasung bietet er großen Schülergruppen optimalen Einblick auf den Ablauf der vom Lehrpersonal durchgeführten Versuche und die Entstehung und Verlauf von chemischen Reaktionen.

- Worktop made of composite ceramics; sink made of polypropylene with lateral installation panel.
- The supporting element for the fume cupboard superstructure is a sturdy steel frame into which the base cabinet with hinged doors is inserted.
- The fume cupboard equipment with sockets, emergency-off switches, standing gas and water fittings can be freely selected.



Legend

1. Electrical equipment
2. Sanitary equipment
3. Base cabinet
4. Plinth panel
5. Pylone
6. Glass front, student size
7. Front sliding window

Dimensional drawing

Technical data

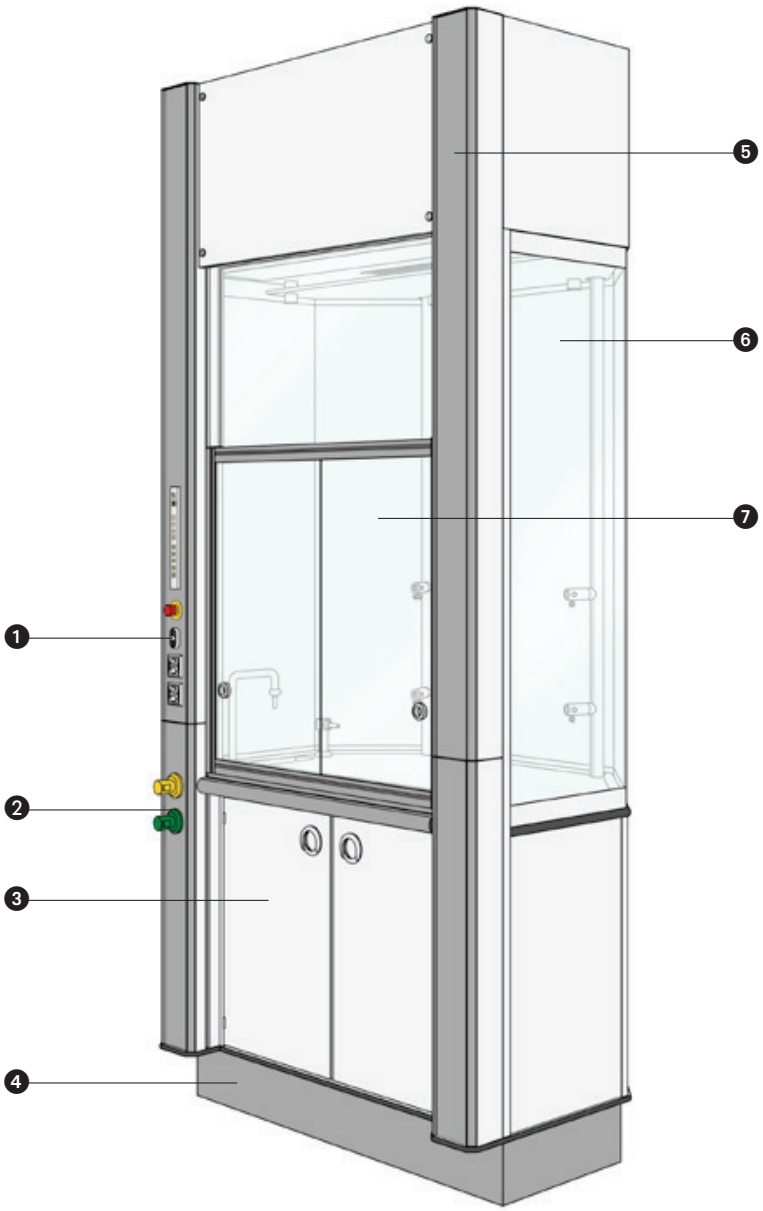
Width	1,200
Overall dimension	1,200 x 770 x 2,748
Workspace dimension	1,160 x 740 x 2,400
Recommended flow rate m³/h	480

5

C I Stand-alone trapezoid fume cupboard

Thanks to its trapezoidal shape, students can cluster even better around the fume cupboard and have an unobstructed view of the experiments demonstrated inside the fume cupboard.

- A base cabinet on a plinth serves as supporting element for the fume cupboard superstructure. The fume cupboard is equipped with two round pipe columns with two brackets each on which tripod rods can be fastened.
- Fittings are executed as „standing fitting", the polypropylene sink is located centred in the rear of the worktop.
- Sanitary and electrical control elements are arranged in the left-hand pylon. The counterweight for the fume cupboard sliding window is arranged in the right-hand pylon.
- A function display monitors the operational safety of the fume cupboards and emits a visual and acoustic alarm when the exhaust air flow rate falls short of the specified figure.



Legend

1. Electrical equipment
2. Sanitary equipment
3. Base cabinet
4. Plinth panel
5. Pylons
6. Glass front, student side
7. Front sliding window

Dimensional drawing

Students' side

Teacher's side

Technical data

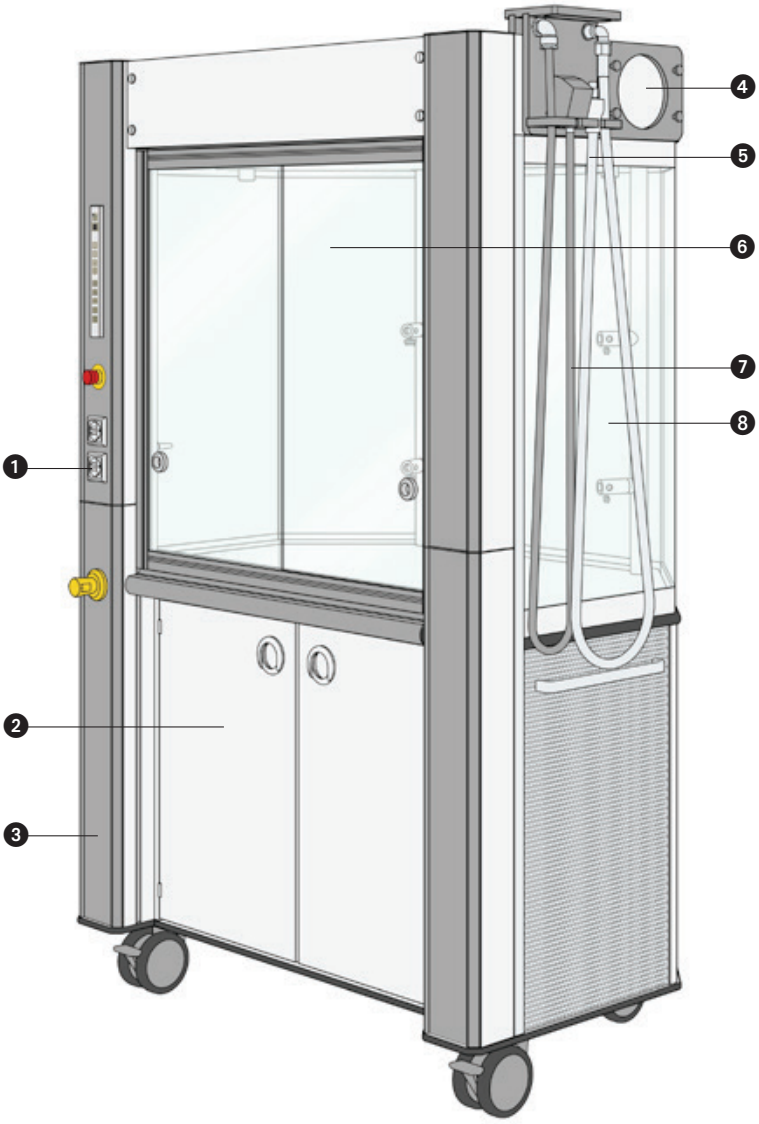
Width	1,200
Overall dimension	1,200 x 810 x 2,748
Workspace dimension	1,160 x 740 x 2,400
Recommended flow rate m^3/h	400

