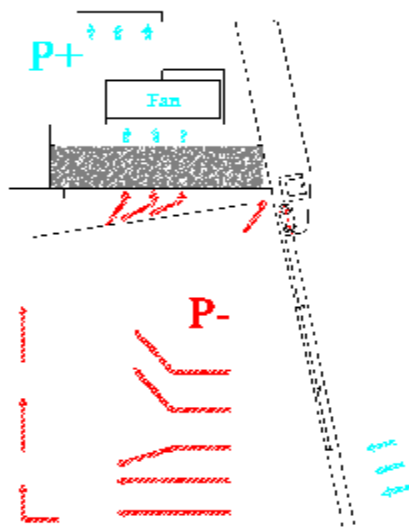


SafeAire™ GS800 Bench-top Filtration Fume Cupboard

- Ø Portable, mobile, easy to install
- Ø Optional Stand or Trolley supplied
- Ø Standard Stainless Steel Worktop fitted into epoxy-powder coated steel GS800 cabinet
- Ø Electronic Timelog PCB with LCD fitted on GS800 model cabinets providing 2-speed VAV (Variable Air Volume) Control: - i.e.: higher fan speed triggered by raising lower sash panel – to ensure constant face velocities, for maintaining high containment factors.
- Ø Folding/hinged Acrylic Sash Panels
- Ø In recirculatory mode, no ducting required - but 160 mm dia. ducting adaptor fitted for optional venting outside via ductwork
- Ø Multilayered Filter Systems (see Guide)
 - 'Filtrete' particulate prefilter
 - Main & Security Carbon Filters
 - Carbon & Class H-14 HEPA Filters
- Ø Standard Hour-counter & Low-Airflow-Alarm
- Ø Auxiliary Extraction Devices ensure effective extraction of both lighter-than-air and heavier-than-air gaseous-phase compounds (see airflow diagram below)



SafeAire™ GS800 Filtration Fume Cupboard
(Ref: BS:7258:2001 & Building Bulletin # 88 of DfEE)



Airflow Diagram

Airflow		Electrical		
Face Velocity	Filtered Air	Voltage	Current	Power
0.3 - 0.6 m/s	350-700 m ³ /h	230v	0.9A	90 Watts

Ext. Frontal Width: 800mm Weight with carbon filter: 80 kg

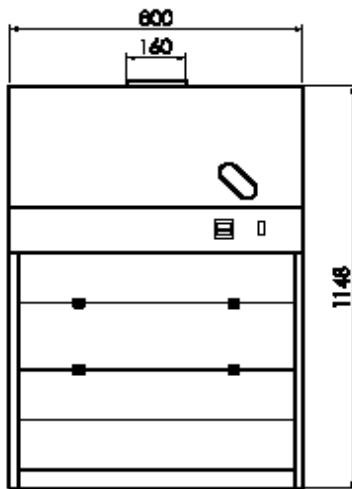
SafeAire™ GS800 model fitted with 2-speed VAV (Variable Air Volume Control): - higher fan speed triggered by raising lower sash panel – to ensure constant face velocities, maintaining tested high containment factors.

SafeAire™ GS800-S economy model fitted with blower of fixed single fan-speed for repetitive routine applications.

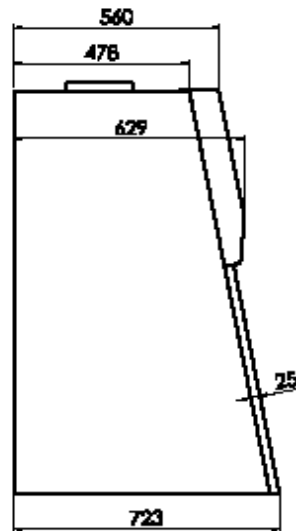
N.B.: Bearing the 'CE-Mark', conformity of molecular gaseous-phase filtration-capacities and filtration efficiencies of the activated carbon filters have been also tested and certified to BS:7989:2001 British Standard for Recirculatory Filtration Fume Cupboards.

