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What is the Activated Carbon?

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The primary raw material used for activated carbon is any organic material with a high carbon content (**coal, wood, peat, coconut shells**). **Granular activated carbon media** is most commonly produced by grinding the raw material, adding a suitable binder to give it hardness, re-compacting and crushing to the correct size.

The carbon-based material is converted to activated carbon by thermal decomposition in a furnace using a controlled atmosphere and heat. The resultant product has an incredibly large surface area per unit volume, and a network of submicroscopic pores where adsorption takes place.

The walls of the pores provide the surface layer molecules essential for adsorption. Amazingly, one pound of carbon (a quart container) provides a surface area equivalent to six football fields

What is the Particle Size of Activated Carbon?

Activated carbon is a carbonaceous adsorbent with a high internal porosity, and hence a large internal surface area. Commercial activated carbon grades have an internal surface area of 500 up to 1500 m²/g. Related to the type of application, three major product groups exist:

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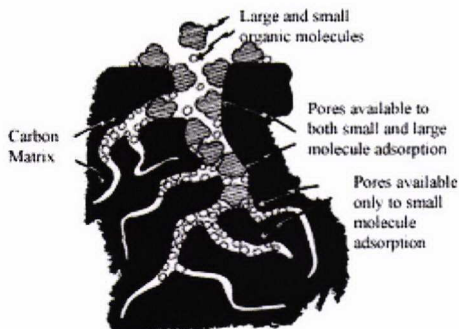
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- Powdered activated carbon; particle size 1-150 μm
- Granular activated carbon, particle size 0.5-4 mm
- Extruded activated carbon, particle size 0.8-4 mm

What is the type of internal pores?

A proper activated carbon has a number of unique characteristics: a large internal surface area, dedicated (surface) chemical properties and good accessibility of internal pores. According to IUPAC definitions three groups of pores are distinguished:

- Macropores (> 50 nm diameter)
- Mesopores (2-50 nm diameter)
- Micropores (< 2 nm diameter)



Micropores generally contribute to the major part of the internal surface area. Macro and mesopores can generally be regarded as the highways into the carbon particle, and are crucial for kinetics. Macropores can be visualised using scanning electron microscopy. The pore size distribution is highly important for the practical application; the best fit depends on the compounds of interest, the matrix (gas, liquid) and treatment conditions.

The desired pore structure of an activated carbon product is attained by combining the right raw material and activation conditions.

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