5

D I Mobile fume cupboard

Mobile fume cupboards are mainly used in rooms with overhead service carriers, where a free floor plan design is of paramount importance. For experimental demonstrations they can be placed in an optimum position and pushed in a parking position when they are not in use.

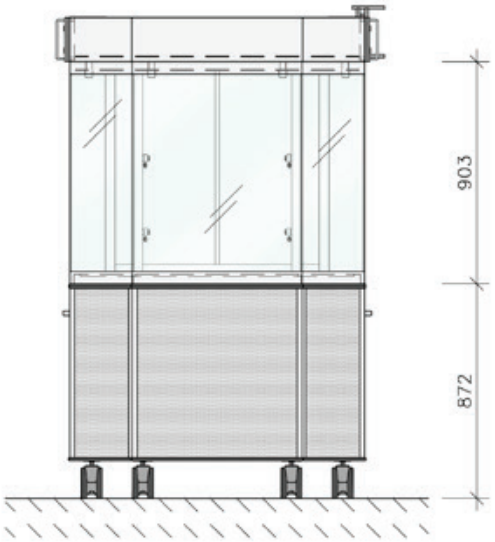
- Thanks to their low installation height of 1,995 mm, mobile fume cupboards can be moved through doors into adjacent rooms, allowing them to be used in different locations.
- The utility supply of the mobile fume cupboard comes either from the teacher's media station, the central feed-in or from the teacher's work-bench via a multifunctional socket with function connector for electrical energy or via a rotating flexible socket with switching connector and connection hose for gas.
- If the mobile fume cupboard is pro-vided with a water supply, it is also equipped with a wastewater lifting system. Water supply and discharge are effected via the overhead service carrier or the teacher's workbench.
- The exhaust air connection is provided at the side via a flexible exhaust air hose with bayonet coupling or via a ceiling-mounted retractable exhaust air connection.



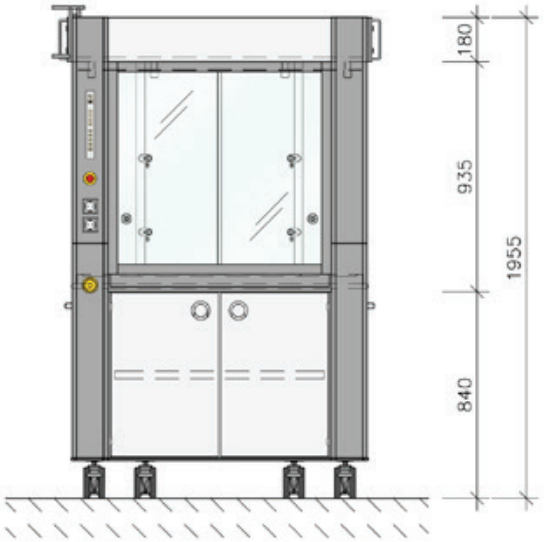
Legende

1. Electrical equipment
2. Base cabinet
3. Pylons
4. Exhaust air connection
5. Gas connection
6. Front sliding window
7. Power connection
8. Glass front, student side

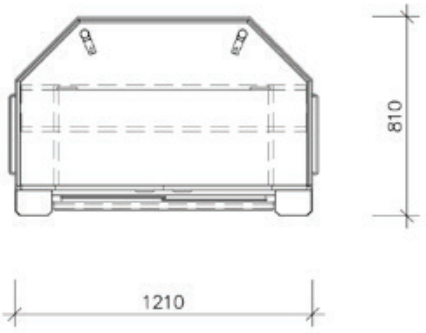
Dimensional drawing



Students' side



Teacher's side



Technical data

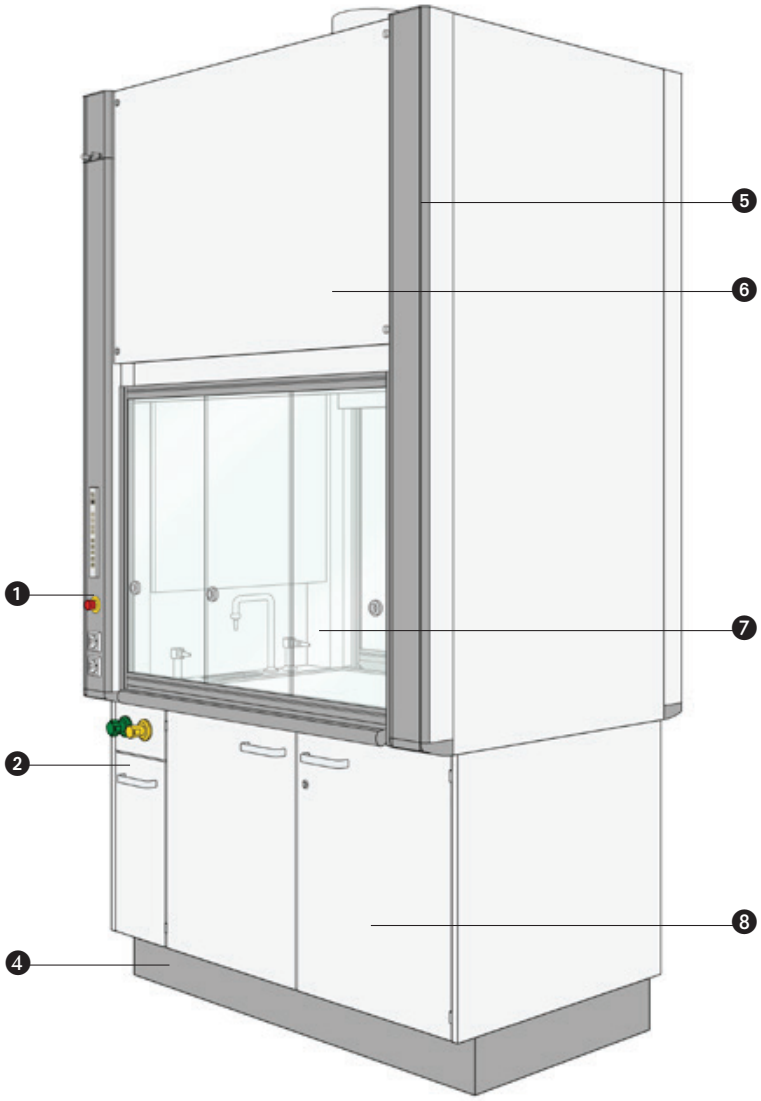
Width	1,200
Overall dimension	1,200 x 810 x 1,955
Work space dimension	1,160 x 740 x 1,050
Recommended flow rate m^3/h	480
Recommended flow rate with support jet m^3/h	350