DIMENSIONS in millimetres

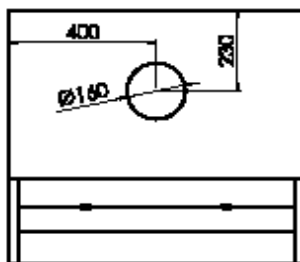
Frontal view



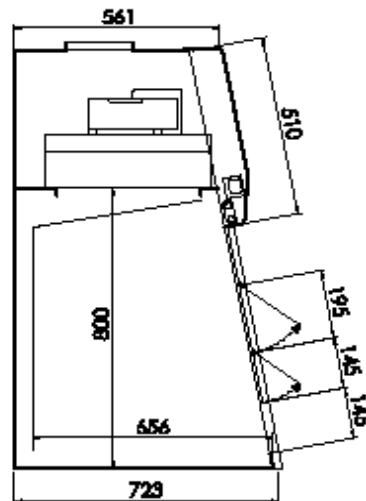
Lateral view



Top view



Section



SafeAire™ GS800 Filtration Fume Cupboards eliminate toxic vapours and fumes at work

The SafeAire™ GS800 is designed to ensure a high degree of protection of laboratory operators from exposure to harmful concentrations of toxic vapours, fumes and particles. A horizontal-even-airflow cleanses the work surface inside the fume enclosures, removing all contaminants of both heavier- and lighter-than-air toxic gases, vapours, aerosols and particulates from the environment, in line with European, British and International safety standards.

GS800 on standard base-stand
or trolley for mobile applications



GS800 on antivibration base-stand for weighing
compounds to 5-decimal accuracy



Flexibility

SafeAire™ GS Fume Cupboards feature a multiple operational flexibility, in that they can be used:

(1) as 'non-ducted' filtration fume cupboards – in the “recirculatory” mode – to BS:7989:2001 - when toxic vapours, fumes and particulates are absorbed into filter-systems - carefully selected from a dozen different grades of carbon filters and HEPA filter combinations - and the clean air returned into the room – and

(2) as 'ducted' filtration fume cupboards in the “combined operational” mode – to BS:7258:1994 - i.e. when the contaminants are removed from the airstream by the filters and the filtered air is extracted outside either by internal fans or by roof-mounted remote-fans - if required for extra safety via transition adaptors to ductwork, or when venting of a few compounds as necessary which are not removed by carbon filters.

(N.B.: - For information on 'standard Ducted Fume Cupboards' (to conform to BS:7258:1994 and BS:EN:14175) or Fume Cupboards fitted with acid-fume scrubbers please contact us.

Ref.: EN ISO 9001 – ISO 14001 - BS 7989:2001 – BS 7258:1994 (1 & 4) - DIN 12924 – DIN 12927 – ANSI/ASHRAE 110 - 'CE'

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Filter Selection Based On Chemical Hazard Analysis & Risk Assessment

Filtration Fume Cupboards should only be used with pollutants of documented hazard, which permits the selection of appropriate filter(s) (BS 7989:2001). - Identify toxic chemical compounds, their approximate airborne concentration levels and volumes, then select appropriate filters for use - before using SafeAire™ GS Filtration Fume Cupboards. Select appropriate types of 'Main' filters and if required 'Security' filters from the listing below – to suit the chemical compounds indicated by the user-operator on the Questionnaire:

C-100 (Type A) activated carbon filters:

C-100 Filters - Type A activated carbon filters for solvents, aromatic & aliphatic hydrocarbons; organic gases & vapours with B.P.>60°C: - alcohols, aldehydes, esters, halogens, ketones, organic acids, nitrogen and sulphur compounds and odours (see Filter Adsorption Index).

C-100/E Filters - Filters with high-activity Type A carbons for adsorption of highly volatile gaseous phase compounds (Ethers)

C-100 (Type A) Activated Carbon Filtration Capacity Indicators:

The Table below indicates approximate carbon filtration capacities (not filtration efficiencies) as they express the ratio between the weight of the activated carbons in the filters and the weight of each compound the filters can adsorb. Correct selection of carbon filters made to suit the chemical challenge profile will ensure achievement of 98% – 99.99% filtration efficiencies. SafeAire™ Carbon Filtration Capacities tested with Carbon-Tetrachloride and Propan-2-ol are certified to BS:7989:2001.

