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Standard Terminology Relating to Activated Carbon¹

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abrasion resistance—the property of a particle to resist attrition or wearing away by friction.

absorption—a process in which fluid molecules are taken up by a liquid or solid and distributed throughout the body of that liquid or solid.

accelerated adsorption tests—adsorption tests in which the end point is hastened by testing at conditions more severe than those anticipated in service.

accelerated service life—the elapsed time until the end point is reached in an accelerated adsorption test.

acid-extractable material—substances dissolved by an acid under specified conditions.

activated carbon—a family of carbonaceous substances manufactured by processes that develop adsorptive properties.

activation—any process whereby a substance is treated to develop adsorptive properties.

activity—a generic term used to describe the capacity to adsorb in general; also, the adsorptive capacity of an adsorbent as measured by a standard test.

adsorbate—any substance that is or can be adsorbed.

adsorbent—any solid having the ability to concentrate significant quantities of other substances on its surface.

adsorption—a process in which fluid molecules are concentrated on a surface by chemical or physical forces, or both.

adsorption wave—see **mass transfer zone**.

adsorption zone—see **mass transfer zone**.

ash—residue after the combustion of a substance under specified conditions.

as is basis—as received.

breakpoint—the appearance in the effluent of a specified concentration of an adsorbate.

breakthrough—the first appearance in the effluent of an adsorbate of interest under specified conditions.

channeling—the greater flow of fluid through passages of lower resistance which can occur in fixed beds or columns of particles due to nonuniform packing, irregular sizes and

shapes of the particles, gas pockets, wall effects, and other causes.

chemical adsorption— see **chemisorption**.

chemisorption (chemical adsorption)—the binding of an adsorbate to the surface of a solid by forces whose energy levels approximate those of a chemical bond.

coadsorption—the adsorption of two or more components on an adsorbent, each affecting the adsorbability of the other.

contact batch operation—an adsorption process in which an adsorbent is dispersed in a fluid to be treated and then separated when practical equilibrium is attained.

continuous moving bed—an adsorption process characterized by flow of a fluid through a continuously moving bed of granular adsorbent with continuous withdrawal of spent adsorbent and continuous addition of reprocessed or virgin adsorbent.

countercurrent adsorption—an adsorption process in which the flow of fluid is in a direction opposite to the movement of the adsorbent.

critical bed depth—the minimum depth of an adsorbent bed required to contain the mass transfer zone.

crushing strength—the property of a particle to resist physical breakdown when contained and subjected to a slowly increasing continuously applied force.

degassing—removal of gases.

density, absolute or true—the mass under specified conditions of a unit volume of a solid sorbent excluding its pore volume and inter-particle voids.

density, apparent (density, bulk)—the mass under specified conditions of a unit volume of a solid sorbent including its pore volume and inter-particle voids.

density, block—see **density, particle**.

density, bulk—see **density, apparent**.

density, particle (density, block)—the mass under specified conditions of a unit volume of a solid sorbent including its pore volume but excluding inter-particle voids.

desorption—the separation of an adsorbate as such from a sorbent.

differential heat of adsorption—the heat evolved during the adsorption of an incremental quantity of adsorbate at a given level of adsorption.

dosage—the quantity of substance applied per unit weight or volume of the fluid being treated.

¹ These definitions are under the jurisdiction of ASTM Committee D-28 on Activated Carbon and are the direct responsibility of Subcommittee D28.03 on Nomenclature and Editorial.

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