5

E I Hatch fume cupboard

The hatch fume cupboard is built in between preparation room and exercise room. As it can be operated from both sides, it facilitates the setting up of the experiment in the preparation room and the demonstration during classes from the side of the exercise room. The installation is executed in accordance with the specifications of DIN 12924 Part 3.

- The fume cupboard is equipped with two front sliding windows with cross slides and two shade slides, which alternately open and close.
- The fittings are installed on a lateral installation panel with polypropylene sink. The fume cupboard is equipped with standard fittings.
- The electric equipment is installed on the left-hand pylon on each side of the fume cupboard, while the right-hand pylon houses the counterweight for the slide window.
- On the side of the preparation room, the hatch fume cupboard receives base cabinets on plinths with hinged doors and shelves and a maintenance panel on the side of the exercise room to guarantee the operability of the stop valves.



Legend

1. Electrical equipment
2. Fittings panel
3. Plinth panel
5. Pylons
6. Front panel
7. Front sliding window
8. Base cabinet

Dimensional drawing

Technical data

Width	1,200	1,500
Overall dimension	1,200 x 1,700 x 2,748	1,500 x 1,700 x 2,748
Workspace dimension	1,160 x 740 x 1,940	1,460 x 740 x 1,940
Recommended flow rate m^3/h	500	630
Recommended flow rate with support jet m^3/h	450	550

6 Storage spaces

Storage space & tidiness – the two most important things in laboratory storage rooms

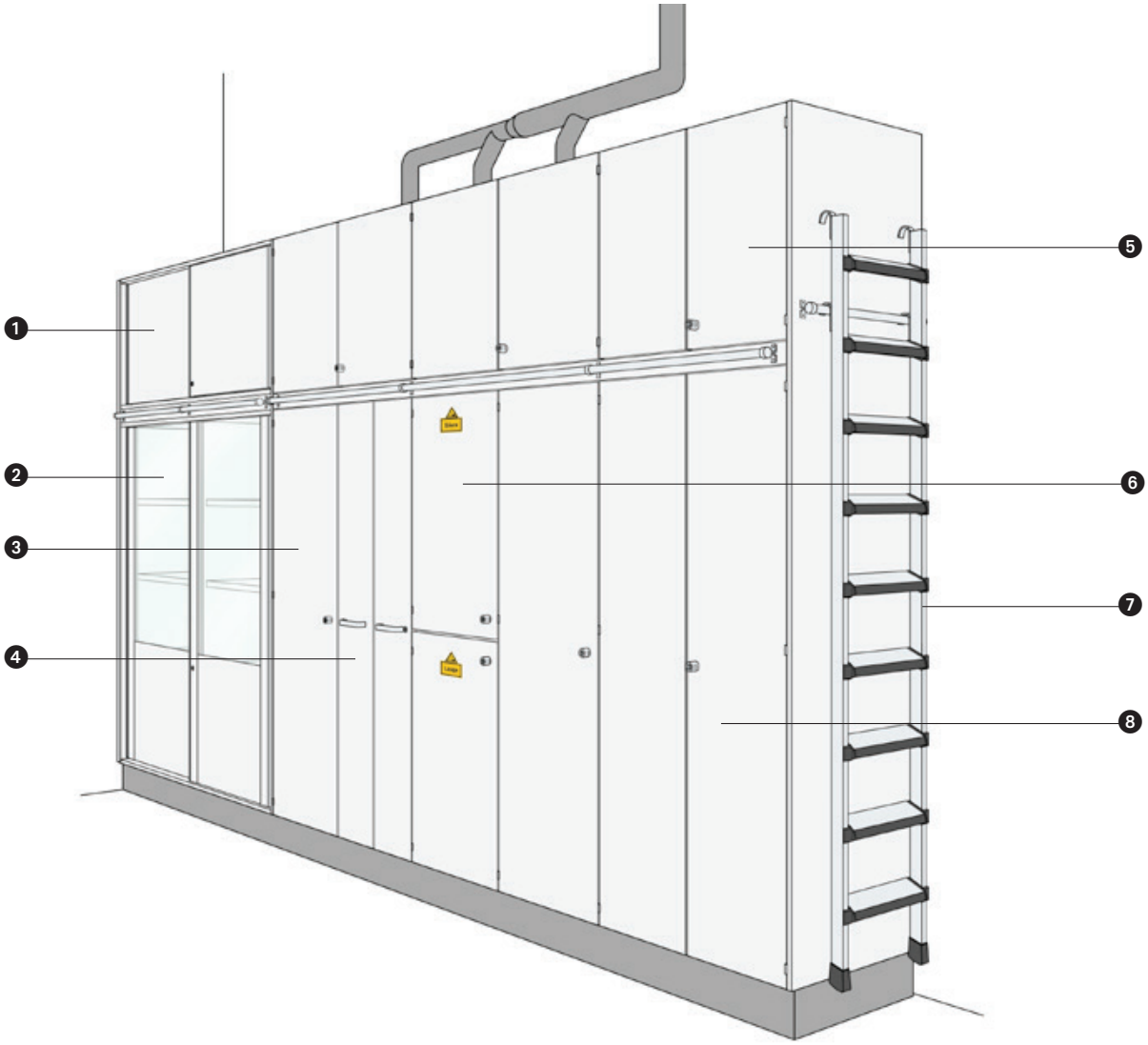
We offer cabinets and storage spaces in many different designs for the storage of equipment, teaching materials, models, documentation, consumables, glassware, chemicals, combustible liquids, compressed gas cylinders and for the storage and sorting of waste.

