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
A Benzene
A. Naphthalene
A. Styrene Monomer
A. Toluene
A. Toluidine
A. Xylene

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

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. Caprilyc
A. Carbolic
B. Formic
A. Lactic
A. Palmitic
A. Phenol
A. Propionic
A. Valeric

Aldehydes & Ketones
B. Acetone
C. Acetaldehyde
B. Acrolein
B. Acryladehyde
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

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

Halogens
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. Dichloromonofluro 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

Nitrogen Compounds
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

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. Tetrahydothiophene

Filtration Capacity Key
Weight/weight ratio:
A = 15 - 50%: Very good
B = 5- 20%: Good
C = <5% : Moderate
D = <1% : Poor

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

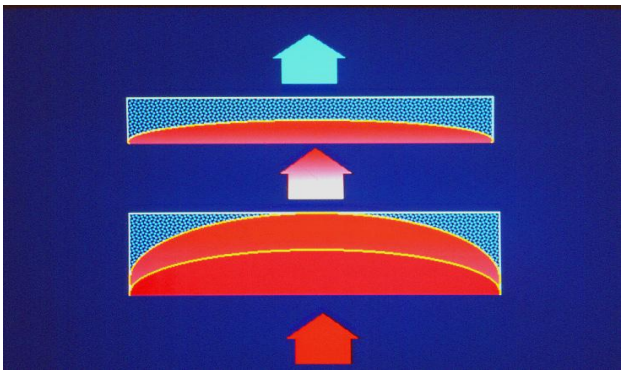
CI-range SafeAire™ activated-impregnated carbon filters:

CI-200 Filters - Type F impregnated activated carbon filters for chemisorption of formaldehyde - **HCHO** – and glutaraldehyde - **$OCH(CH_2)_3CHO$** – 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 alkalinic nuisance odours (urine, faecal)
CI-400 Filters - Type E impregnated activated carbon filters for chemisorption of inorganic acids **HCl***, **HNO_3 * SO_2***, **H_2SO_4*** etc.
CI-410 Filters - Type B impregnated activated carbon filters for chemisorption of mercaptans and **H_2S**
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
HEPA Filters - Class H-13 HEPA Filters for particulates to EN:BS:1822-1 (99.99% > 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.

* Please do not use for great quantities of fumigant acids: there must be used acid resistant ducted fume cupboards

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 60 mm sick **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
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	Yes or HEPA	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

We reserve the right to change specification without notice for continuous improvement

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

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