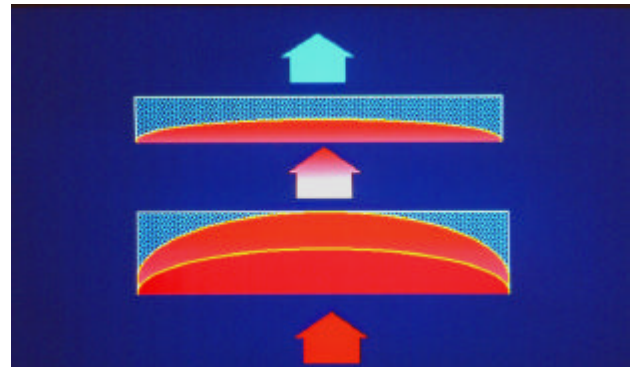
Aromatic Hydrocarbons	Aldehydes & Ketones	Halogens	Nitrogen Compounds	Filtration Capacity Key
A. Benzene A. Naphthalene A. Styrene Monomer A. Toluene A. Toluidine A. Xylene	B. Acetone C. Acetaldehyde B. Acrolein B. Acrylaldehyde A. Benzaldehyde B. Butyraldehyde A. Caproaldehyde A. Crontonaldehyde A. Cyclohexanone A. Diethyl Ketone A. Dipropyl Ketone C. Formaldehyde (NB: Use CI-200) B. Glutaraldehyde (NB: Use CI-200) A. Mesityl Oxide A. Methyl Butylketone A. Methyl Ethylketone A. Methyl Isobutylketone B. Propionaldehyde C. Succinic Aldehyde (NB: use CI-200) A. Valeraldehyde A. Valeric Aldehyde	A. Bromine A. Butyl Chloride A. Carbon Tetrachloride B. Chlorine A. Chlorobenzene A. Chlorobutadiene A. Chloroform A. Chloro-Nitropropane A. Chloro Picrin A. Dibromoethane A. Dichlorobenzene B. Dichlorodifluoro-meth A. Dichlorodifluoro- Ethane A. Dichloroethane A. Dichloroethylene A. Dichloroethyl-Ether A. Dichloromethane B. Dichloromonofluoro Methane A. Dichloropropane B. Dichlorotetrafl. Ethane B. Ethyl-Bromide B. Ethyl Chloride A. Ethylene Chlorohydrine A. Ethylene Dichloride B. Fluortrichloromethane C. Freon C. Hydrogen Bromide C. Hydrogen Chloride C. Hydrogen Fluoride B. Hydrogen Iodide A. Iodine A. Iodoform B. Methyl-Bromide B. Methyl-Chloride A. Methyl Chloroform A. Methyl Chloride A. Monochlorobenzene B. Monofluorotric. Meth. A. Paradichlorobenzene A. Perchloroethylene B. Phosgene A. Propyl Chloride A. Tetrachloro Ethane A. Tetrachloro-Ethylene A. Trichloro-Ethylene B. Vinyl Chloride	D. Ammonia (NB: Use CI-300) C. Amines (NB: Use CI-300) A. Aniline B. Diethyl-Amine A. Aniline B. Diethyl-Amine A. Dimethyl-Amine B. Ethyl-Amine C. Hydrogen Cyanide 3/ A. Indole A. Nicotine B. Nitric acid fumes A. Nitrobenzene A. Nitroethane A. Nitrogen Dioxide A. Nitroglycerine A. Nitromethane A. Nitropropane A. Nitrotoluene A. Pyridine A. Skatole A. Urea A. Uric Acid	Weight/weight ratio: A = 15 - 50%: Very good B = 5- 20%: Good C = <5% : Moderate D = <1% : Poor
Aliphatic Hydrocarbons D. Acetylene B. Iso Butane B. Butylene C. Butadiene A. Cyclohexane C. Heptylene B. Hexane C. Hexylene D. Methane B. Pentane C. Propane B. Propylene				Miscellaneous A. Adhesives A. Animal Odours A. Camphor D. Carbon-Monoxide (NB: Use SMCO) D. Carbon-Dioxide (NB: Use SMCO ₂) A. Citrus Fruits A. Cooking Odours A. Degreasing Solvents B. Deodorisers A. Detergents A. Hospital odours A. Human odours A. Leather A. Ozone A. Nicotine A. Perfumes A. Petrol B. Putrefying odours A. Putrescine B. Produce of incomplete Combustion A. Plastic A. Poultry odours A. Rancid oils and fats A. Resins A. Rubber A. Stale odours A. Stable odours A. Tar odours C. Tobacco smoke A. Toilet odours A. Turpentine A. Varnish A. Vinegar B. Wood alcohol
Alcohols A. Ethyl A. Amyl A. Butyl A. Cyclohexanol A. Isopropyl B. Methanol (Methyl) A. Propyl				
Acids A. Acetic A. Acetic Anhydride A. Acrylic A. Butyric A. Caprylic A. Carbolic B. Formic A. Lactic A. Palmitic A. Phenol A. Propionic A. Valeric	Esters A. Butyl Acetate A. Cellosolve Acetate A. Ethyl Acetate A. Ethyl Acrylate B. Ethyl Formate A. Isopropyl Acetate B. Methyl Acetate A. Methyl Acrylate B. Methyl Formate A. Propyl Acetate			
Ethers C-100/E Filters A. Amyl B. Methyl A. Propyl A. Isopropyl A. Butyl	A. Methyl Cellosolve B. Ethyl B. EthyleneOxide A. Dioxane A. Cellosolve		Sulphur Compounds B. Carbon-Disulphide A. Dimethyl-Sulphate A. Ethyl-Mercaptan C. Hydrogen-Sulphide (NB: Use CI-410) A. Mercaptans A. Methyl-Mercaptan A. Propyl-Mercaptan A. Sulfotep (ISO) C. Sulphur-Dioxide (NB: Use CI-400) B. Sulphur-Trioxide B. Sulphuric Acid (NB: Use CI-400) A. Sulprofos A. Tetrahydrothiophene	