Whether laboratory cabinets, cabinets with extraction system, cabinets with hinged doors or sliding doors, with drawers and pull-out racks, whether cabinet units, pull-out cabinets, base cabinets, hanging cabinets - the choices are virtually endless!

6

A | Wall units and cabinet units

Wall units can be compiled from the large range of tall cabinets and combined in any order. They are available with hinged doors or sliding doors, with height-adjustable or extendible shelves. It is also possible to integrate cabinets with extraction system, for example chemicals cabinets, acid and lye cabinets and cabinets for combustible liquids or compressed gas cylinders.

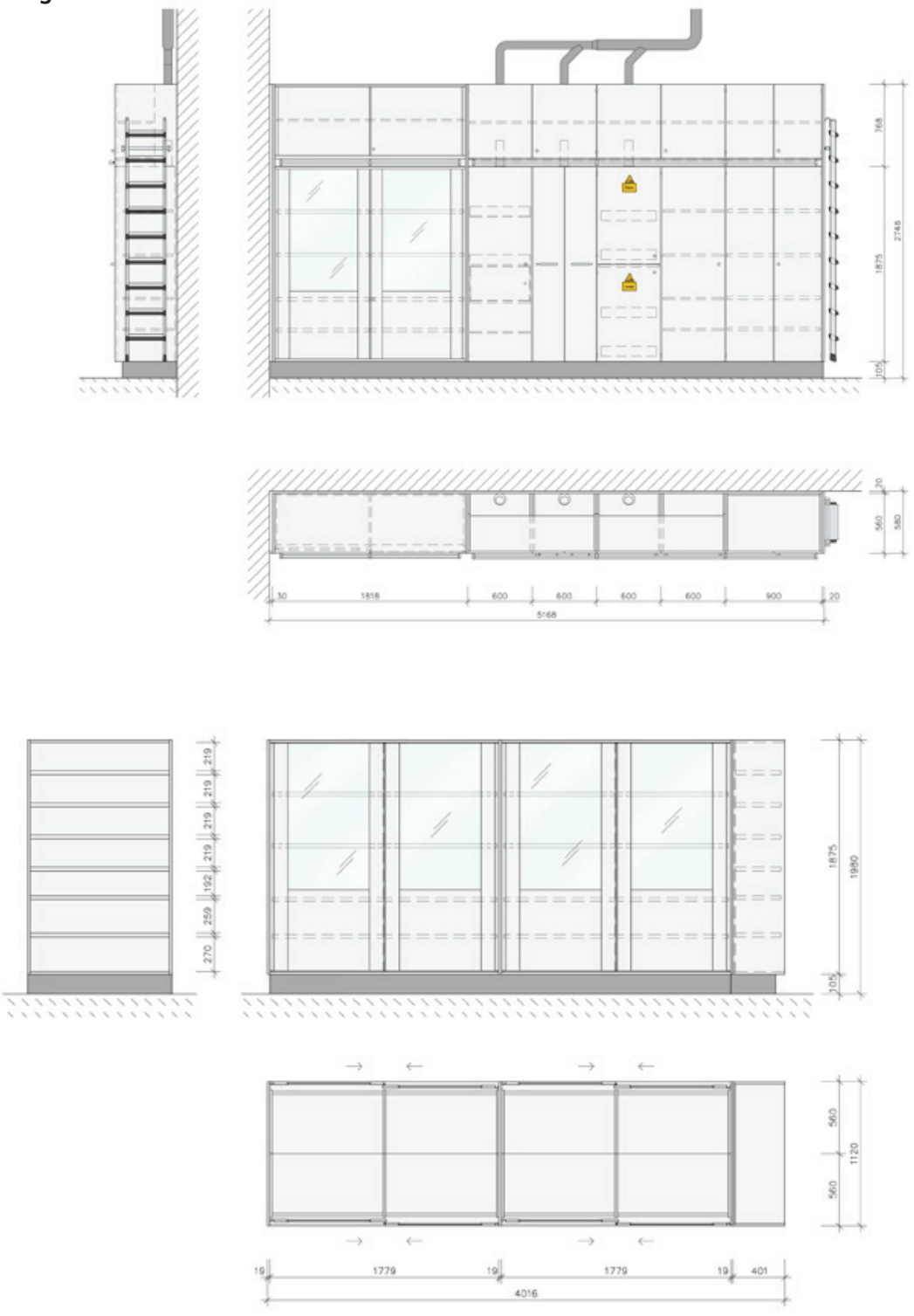


Legend

1. Detachable top cabinet with sliding doors
2. Cabinet with glazed doors
3. Tall cabinet with hinged doors
4. Pull-out cabinet
5. Detachable top cabinet with hinged doors
6. Acid and lye cabinet
7. Ladder
8. Tall cabinet

- We offer to install the air duct in the room or to execute the entire ventilation system.
- Cabinet units that are used as storage space for teaching materials can be operated from both sides. The design with glazed doors offers a clear arrangement and fast access.
- Cabinets and cabinet units are equipped with height-adjustable or extensible shelves.
- Wall units and cabinet units are available with detachable top cabinets. They are equipped with a ladder frame. If requested, the facing can be extended up to the ceiling.

Dimensional drawing



6

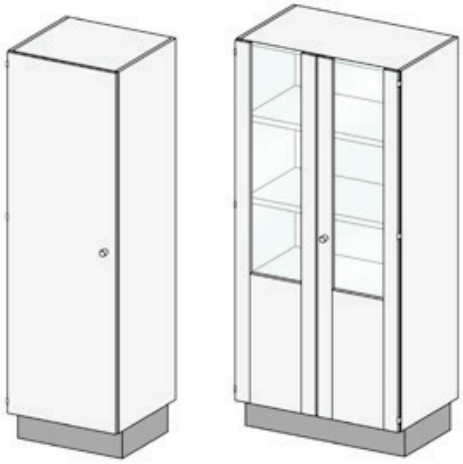
B | Tall cabinets

Tall cabinets are manufactured with different width and depth dimensions. The fronts are available as hinged doors, hinged doors with drawers, and sliding doors, each also available in glazed design and as version with pull-out racks.

