



Application

Carbon filtration is ideal for removing unpleasant or even dangerous odours and gases from a wide variety of sources. The ever increasing awareness of this problem from public health authorities and environmentalists has resulted in an increase in the use of the unique properties of activated carbon filtration.

Carbon will adsorb chemical molecules in the air stream in varying degrees according to the type of contaminant and the period of time the air remains resident in the carbon. Activated Carbon in its loose granular form can present problems as there is a tendency for granules to abrade one another, this causes both settlement of the carbon – creating potential bypass voids and produces carbon dust that can be re-entrained into the air-stream. The unique bonding method eradicates these problems by producing a solid and stable biscuit of consistent quality and dimensional stability that produces an even resistance. Once formed the biscuits are bonded in a rigid mitred 'U' channel Frame for a panel or into a galvanised steel case for the discarb.

Technical Information

Due to the complex nature of adsorption, carbon filters are generally designed to suit the application, however, the following information is given as an indication of the physical requirements for their use.

Filter Type	Typical Panel Size (HxWxD)	Maximum Permissible Airflow (m ³ /s) at 0.1 sec dwell time	Resistance at 0.1 sec (pa)	Resistance at 0.2 sec (pa)
Panel Frame	595 x 595 x 20mm	0.07	100	50
Panel Frame	595 x 595 x 45mm	0.16	100	50
Panel Frame	600 x 600 x 22mm	0.07	100	50
Panel Frame	495 x 495 x 18mm	0.06	100	50
Discarb	597 x 297 x 597mm	0.52	225	115
Discarb	597 x 597 x 293mm	0.52	225	115
Discarb	597 x 198 x 597mm	0.34	225	115
Discarb	597 x 597 x 597mm	1.04	225	115

Operational Criteria

As far as possible water vapour should be eradicated from the air-stream to eliminate condensation within the filter that could cause porous blockage causing a dramatic increase in resistance – this also applies to loose carbon, however humidity levels as high as 80% RH are normally acceptable providing no interstitial condensation takes place.

Air-stream temperatures entering the filter in excess of 40°C should be avoided. In the case of anticipating temperatures above this level steps should be taken to reduce the temperature to an acceptable level by fresh air bleed, cooling coil or heat exchanger. In catering and food preparation applications smoke and grease must be removed from the air-stream prior to entry into the carbon

Dwell Times

In order to ensure a carbon filter operates satisfactorily certain criteria need to be met which do not apply to particulate filters. The most important aspect is the “dwell time” (the period of time the air is in contact with the carbon). The minimum dwell time used is 0.1 seconds and this is shown below as maximum permissible airflow. The dwell time may increase considerably according to the contaminant to be removed.

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