

ENVAIR

Integrity in clean air



Envair ecoChem HD

Ducted Laboratory Fume Cupboard



Many laboratory functions previously carried out on open bench tops are no longer permitted under current health and safety legislation and a suitable method of containing a chemical hazard must be employed.

A fume cupboard is a large enclosure comprising of five sides, either at standing height (Bench Mounted), or full height (Walk-In). Envair offer four standard sizes, independently Type Tested and Certified in accordance with BS EN14175.



Air from the surround laboratory is drawn in through the front opening, to protect users from fumes within, and expelled to atmosphere, outside the building.

The ecoChem HD is a general chemistry laboratory fume cupboard which protects the user by:

- Trapping gases, aerosols and dust
- Protecting users against flying fragments and sprays
- Preventing contamination of the laboratory by dangerous concentrations of flammable hazardous substances.



Applications

Envair ecoChem HD Fume Cupboards have been adopted worldwide for personnel and environmental protection whilst handling harmful agents. They operate in a wide range of disciplines including Chemical and Analytical Laboratory applications.

Fume cupboard applications involving high heat, acid digestion, radiochemistry or ATEX rated atmospheres require further consideration. Options for each of these applications are available from Envair.

CAV vs VAV

Constant Air Volume (CAV) fume cupboards extract the same volume of air regardless of sash opening position.

Lowering the sash opens the in-built air bypass arrangement which will draw air into the fume cupboard from the laboratory via the perforated high level front access panel. Airflow monitor and controls system for a CAV design are relatively simple and inexpensive. However, when multiple fume cupboards occupy a laboratory energy conservation measures should be considered.

Variable Air Volume (VAV) fume cupboards limit energy wastage by up to 80%. The VAV design has no high level air bypass arrangement. The airflow monitor and controls system are upgraded to an ECON design and incorporate a fast-acting motorised damper which is electronically linked to the sash opening position. Lowering the sash causes the damper to operate ensuring the desired face velocity is maintained at typically 0.50m/s. This in turn reduces the overall volume of air the fume cupboard extracts during normal operation.

Construction

All exterior components are constructed from zinc coated mild steel (zintec) 16swg, finished with a minimum of 70 microns (face and reverse) polyester powder paint to an approved colour, then high temperature cured offering a durable corrosion resistant finish. The fume cupboard chamber is double skin, all metal assembly with 150mm wide angled service void columns at each end.

Upper Infil Arrangement

The upper structure of the fume cupboard can finish slightly above or below the laboratory ceiling. A single perforated top access panel (not perforated with VAV design) will be provided across the width of the fume cupboard. This will be unlocked, hinged and complete with suitable handles and mechanical stay bars to allow quick access for servicing of:

- Light box
- Sash cables / pulley wheels / counterbalance weights
- Electrical junction boxes
- Extract connection

Interior

Various inner chamber finishes are available subject to the intended application. Typically the inner chamber assembly is fabricated from satin polished 316 grade stainless steel, formed as a leakproof one-piece cell comprising full top/sides/rear with integrally formed workbase, complete with an integral 30mm high upstand extending across the full width of the front edge. Alternative workbase finishes include; cast epoxy resin, solid grade laminate or ceramic.

Rear Baffle

The baffle will be manufactured from the same material as the inner chamber and will be removable for cleaning and maintenance inspection.

Sash

The sash provides physical containment and offers facial protection whilst the fume cupboard is in use, manually opened and closed via a full length PVC finger grip. A single frameless, vertically sliding, 6mm thick toughened safety glass sash arrangement will be fitted to the fume cupboard with an option to also include a clear 100MN anti-shatter film, factory applied to the front face of the sash glass. The sash will be counterbalanced with a fail-safe pulley and weight system accessible from the front of the fume cupboard. A mechanical sash lock provides a physical means of preventing the operator from raising the sash above the designed safe working limit of 500mm.

Optional energy conservation measures include an automatic sash closure feature whereby PIR sensors monitor operator presence and after a pre-set time period will automatically close the sash.

Lighting

LED batten light fitting providing an average >500LUX when measured at workbase level.

Plumbed & Electrical Services

Factory installed water, gas, waste and electrical services are available.

Airflow Monitoring

The digital display is a backlit, full colour high resolution graphic unit, approx 45 x 34mm. The display shows the fume cupboard face velocity in m/sec or fpm when enabled or the alternative with no velocity reading but showing AIR FAIL / AIR SAFE as continuous display.

The displayed face velocity colour will change when in an alarm condition:
Air Safe = White / Low or High Air Alarm = Red / Warning Air Alarm = Amber.

Extract Duct Connection

A 'fishtail' assembly will be provided to the rectangular extract slot formed in the roof of the fume cupboard inner chamber and be manufactured from rigid grey PVC. Final ductwork connection will comprise of a plain slip joint.

Support Frame

The fume cupboard will be supported by a fully welded steel support frame with level adjusters to each leg. Various underbench storage options are available.

Tailor-made Special Cabinets

Custom cabinets manufactured to your requirements on request.



Access panel.



Storage cabinets.



Control panel and sash lock.



Our Commitments:

New technology for low environmental impact

We constantly strive to optimise our environmental performance, and, to this end, we have developed a set of environmental procedures founded on three guiding principles:

- To protect the environment for present and future generations by manufacturing equipment with low energy consumption
- To reduce risk and improve efficiency
- To introduce enhanced technology and processes