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EXPERTS IN FILTRATION

Water Treatment

Carbon and Media Cartridges

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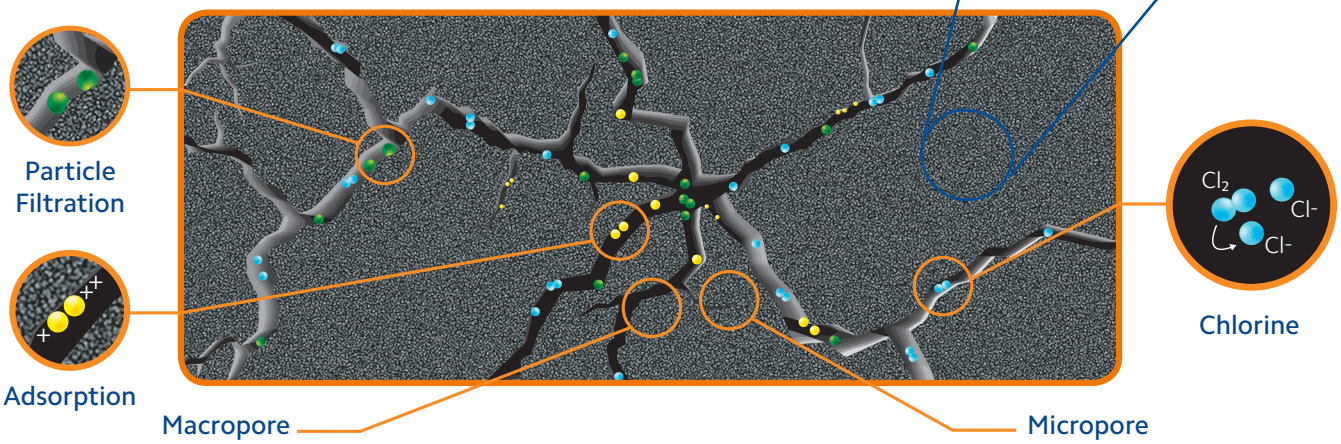
Carbon Technology

Utilised for several hundred years, carbon is considered one of the oldest means of water purification. Although impossible to trace the exact date and time, there is evidence of its usage and importance throughout history, from the ancient world to the modern era.

How Carbon Works

The cross-section below exposes the huge network of cracks and micropores that determines carbon's effectiveness at removing a wide range of contaminants.



Particle Filtration
Sediment and Suspended Solids

Every carbon block cartridge has a given micron rating to indicate the physical size of suspended particulate that can be removed by the cartridge. To prevent premature sediment blockage before the chlorine capacity of the carbon has been exhausted, pre-filtration, such as the SPECTRUM SSP or PSP, is recommended to prolong the life of the cartridge.

Adsorption
Organics and Heavy Metals

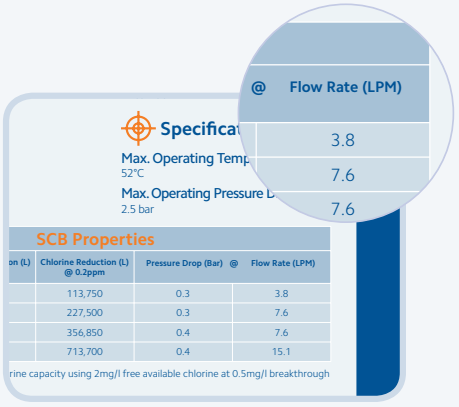
Carbon is a naturally adsorptive media, removing dissolved contaminants from a solution. When heated to 870°C, during the activation process, millions of tiny micropores are created throughout the structure of the cartridge, attracting large organic molecules and heavy metals to the surface.

Chemical Reaction
Chlorine and Chloramine

Through chemical interactions with the activated carbon, reactive chlorine molecules are converted to less reactive chloride ions. Chloramine can also be removed through this process although the reaction occurs at a much slower rate. Speciality cartridges such as the SPECTRUM PCB have been specifically designed to effectively target chloramine.

Carbon Flow Rate

The longer water comes into contact with carbon, generally the more effective the treatment process will be, whether removing organics, heavy metals, chorine or chloramine. Even a small increase over the recommended flowrate can cause dramatic decreases in carbon treatment's effectiveness. Therefore it is imperative to size a carbon treatment system properly, ensuring that the flowrate allows enough contact time to remove the undesired contaminants. The recommended flowrate for each cartridge is shown on the product page (as illustrated, right).



Carbon's Effectiveness at Removing...

Excellent

Chloramine
Chlorine
Dyes
Glycols
Herbicides
Hydrogen Peroxide
Insecticides
Iodine
Odours
Oil-dissolved
PCBs
Pesticides
Sodium Hypochlorite
Taste
THMs

Good

Organic Acids
Organic Salts
Potassium Permanganate
Solvents
Sulphonated Oils
Tannins

Fair

Acetic Acid
Detergents
Heavy Metals
Hydrogen Sulfide
Plating Wastes
Soap

Carbon Cartridge Construction

From raw material, through to activation and end product.

