THE SURFACE AREA AND POROSITY OF CARBON BLACKS

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An instrument for the automatic recording of complete low-temperature gas adsorption isotherms of fine powders has been constructed. It is based on weight measurements by means of an electrobalance and pressure responses by means of a radioactive source. Existing procedures for cumulative surface area calculation are unsatisfactory for carbon blacks with a low porosity. Equally, the application of the Boer's t method leads to doubtful results for carbon blacks. A modification of this approach is proposed, based on the existence of a residual homogeneity at the particle surface, which yields consistent results, compatible with BET data, for porous and nonporous carbon blacks. It was found that pores in carbon blacks are generally of a slitlike shape formed by removal of one or more layers from surface crystallites, most likely by oxidation.