

Activated Carbon

James Cumming & Sons Pty Ltd supplies a range of high quality Activated Carbons, in both granular and powdered forms, for a wide range of Municipal and Industrial water and wastewater treatment applications, as well as for air pollution control.

Activated Carbon works by the process of adsorption, molecules being adsorbed onto the Activated Carbon as a result of the forces exerted on them by the carbon surfaces. These molecules (the "adsorbate") diffuse through the larger pores ("Transport pores") of the Activated Carbon particle into the smallest pore diameter regions ("Adsorption pores") where they are held in pseudo-precipitated or pseudo-condensed form. Because of its large internal surface area (typically of the order of 1000 square metres per gram), Activated Carbon exhibits the strongest physical adsorption forces of any known material.

Activated Carbons can be manufactured from virtually any organic material; however, because of their high carbon contents, coal, wood and coconut shells are the most commonly used raw materials. Activation may be carried out by chemical means or, more commonly, by high temperature steam activation in a controlled atmosphere. It is this activation process which imparts to the Activated Carbon its intricate internal pore structure and thus its great adsorption ability. Because this pore structure is largely dependent, along with the activation conditions, on the nature of the base raw materials, Activated Carbons produced from each of the previously mentioned raw materials will each possess their own inherent pore structures, and will demonstrate different suitabilities for different applications. For example, wood based Activated Carbons tend to possess a preponderance of large diameter pores, coconut shell based Activated Carbons tend to possess a preponderance of small diameter pores, while coal based Activated Carbons tend to possess a broad range of pore diameters.

Activated Carbons can be produced in granular, powdered (pulverised) or extruded (pelletised) forms, and are utilised in a wide range of industrial, municipal and domestic applications, including water and wastewater purification, liquid and gas purification, precious metal recovery, personnel protection and a range of environmental applications. The suitability of a particular type of Activated Carbon can be determined by experience in similar applications, and by the appropriate testwork. Recognising that the different pore structures of Activated Carbons manufactured from different base materials mean that certain types of Activated Carbons will perform more efficiently for certain applications than will others, James Cumming & Sons supplies Activated Carbons based on all three of the abovementioned base materials, to ensure that we can provide the Activated Carbon most suited to your particular requirements.