CI-range (Types B, E, F, K) SafeAire™ activated-impregnated carbon filters:

- CI-200 Filters** - Type F impregnated activated carbon filters for chemisorption of formaldehyde - **HCHO** – and glutaraldehyde - **OCH(CH₂)₃CHO** – along with compounds specified for C-100
- CI-300 Filters** - Type K impregnated activated carbon filters for chemisorption of ammonia & amines
- CI-350 Filters** - Type K composite carbon filters for chemisorption of alkaline nuisance odours (urine, faecal)
- CI-400 Filters** - Type E impregnated activated carbon filters for chemisorption of inorganic acids (**HCl, HNO₃, SO₂, H₂SO₄**, etc.)
- CI-410 Filters** - Type B impregnated activated carbon filters for chemisorption of mercaptans and **H₂S**
- CI-420 Filters** - Type B impregnated activated carbon filters for chemisorption of Hydrogen Cyanide – **HCN** - cyanides & cyanates
- CI-450 Filters** - Type E impregnated activated carbon filters for chemisorption of acidic nuisance odours from animals (cadaverine, putrescine)
- CI-Hg Filters** - Type S impregnated activated carbon filters for chemisorption of Mercury vapours
- C-RI Filters** - TEDA-impregnated nuclear carbon filters for **I-125, I-129, Methyl Iodide**
- MS Filters** - Molecular sieve filters (select from different types available for: **CO, CO₂, H₂O**)
- HEPA Filters** - Class H-13 HEPA Filters for particulates to EN:BS:1822-1 (99.999% > 0.3 micron)
- CMS Filters** - Multilayered composite KEA filters for teaching chemistry in schools and colleges
- 'Security' Filters** - Security carbon filters and/or HEPA filters added to Main Filters (for achieving filtration efficiencies greater than 99.99% and for lengthening overall life of the filter-system by increased filtration capacities).
- 'Special' Filters** - Multilayered composite filters made to order upon receipt of Questionnaire with list of chemical compounds to be handled.

