ACTIVATED CARBON SPHERES

Nuclear, Biological and Chemical (NBC) threat is a global concern in the wake of terrorism and several nations having acquired the capability to build these weapons of Mass destruction. Effective protection of personnel is very important in an NBC scenario. The conventional NBC individual protective (IP) equipment with powder carbon as the adsorbent imparts severe heat stress and gives only low protection. In order to overcome the problems associated with powder carbon new material with high surface area and high adsorption capacity Activated Carbon Spheres (ACS) has been explored and production process has been developed by DRDE Gwalior.

ACS is an interesting adsorbent material having excellent properties such as porous structure, large surface area, high micropore volume, controllable pore size distribution, high mechanical strength, high purity, smooth surface, high wear resistance, excellent durability, good fluidity, low ash content and low moisture content. Due to above mentioned qualities, ACS are commonly used in many applications like catalyst supports, purification of blood, supercapacitors, protective suits against chemical warfare agents and adsorptive removal of gaseous and liquid toxicants. Using polymeric precursors, specific surface area of greater than 800 m^2 /g along with total pore volume of more than 0.8 cm^3 /g have been obtained and successfully used for removal of various types of toxicants. The application of activated carbon as adsorbents relies on the pore size and its distribution as micropores (<2mm) and mesopores (2 to 50 nm) that are mostly utilized for the gas phase and liquid phase.

ACS has been successfully used for developing individual protective equipment (IPE) for Services like NBC Suit Permeable Mk-V, NBC Socks, NBC Haversack Mk-II, Multifunctional NBC boot. Further it is also being used in development of Multifunctional NBC Boot, IHM etc.