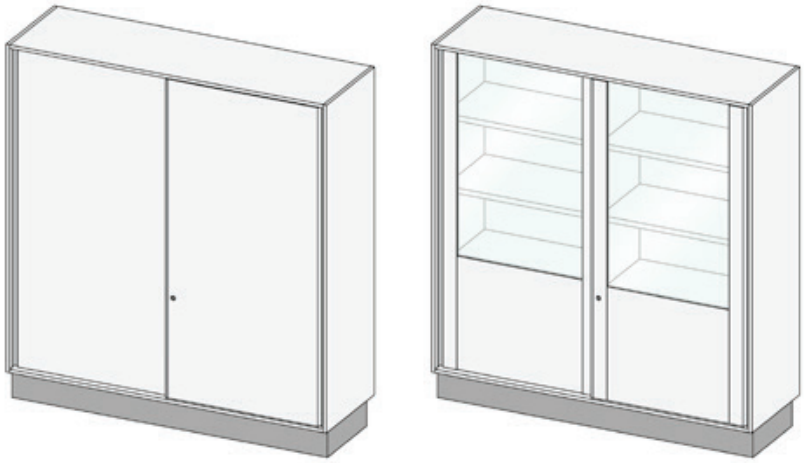
In addition, we offer cabinets for the installation of fridges, freezers or drying cabinets, but also solvent or chemicals cabinets.

Cabinets with connection to a ventilation system are available as chemicals cabinet (also as model with poison compartment), as acid and lye cabinet, solvent cabinet and compressed gas cylinder cabinet. Exhaust air volume respectively 40 m³/h, exhaust air socket 75 mm diameter.

Hinged doors

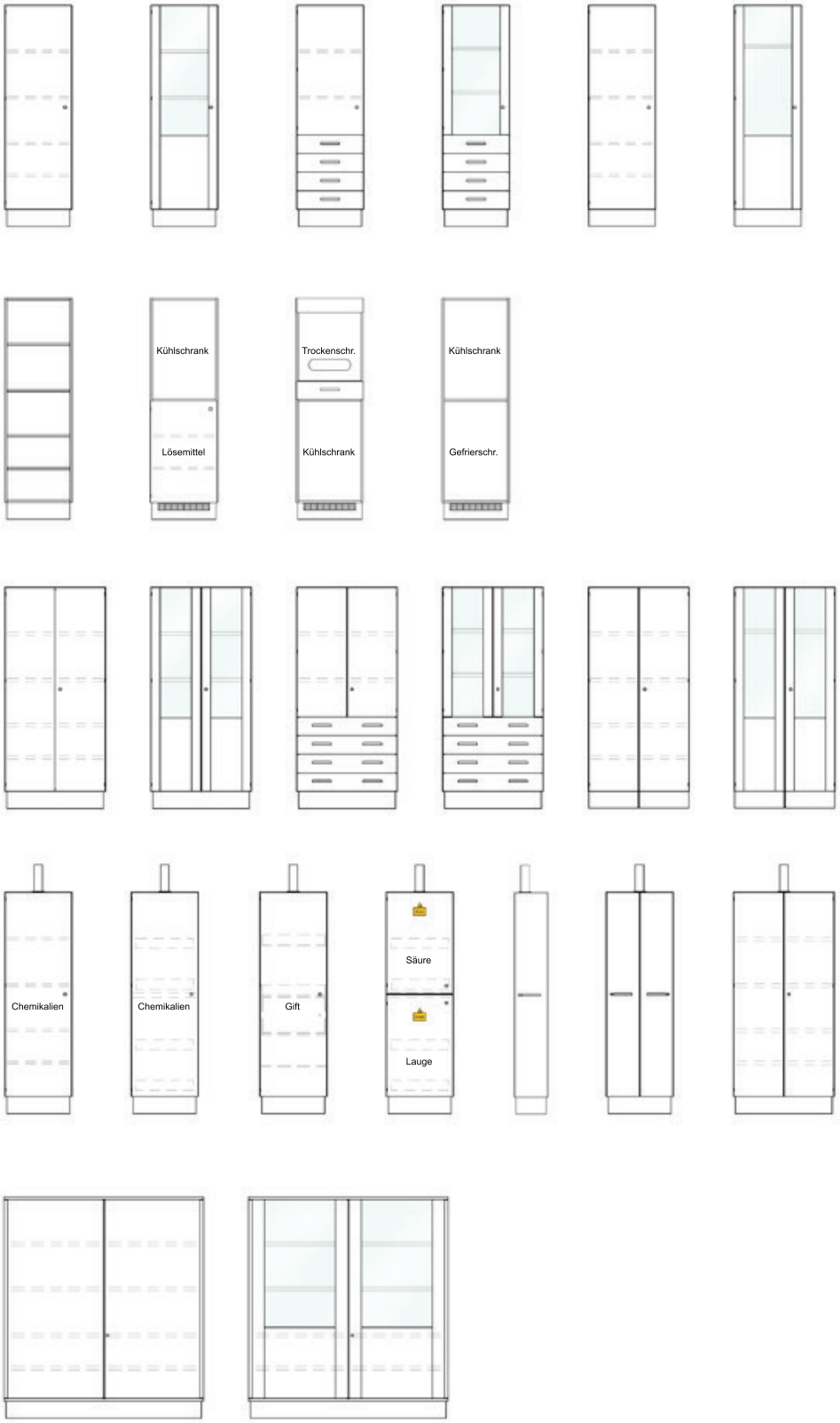


Sliding doors



Model

Width cabinet hinged doors:	450 / 600 / 900 / 1,200 mm	Width cabinet sliding doors:	1,800 / 2,400 mm
Depth cabinet hinged doors:	368 / 560 mm	Depth cabinet sliding doors:	400 / 560 mm
Height:	1,980 mm	Height:	1,980 mm

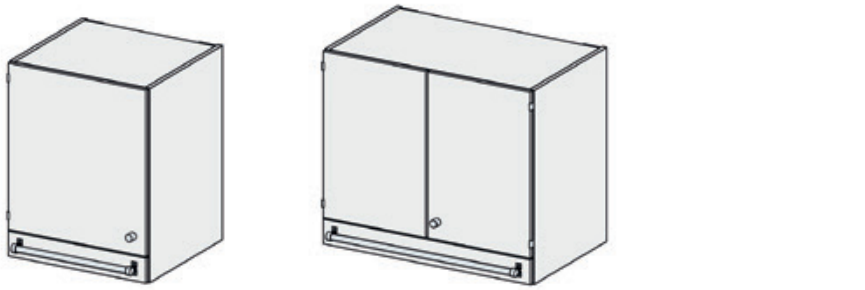

Kühlschrank
Lösemittel
Trockenschr.
Kühlschrank
Kühlschrank
Gefrierschr.
Chemikalien
Chemikalien
Gift
Säure
Lauge