Coal and coconut carbon are the base materials used in cartridge construction. Coconut promotes the highest porosity and is the cleanest form oriented more towards drinking water use. Coal-based carbon, having a higher ash content, is better suited to industrial or batch process usage.

Coal and coconut are individually heated to 870°C in a carbon activation furnace.

Properties, such as mesh size and adsorption capacity, are confirmed with quality testing. Ash content is checked and can be controlled with acid washing to reduce ash and soluble impurities resulting in a cleaner end product that rinses up quickly.

Activated media is combined with binders and compressed through an extrusion machine, or manufactured using specialised techniques i.e. modified or catalytic carbon.

To complete construction, the product is encased in applicable wraps and end-caps.

Modified
Carbon Block
e.g. CFB-Plus

An advanced technology, Fibredyne combines dissolved contaminant removal with excellent sediment reduction. Uses powdered carbon for effective chlorine reduction.

Powder
Carbon Block
e.g. SCB & PCB

Finer carbon mesh size increases surface area, ensuring highly effective removal of small contaminants such as chlorine. Perfect for drinking water applications.

Granular
Carbon Block
e.g. CB & ECB

Traditional carbon technology, more effective at removing large molecules such as odours. Suitable for commercial and industrial applications.

SPECTRUM

870 Carbon Block - Economic

Performance based on 10" cartridge. *Life in UK water based on free chlorine concentration of 0.2mg/l.

Batch Process Applications

Suited to the industrial sector, the lower capacity ECB suits batch process, where a longer service life is not required. For 2019, the carbon formulation has been upgraded, significantly improving chlorine removal efficiency to 60% from 35%, serving for a more reliable and dependable economic block. Manufactured using acid washed bituminous carbon, a highly microporous structure targets larger organic molecules such as benzene. This ensures the removal of ash and reduces rinse-up fines often found with non-acid washed bituminous carbon. Available in 3 micron sizes, the ECB offers flexibility to suit different applications where sediment could plug the carbon before service life is achieved.

Key Features

- Upgraded for 2019, new formula ECB with chlorine reduction efficiency levels of 60%
- Robust, due to high binder content
- The highest micron size available in the economic range prevents blinding of cartridge

Typical Applications

- Low capacity industrial batch processes
- Small RO applications where cost is of primary consideration

* Bituminous carbon is not suitable for drinking water. For an alternative, please refer to the WRAS approved SCB on page 10

Configurations

Micron (µm)

1	5	10

Length (")

9¾	20

Diameter

Standard	Large = BB

Materials of Construction

Carbon Type
Acid washed bituminous

Netting
Polyethylene

End-cap
Polypropylene

Gasket
EPDM

Wrap
Polypropylene

Specification

Max. Operating Temperature
52°C

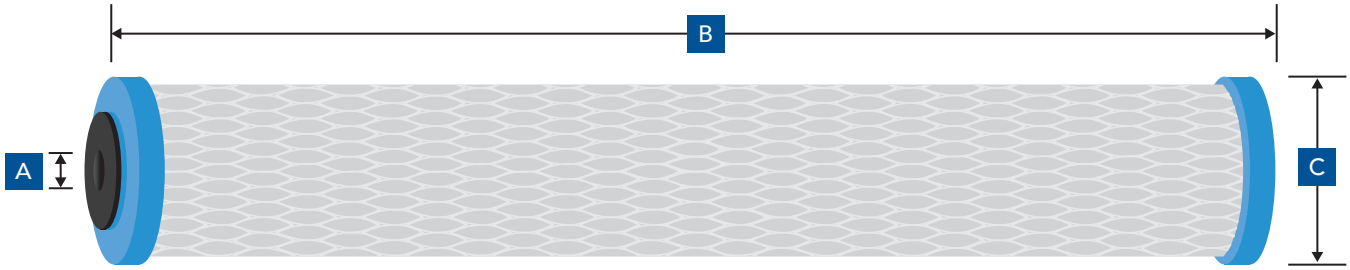
Max. Operating Pressure Differential
2.5 bar

ECB Properties

Length (")	Chlorine Reduction (L) @ 2mg/l *	Chlorine Reduction (L) @ 0.2mg/l **	Pressure Drop (Bar) @ Flow Rate (LPM) (Performance based on 5µm cartridge)	
9¾	6,000	48,000	0.4	3.8
20	12,000	96,000	0.4	7.6
9¾BB	27,400	219,200	0.5	7.6
20BB	54,900	439,200	0.5	15.1

*Chlorine capacity using 2mg/l free available chlorine at 0.8mg/l breakthrough
**Calculated chlorine capacity using 0.2mg/l free available chlorine at 0.08mg/l breakthrough

Dimensions & Packaging



Dimensions (mm)			
Length (")	**A**	**B**	**C**
9¾	28	248	66
20	28	508	66
9¾BB	28	248	115
20BB	28	508	115

Packaging	
Box Qty	**Box Weight (kg)**
15	8
15	12
4	7
4	14

Part Number

Code	Micron	Length
ECB	1, 5, 10	9¾, 20
		9¾BB, 20BB

e.g. ECB-1-20BB