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An American National Standard

Standard Terminology Relating to Manufactured Carbon and Graphite¹

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across (or against) grain, *n*—the direction in a body with preferred orientation due to forming stresses that has the maximum *c*-axis alignment as measured in an X-ray diffraction test.

agglomerate, *n*—in *manufactured carbon and graphite product technology*, a composite particle containing a number of grains.

ash, *n*—in *carbon and graphite technology*, the residue remaining after oxidation of a carbon or graphite.

binder—a substance, usually an organic material such as coal tar pitch or petroleum pitch, used to bond the coke or other filler material prior to baking.

carbon—an element, number 6 of the periodic table of elements, electronic ground state $1s^2 2s^2 2p^2$.

carbon—in *carbon and graphite technology*, an artifact consisting predominantly of the element carbon and possessing limited long range order.

DISCUSSION—The presence of limited long range order is usually associated with low electrical and thermal conductivity and difficult machinability when compared with graphite.

coke—a carbonaceous solid produced from coal, petroleum, or other materials by thermal decomposition with passage through a plastic state.

compressive strength—a property of solid material that indicates its ability to withstand a uniaxial compressive load.

defect—of a *manufactured carbon or graphite product*, any irregularity in the chemistry, microstructure, or macrostructure.

defective—having flaws or dimensional deviations greater than acceptable for the intended use.

electrographite, *n*—in *carbon and graphite technology*, a synonym for manufactured graphite.

extruded—formed by being forced through a shaping orifice as a continuous body.

filler—in *manufactured carbon and graphite product technology*, carbonaceous particles comprising the base aggregate in an unbaked green-mix formulation.

flaw—a defect sufficiently greater than those typical of the morphology of a carbon or graphite body to influence a property.

flexural strength—a property of solid material that indicates its ability to withstand a flexural or transverse load.

flow line—a defect induced by discontinuous flow velocities during forming of molded or extruded bodies.

grade—the designation given a material by a manufacturer such that it is always reproduced to the same specifications established by the manufacturer.

grain, *n*—in *manufactured (synthetic) carbon and graphite*, a particle of filler material (usually coke or graphite) in the starting mix formulation. Also referred to as granular material, filler particle, or aggregate material. The term is also used to describe the general texture of a carbon or graphite body, as in the descriptions listed below:

coarse grained—containing grains in the starting mix that are substantially greater than 4 mm in size.

medium grained—containing grains in the starting mix that are generally less than 4 mm in size.

fine grained—containing grains in the starting mix that are generally less than 100 μm in size.

superfine grained—containing grains in the starting mix that are generally less than 50 μm in size.

ultrafine grained—containing grains in the starting mix that are generally less than 10 μm in size.

DISCUSSION—All of the above descriptions relate to the generally accepted practice of measuring the sizing fractions with a criterion that 90 % of the grains will pass through the stated screen size in a standard particle sizing test.

graphene layer—in *carbon and graphite technology*, a single carbon layer of the graphite structure, describing its nature by analogy to a polycyclic aromatic hydrocarbon of quasi-infinite size.

DISCUSSION—The term graphite designates a modification of the chemical element carbon in which planar sheets of carbon atoms, each atom bound to three neighbors in a honeycomb-like structure, are stacked in a three dimensional regular order. For a single layer, it is not correct to use the term graphite, which implies a three dimensional structure.

graphite—an allotropic crystalline form of the element carbon, occurring as a mineral, commonly consisting of a

¹ This terminology is under the jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.F0 on Manufactured Carbon and Graphite Products.

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