6

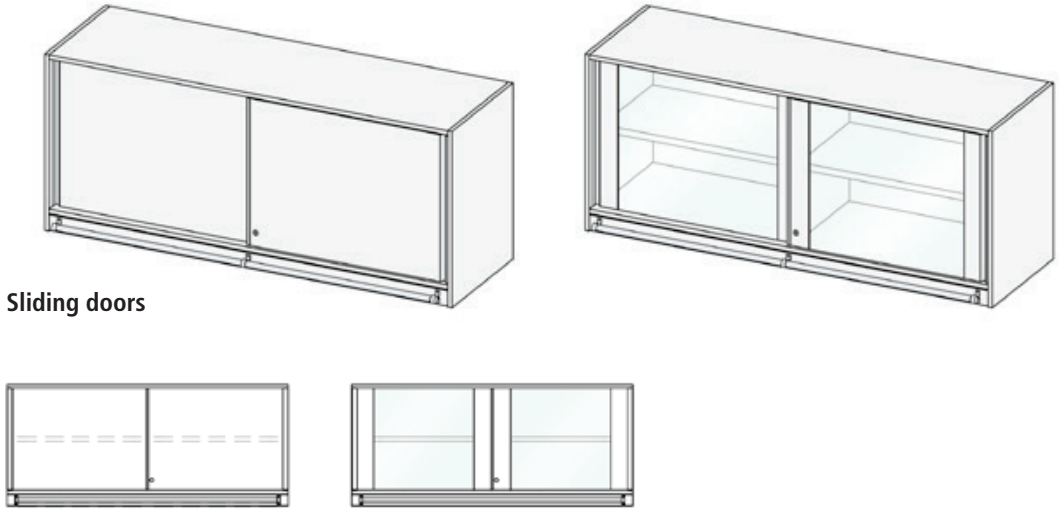
C | Detachable top cabinets

We offer detachable top cabinets as hinged door model with olive-shaped handle and as sliding door model with aluminium handle strip. A model with cylinder lock is available as an option. Detachable top cabinets are equipped with a frame with ladder rail to hook in a step ladder.

Hinged doors



Sliding doors



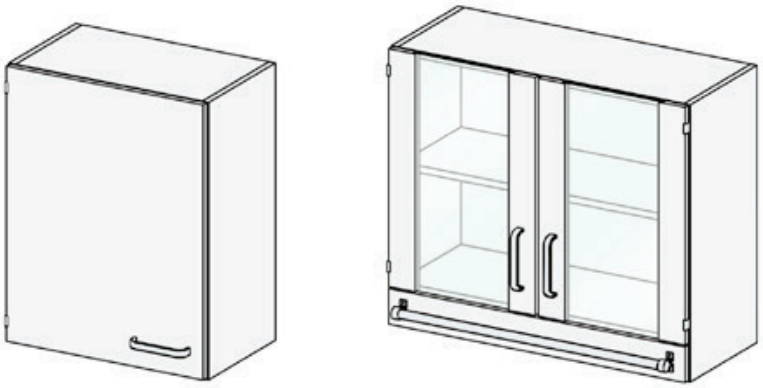
Model

Width cabinet hinged doors:	450 / 600 / 900 / 1,200 mm	Width cabinet sliding doors:	1,800 / 2,400 mm
Depth cabinet hinged doors:	368 / 560 mm	Depth cabinet sliding doors:	400 / 560 mm
Height:	768 mm	Height:	768 mm

D | Wall cabinets

Wall cabinets are either hooked into the system support of a wall-mounted laboratory bench or a laboratory island bench or are fastened on the wall. Shelves are height-adjustable. Doors are provided with bow-type handles made of anodized aluminium. Front design as hinged doors, glazed hinged doors or glass sliding doors.

Optional model with ladder frame. Wall units are available with detachable top cabinets and if requested, the facing can be extended up to the ceiling.



Model

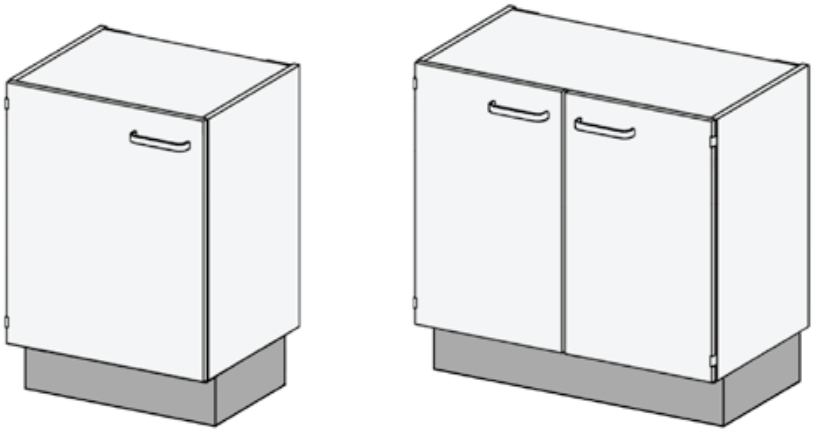
Width:	450 / 600 / 900 / 1,200 mm
Height:	768 mm
Depth:	368 mm

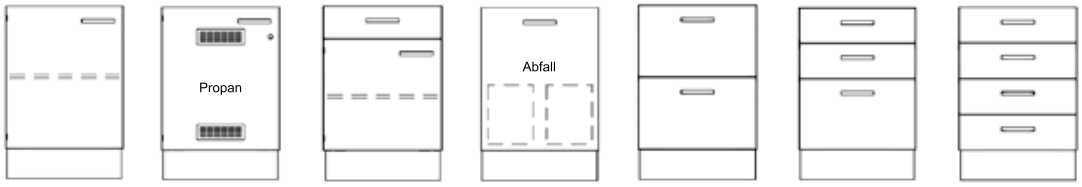
6

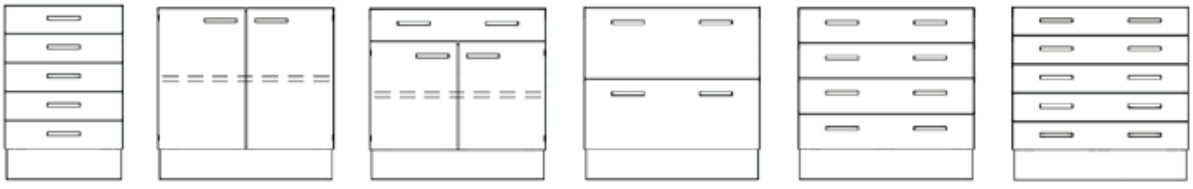
E I Floor cabinets

Base cabinets on plinths, equipped with four levelling feet to compensate floor unevenness. A plinth panel with soft lip serves as floor seal. Hinged doors and drawers are provided with bow-type handles, cabinets with hinged doors are equipped with a height-adjustable shelf.

