



The Carbosorb range of filters are designed for use in conjunction with ventilation or air conditioning systems, to eliminate objectionable odours or chemicals in gaseous form. Applications for Carbosorb include commercial kitchen, clubs, shopping centres and industrial installations. Carbosorb filters are available in type 'AC' with activated carbon media and two types of activated alumina media, 'AA1' and 'AA2'. All are available in either 205mm or 620mm depth.

Description

Carbosorb odour filters are fixed panel dry activated carbon or activated alumina air purifiers, consisting of 1.6mm steel outer frames into which are fitted a number of galvanized iron cell units.

These cell units are mounted in a 'zig-zag' or staggered fashion, and are designed to enable easy removal from the outer frame. Cell units contain carbon granules or activated alumina pellets between two pieces of galvanized steel mesh, and are specially treated to resist corrosion.

Principle of operation

Activated carbon and activated alumina are special forms of filter media which are capable of 'soaking up' or adsorbing gases and vapours from the air circulated through them, just as silica gel adsorbs water vapour. In general, the higher the molecular weight of the gas or vapour, the better it will be adsorbed by activated carbon. Lower molecular weight contaminants tend to be better adsorbed by 'AA1'. 'AA2' is formulated for removal of sulphur dioxide and hydrogen sulphide.

Carbosorb Gaseous / odour filters

Performance

Type 'AC' Carbosorb media is manufactured from selected raw material by a high temperature activation process, and has a retentivity of 65% on carbon tetrachloride vapour under test conditions. Type 'AA1' has a retentivity on formaldehyde of 24% and 'AA2' has a retentivity of 26% on sulphur dioxide. The media is very hard ensuring minimum wear and long life.

Design considerations

Carbosorb filters are not designed to remove particulate matter from the air. Unless prefilters are used to carry out this function, the filters will clog, causing a reduction in odour-adsorbing efficiency as well as greatly increasing resistance to airflow. See Email Air Handling for more information on suitable prefilters.

Installation

Carbosorb filters may be installed on a horizontal or vertical position, but when placed vertically the cell units must be horizontal. By screwing the frames together, any number of filters can be assembled into banks to suit any given air capacity. As the inner cell units can only be removed from one side of the filter, care must be taken to ensure that access is available to that side for servicing.

Engineering and performance data

| Carbon 'AC' | Type A | Type B |
|----------------------------|---|---|
| Mounting frame size (mm) | 610x610x205 deep | 610x610x620 deep |
| (inches) | 24 x 24 x 8 ¹ / ₁₆ deep | 24 x 24 x 24 ³ / ₈ deep |
| Capacity | 0.567 m ³ /s | 0.944 m ³ /s |
| Clean resistance | 62 Pa | 100 Pa |
| Retentivity of carbon used | 60% by carbon tetrachloride test | 60% by carbon tetrachloride test |
| Weight of carbon used | 16 kg | 45.4 kg |
| Total weight of filter | 53 kg | 127 kg |
| Operating conditions | ≤ 300°C / 0% to 100%RH | |

| Email MK2 (Alumina 'AA1') | Type A | Type B |
|-----------------------------|---|---|
| Mounting frame size (mm) | 610x610x205 deep | 610x610x620 deep |
| (inches) | 24 x 24 x 8 ¹ / ₁₆ deep | 24 x 24 x 24 ³ / ₈ deep |
| Capacity | 0.567 m ³ /s | 0.944 m ³ /s |
| Clean resistance | 62 Pa | 100 Pa |
| Weight of carbon used | 24 kg | 70 kg |
| Total weight of filter | 61 kg | 151 kg |
| Operating conditions | - 20°C to 52°C / 10% to 95%RH | |

| Email MK2 HC (Alumina 'AA2') | Type A | Type B |
|--------------------------------|---|---|
| Mounting frame size (mm) | 610x610x205 deep | 610x610x620 deep |
| (inches) | 24 x 24 x 8 ¹ / ₁₆ deep | 24 x 24 x 24 ³ / ₈ deep |
| Capacity | 0.567 m ³ /s | 0.944 m ³ /s |
| Clean resistance | 62 Pa | 100 Pa |
| Weight of carbon used | 22 kg | 64 kg |
| Total weight of filter | 59 kg | 145 kg |
| Maximum operating temperature | - 20°C to 52°C / 10% to 95%RH | |



Carbon granules, actual size

Filters can be arranged at right angles to the air-flow, oblique to the air flow or in a 'V' arrangement. The high capacity of Carbosorb filters makes mounting normal to the air flow suitable for most applications. However, when necessary, the alternative arrangements can be used.

Conventional dust and/or grease filters should be installed on the upstream or polluted air side of the Carbosorb filter to prevent dust and grease reaching and affecting it.

Maintenance/service

An efficiency reduction in Carbosorb filters occurs when the activated carbon or alumina will not take up all the vapour fed to it and a small amount of vapour passes right through the filter.

For example, 'AC' will take up about 65% of its own weight of carbon tetrachloride vapour and 'AA2' up to 26% of its own weight of sulphur dioxide before any break-through occurs. On other gasses or vapours, the percentage varies, depending on the particular substance concerned.

This high percentage adsorption ensures that the filter will operate for a long period before it requires attention. When the filter ultimately loads up and the efficiency tends to drop, it is easily returned to as-new condition by removing the inner cells and replacing them with a set containing fresh carbon or alumina. Replacement cell units are readily available from Email Air Handling. For your nearest service branch phone 1300 550 116.

Standard Specification

Activated carbon or activated alumina filters shall be of modular construction, 610mm by 610mm by 620mm deep (610 x 610 x 205). At a rated capacity of 0.944m/s, the resistance shall not exceed 100 Pa (62 Pa). Each module shall contain at least 45 kg (15 kg) of 65% retentivity (on CCl₄) activated carbon, or 63.5 kg (22.5 kg) activated alumina pellets.

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