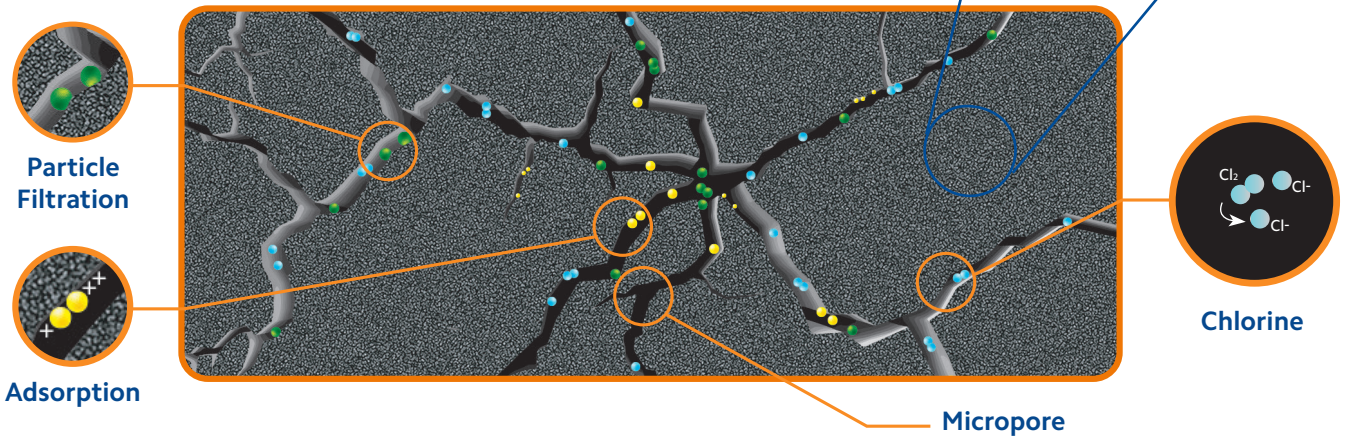


Carbon Technology

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, chlorine or chloramine. Even a small increase over the recommended flow rate can cause dramatic decreases in carbon treatment's effectiveness. Therefore it is imperative to size a carbon treatment system properly, ensuring that the flow rate allows enough contact time to remove the undesired contaminants. The recommended flow rate for each cartridge is shown on the product page (as illustrated, right).

		@ Flow Rate (LPM)	
Specific		3.8	
Max. Operating Temp 52°C		7.6	
Max. Operating Pressure 2.5 bar		7.6	
SCB Properties			
on (L)	Chlorine Reduction (L) @ 0.2ppm	Pressure Drop (Bar) @	Flow Rate (LPM)
	113,750	0.3	3.8
	227,500	0.3	7.6
	356,850	0.4	7.6
	713,700	0.4	15.1
<small>rine capacity using 2mg/l free available chlorine at 0.5mg/l breakthrough</small>			

Carbon's Effectiveness at Removing...

Excellent

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

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.