Multiple filter combinations consisting of:

- ? **Main Activated Carbon Filters** of 100mm depth and **Security HEPA Filters** protect from both toxic vapours/gases and submicron particulates, powders, bacteria, fungi and fumes.
- ? Fitting 40-60 mm **Security Carbon Filters** onto the Main Carbon Filters will increase both filtration capacities and filtration efficiencies.



Select from following combinations of SafeAire™ Activated Carbon Filters:

Model	Filter Size mm	Filter depth mm	Qty.	Approx Weight of Carbons	Security Carbon Filter	Total Approx Weight Carbons
GS640	A - 600x300	100	1	10 kg	Yes or HEPA	12-14 kg
GS800	B – 600 x 450	100	1	15-17 kg	Yes or HEPA	18 - 22 kg
GS900	B – 600 x 450	100	1	15-17 kg	HEPA only	15 - 17 kg
GS1000	B – 600 x 450	100	1	15-17 kg	Yes or HEPA	18 – 22 kg
GS1200	B – 600 x 450	100	2	30-34 kg	Yes or HEPA	36 – 44 kg
GS1500	B – 600 x 450	100	2	30-34 kg	Yes or HEPA	36 – 44 kg
GS1800	B – 600 x 450	100	3	45-50 kg	Yes or HEPA	54 – 66 kg

Contact us for assistance in selection of appropriate type of filter combinations to suit your particular chemical challenge profile and application.

Instructions

‘CE’

Pre-filters: - High efficiency pre-filter(s) protect and extend the life of gaseous phase filter(s). Pre-filters should be replaced at regular intervals - and more frequently than the ‘main’ gaseous phase filters - as accumulation of dusts, powders, resins and other particulate contaminants would reduce frontal face velocities, which should be kept to a minimum of 0.3 metre/sec at the front opening.

Monitoring & Safety Checks: - Monitor the efficiencies of gaseous phase filters by measuring regularly concentration levels (in ppm or mg/m³) at the exhaust port of the filtration fume cupboard with chemical detector stain-length tubes. Enter monitoring data in the Safety Log-Book

Filter Change: - Replace gaseous phase filters when concentration levels of contaminants measured at the exhaust port begin to rise and **before** these may reach their respective Occupational Exposure Limits (MAK, TLV, MEL, OES, LTEL, STEL, etc). The filters should also be replaced following any chemical-or-smoke/fire emergencies, gas-leaks and accidental spillages. Spare sets of replacement filters should be kept on site.

Warning: - Should appropriate types of filters not be available the Filtration Fume Cupboard should not be used in the “recirculatory mode” - it should be operated in the “ducted mode” via its duct-collar adaptor connected to ductwork.

Limitations and Information on Filtration Capacities: - Please refer to Operational Manual and Safety Log Book. Avoid using incompatible substances within filtration fume cupboard(s) and check that new compounds introduced are not incompatible with chemicals already adsorbed in the filters. Log details of chemical compounds, types of filters and dates when these were fitted in the Safety Log-Book, as required by current safety regulations (COSHH). Fume cupboards of metal construction may not be suitable for continuous acid-digestions - for which polypropylene fume cupboards fitted with acid-fume-scrubbers should be employed.

Note: Correct filter selection provides higher fume-containment factors, better operator protection and longer filter life. Following these Instructions will ensure correct use of the fume cupboard under the responsibility of the operator. When in doubt contact your Safety Officer and your supplier for advice.

**Ref.: BS 7989:2001, DIN 12927:1995, EN-141:1991, ANSI-ASHRAE 110:1995, EN 61010-1
Building Bulletin 88 of Architects & Building Branch of UK Dept. for Education & Employment**