Drawers are equipped with steel frames and if requested, they are available as full extension drawer. Adjustable phenolic resin drawer dividers are optional accessories. Closure by means of cylinder lock is possible.







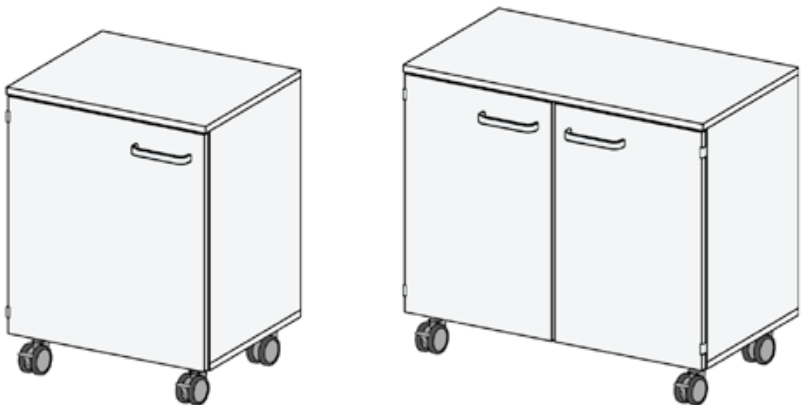
Model

Width:	**450 / 600 / 900 / 1,200 mm**
Height:	**694 mm** (for seated work) / **890 mm** (for standing work)
Depth:	**550 mm**

F | Mobile base cabinets

Mobile base cabinets are inserted into H-feet or C-feet frames. They are equipped with four double guide rollers, two of which are lockable. Cabinets with hinged doors receive a height-adjustable shelf.

As tilt protection, the cabinets with drawers or pull-out racks are provided with an interlock system that allows only one drawer to be opened at a time.



Model

Width:	**450 / 600 / 900 / 1,200 mm**
Height:	**644 mm** (for seated work) / **840 mm** (for standing work)
Depth:	**550 mm**

7 Barrier-free classrooms

Barrier-free classrooms

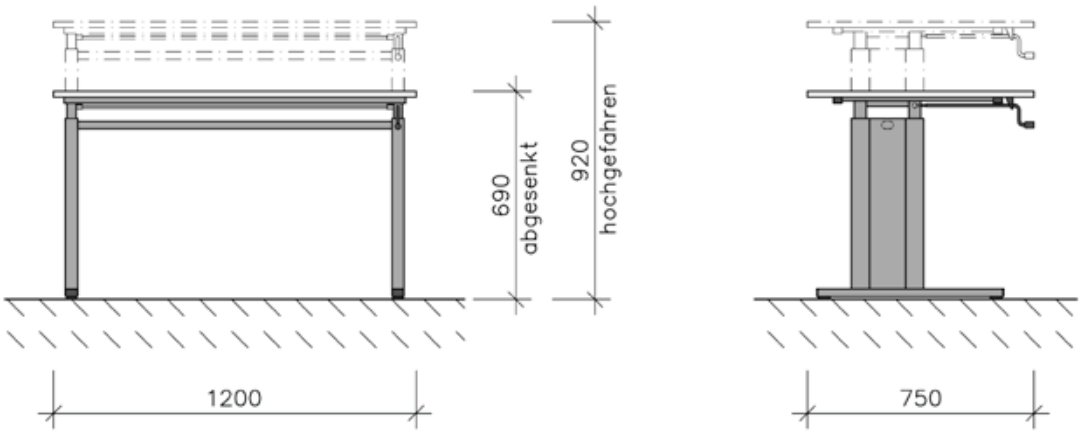
Dismantling obstacles instead of ostracising - that is what is necessary to allow children with restricted mobility, who often depend on implements such as wheel chairs, to freely participate in classes.

This is why we have adapted students› workbenches, fume cupboards and workplaces for desk work to the requirements of this group of persons and have designed them such that they offer a lot of space, are height adjustable and thus ideal for use by wheelchair users.

7

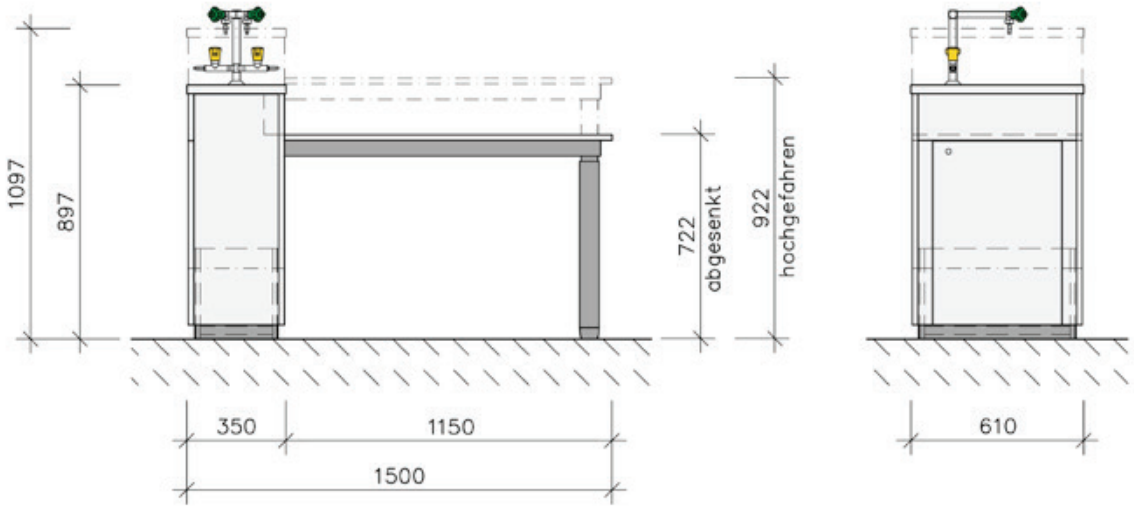
A I Workplace for desk work

On barrier-free workplaces for desk work, the height of the C-foot frame is infinitely adjusted by means of a crank or via electric lifting columns. The table width of 1,148 mm offers adequate room to move.