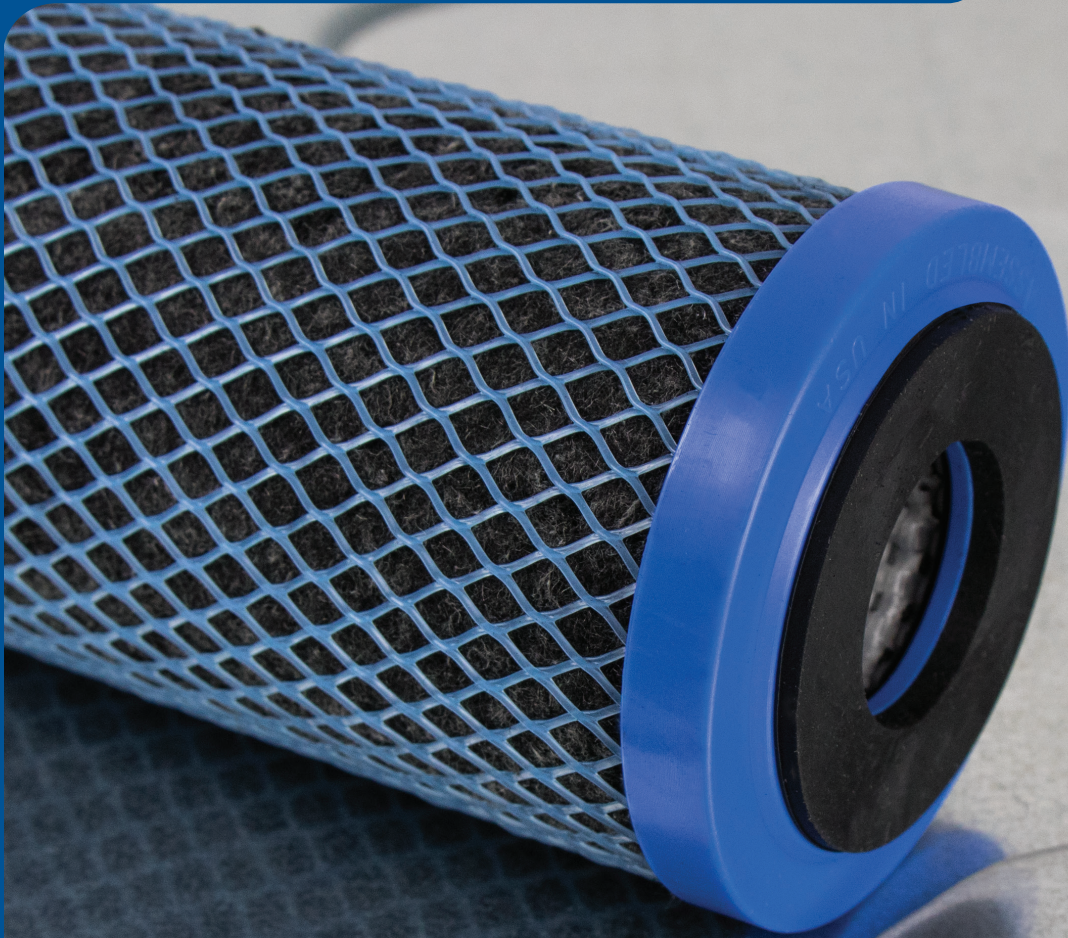


Granular Carbon Block

e.g. CB & ECB

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

Advanced Carbon Technology



For **Sediment**
and **Chlorine**

Chlorine Reduction
Start - End of Life (%)
98-75

Total Chlorine
Capacity (mg)
66,150

Typical Life in UK
Water (L)*
330,750

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

CFB-Plus - Fibredyne

5 micron

The latest in carbon technology, Pentair Fibredyne stands for best of both worlds: a range of cartridges that combine activated carbon technology with depth filtration. This allows all the benefits of activated carbon with minimum pressure drop, thanks to using powdered activated carbon embedded onto a cellulose-free synthetic fibre matrix. With premium chlorine, taste and odour reduction, the CFB-Plus is a versatile cartridge, with the highest sediment reduction promoting a long life and the ideal, trusted choice for residential, commercial or industrial applications.

Key Features

- Fibredyne technology enables one-stage chlorine and sediment removal, promoting ease-of-use
- Unique post-filtration layer reduces fine release downstream
- Over 75% reduction in pressure drop over carbon block

Typical Applications

- Domestic and general water supply
- Incoming water for breweries

Specification

Max. Operating Temperature
82°C

Carbon Type
Bonded Powder Activated Coconut Carbon

End-cap / Gasket
Polypropylene / Santoprene

Max. Operating Pressure Differential
1.5 bar

Netting Material
Polyethylene

CFB-Plus Properties				
Length (")	Chlorine Reduction (L) @ 2mg/l *	Chlorine Reduction (L) @ 0.2mg/l **	Pressure Drop (Bar) @	Flow Rate (LPM)
10	37,800	330,750	0.11	3.8
20	75,700	662,375	0.11	7.6
30	113,500	993,125	0.11	11.4
10BB	94,600	827,750	0.17	7.6
20BB	189,000	1,653,750	0.17	15.1

*Chlorine capacity using 2mg/l free available chlorine at 0.5mg/l breakthrough
**Calculated chlorine capacity using 0.2mg/l free available chlorine at 0.05mg/l breakthrough

Configurations

Micron (µm)

5

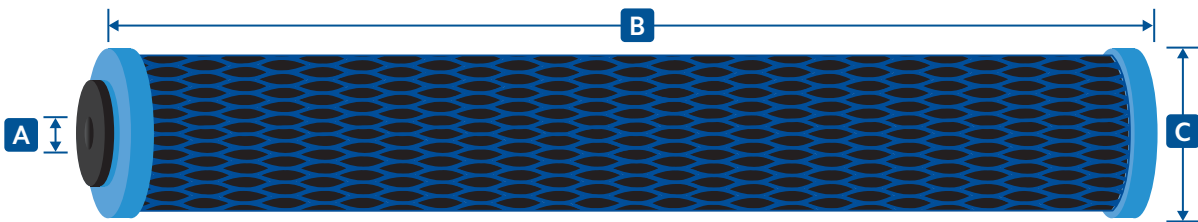
Length (")

10 = 9¾ 20 30

Diameter

Regular Large = BB

Dimensions & Packaging



Length (")	Dimensions (mm)		
	A	B	C
10	28	248	73
20	28	508	73
30	28	762	73
10BB	28	248	118
20BB	28	508	118

Part Number

Code	Length
CFB-Plus	10, 20, 30
	10BB, 20BB

e.g. CFB-Plus20BB