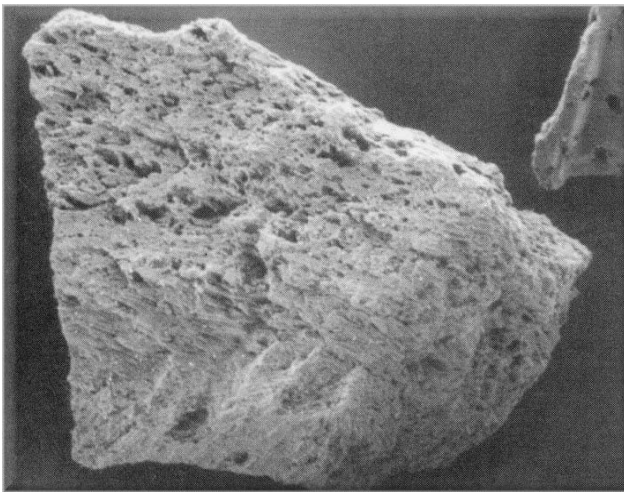


## WHAT IS ACTIVATED CARBON?

Activated carbon is a porous form of carbon which can be manufactured from a variety of carbonaceous raw materials. The principal commercial products are made from coconut shell, coal, peat or wood. The activation process involves treating the raw material with steam or chemicals, thereby developing a pore structure.

Activated carbon is characterised by a vast system of pores of molecular size within the carbon particles resulting in the formation of a material with extensive surface area. Commercially available activated carbons have surface areas from 400m<sup>2</sup>/g to in excess of 2000m<sup>2</sup>/g.

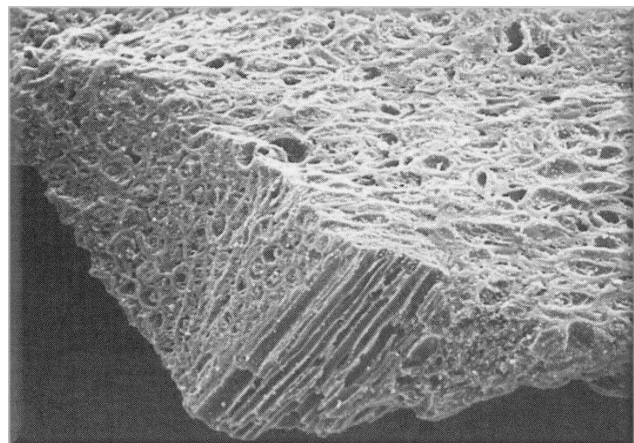


## ACTIVATED CARBON SELECTION

Selection of the most appropriate activated carbon type is based either on known characteristics of the chemicals to be removed in the adsorption process or by a series of controlled laboratory tests. Powder carbons are mainly used in batch processes and removed by filtration after an appropriate contact time whereas granular carbons are used in fixing or moving filter beds. In the case of granular carbons, the smallest particle size is normally selected consistent with retention in the filter and acceptable flow resistance since this will provide the best adsorption kinetics. Activated carbon is sometimes chemically impregnated to enhance the performance by chemisorption when adsorption affinity for particular contaminants is too weak to be effective.

## HOW DOES IT WORK?

The atoms of carbon comprising the large internal surface area of activated carbon present attractive forces outward from the surface. These forces, known as Van der Waals forces, attract the molecules of the surrounding gas or liquid. The combination of these attractive forces and those of molecules in the surrounding medium result in adsorption of molecules at the surface of the activated carbon. Some molecules have structures which make them more easily adsorbed than others and it is due to this that separation of molecules is achieved.



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