B I Students' workbench with energy column

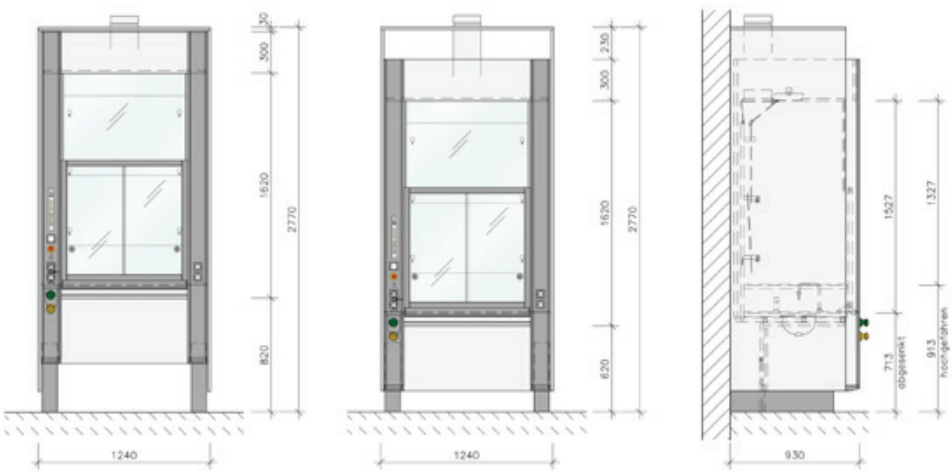
To ensure that wheelchair users can easily move their wheelchair underneath this students' workbench and that the media supplied by the energy column are always within reach, the entire unit is electrically adjustable by means of lifting columns. Water, gas and power are connected by means of flexible lines and cables.



C I Height-adjustable fume cupboard

The barrier-free fume cupboard is designed so that the lock valves of the fittings and the sockets are easy to reach. They are housed in the left-hand pylon of the fume cupboard. The tapping points and the sink are located in the lateral installation panel.

To ensure that the fume cupboard allows wheelchair users to take up a good sitting position, it is equipped with electric lifting columns for infinitely variable height adjustment.



8 Customised solutions

A | Room acoustics

The use of finely perforated panels for cabinets in classrooms is a room acoustics measure that contributes to an improvement of the quality of teaching by increasing the acoustic quality and the teachers' and students' ability to concentrate.

8

B I Integration in rooms

Furniture and furnishing components adapt to the geometry of the science classroom. We also manufacture tailor-made furniture, thus creating customised room solutions.

C I Adaptation to room situations

Our science school furnishings are no standard pieces of furniture. Our planning takes into consideration specifications provided by the room such as pillars, heaters and window sills and laboratory benches are adapted accordingly.

D I Showcase illumination

We illuminate showcases or presentation cabinets with different types of lighting technology without disturbing reflections so as to show exhibits to advantage. Thus, not only the exhibit, but the entire piece of furniture is presented in the proper light.

9 Accessories

Perfectly equipped

Our comprehensive furnishing range is completed by built-in devices as well as accessory and supplementary parts resulting in comprehensive, fully functional furnishings and equipment.

Boards

Boards, either as pylon board or blackboard with different surfaces, also in mobile design, as projection area or roll-off projection screen, in many different dimensions.

Interactive boards

Interactive boards with short-distance projector open numerous options for designing modern classes. We provide the cabling to the control modules in the teacher›s workbench or in the central in-feed.

Chairs

We offer students› chairs as skid chairs or height-adjustable swivel chairs, with different seats both for students and for teachers.

Experimentation panel

We offer experimentation panels with sheet steel surface to protect the worktop. These are provided with circumferential aluminium profile frame as well as safety base plates made of anodised aluminium with 4 mm high rim.

Bunsen burner

Bunsen burners and Teclu burners with painted grey iron base, burner pipe made of nickel-plated brass, head diameter 17 mm, with air regulation, by request also with needle valve. This is completed with a suction cup mount and a DVGW-tested gas safety hose.

Flexible line clips

A safe routing of electric cables and gas hoses from the media connections in the overhead service carrier to the equipment or burners on the bench is ensured by flexible line clips.

Air quality indicator

For air quality monitoring in the classroom, we offer an air quality indicator for CO2/carbon dioxide measurements, with visual display and acoustic alarm.

Safety equipment

Multipurpose dry-chemical fire extinguisher according to DIN 14406/GS-mark of conformity with smouldering fire powder for fire class ABC incl. wall bracket.

Glass fibre fire blanket acc. to DIN 14155 with 2 grip tabs with special sheet steel container.

Polyethylene sand box for fire extinguishing sand.

First aid cabinet with safety lock and red cross symbol incl. filling assortment acc. to DIN 13157 C

Drawer dividers

Dividers for drawers ensure things are tidy and well-arranged. We offer adjustable phenolic resin drawer dividers for all drawer sizes.

Appliances

We integrate all the appliances that are required in the preparation room, such as laboratory dishwashers, refrigerators, drying cabinets, boilers or flow heaters and demineralised water systems into our furnishings.

We would be pleased to welcome you at one of our exhibition rooms in Ahaus or at our distribution partners Gebr. Kassel in Mannheim and Urhammer Lehrmittel in Kiel.

Your technical advisers:

Ingo Scheib

Kranichstraße 6
Postfach 10 12 40 (PLZ 41544)
D-41564 Kaarst

Phone +49 2131 / 668161
Fax +49 2131 / 668251
Mobile +49 160 / 90242755

E-mail i.scheib@laborbau-systeme.de

Sven Sonnenberg

Postfach 02 21 (PLZ 32122)
Wilhelmstraße 14
D-32130 Enger

Phone +49 5224 / 997851
Fax +49 5224 / 997852
Mobile +49 170 / 5840587

E-mail s.sonnenberg@laborbau-systeme.de

Steffen Heinze

Gumpener Straße 14
D- 64385 Reichelsheim

Phone +49 6164 / 6429432
Fax +49 6164 / 6429433
Mobile +49 170 / 7092426

E-mail s.heinze@laborbau-systeme.de

Uwe Schneider

Herderstraße 26
D-07743 Jena

Phone +49 3641 / 820193
Fax +49 3641 / 820194
Mobile +49 172 / 3679674

E-mail laborservice-jena@t-online.de

Urhammer-Lehrmittel, Karsten Meyer

Brunswiker Straße 40
D-24105 Kiel

Phone +49 431 / 561033
Fax +49 431 / 561070
Mobile +49 173 / 2085401

E-mail k.meyer@urhammer.de

Gebr. Kassel GmbH

Soldnerstraße 1
D-68219 Mannheim

Phone +49 621 / 32278-0
Fax +49 621 / 32278-22

E-mail: info@gebruederkassel.de
Internet: www.gebruederkassel.de

Laborbau | Systeme

HEMLING.de

Laborbau Systeme Hemling GmbH & Co. KG I Siemensstraße 10 I D-48683 Ahaus
Phone: +49 2561 956-860 I info@laborbau-systeme.de I www.laborbau-systeme.de