Designation: C 125 – 03

Standard Terminology Relating to Concrete and Concrete Aggregates[1]

This standard is issued under the fixed designation C 125; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 The following definitions apply to hydraulic cement concrete, although some of them may have wider application.[2]

2. Referenced Documents

2.1 *ASTM Standards:*

C 109/C 109M Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)[3]

C 143/C 143M Test Method for Slump of Hydraulic Cement Concrete[4]

C 403/C 403M Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance[4]

C 494/C 494M Specification for Chemical Admixtures for Concrete[4]

C 939 Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)[4]

C 1074 Practice for Estimating Concrete Strength by the Maturity Method[4]

2.2 *American Concrete Institute Publications:*[5]

308 Practice for Curing Concrete

3. Terms and Their Definitions

absorption, *n*—the process by which a liquid is drawn into and tends to fill permeable pores in a porous solid body; also, the increase in mass of a porous solid body resulting from the penetration of a liquid into its permeable pores.

DISCUSSION—In the case of concrete and concrete aggregates, unless otherwise stated, the liquid involved is water, the increase in mass is that which does not include water adhering to the outside surface, the increase in mass is expressed as a percentage of the dry mass of the body and the body is considered to be "dry" when it has been treated by an appropriate process to remove uncombined water, such as drying to constant mass at a temperature between 100 and 110°C.

admixture, *n*—a material other than water, aggregates, hydraulic cementitious material, and fiber reinforcement that is used as an ingredient of a cementitious mixture to modify its freshly mixed, setting, or hardened properties and that is added to the batch before or during its mixing.

accelerating admixture, n—admixture that accelerates the setting and early strength development of concrete. (C 494/C 494M)

air-entraining admixture, n—admixture that causes the development of a system of microscopic air bubbles in concrete or mortar during mixing.

chemical admixture, n—a nonpozzolanic admixture in the form of a liquid, suspension, or water-soluble solid.

mineral admixture, n—deprecated term.

DISCUSSION—This term has been used to refer to different types of water insoluble, finely divided materials such as pozzolanic materials, cementitious materials, and aggregate. These materials are not similar, and it is not useful to group them under a single term. The name of the specific material should be used, for example, use "pozzolan," "ground granulated blast-furnace slag," or "finely divided aggregate," as is appropriate.

retarding admixture, n—admixture that retards the setting of concrete. (C 494/C 494M)

water-reducing admixture, n—admixture that either increases the slump of freshly mixed mortar or concrete without increasing the water content or that maintains the slump with a reduced amount of water due to factors other than air entrainment.

water-reducing admixture, high-range, n—a water-reducing admixture capable of producing at least 12 % reduction of water content when tested in accordance with Specification C 494/C 494M and meeting the other relevant requirements of Specification C 494/C 494M.

aggregate, *n*—granular material, such as sand, gravel, crushed stone, or iron blast-furnace slag, used with a cementing medium to form hydraulic-cement concrete or mortar.

[1] This terminology is under the jurisdiction of ASTM Committee C09 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.91 on Terminology.

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[2] C 219, Terminology Relating to Hydraulic Cement contains definitions of a number of items in use in standards under the jurisdiction of Committee C09. Definitions of additional terms may be found in *Cement and Concrete Terminology*, 116R American Concrete Institute, P.O. Box 19150, Detroit, MI 48219.

[3] *Annual Book of ASTM Standards*, Vol 04.01.

[4] *Annual Book of ASTM Standards*, Vol 04.02.

[5] Available from the American Concrete Institute, P.O. Box 9094, Farmington Hills, MI 48333-9094.

coarse aggregate, n—(1) aggregate predominantly retained on the 4.75-mm (No. 4) sieve; or *(2)* that portion of an aggregate retained on the 4.75-mm (No. 4) sieve.

Discussion—The definitions are alternatives to be applied under differing circumstances. Definition *(1)* is applied to an entire aggregate either in a natural condition or after processing. Definition *(2)* is applied to a portion of an aggregate. Requirements for properties and grading should be stated in the specification.

fine aggregate, n—(1) aggregate passing the 9.5-mm (⅜-in.) sieve and almost entirely passing the 4.75-mm (No. 4) sieve and predominantly retained on the 75-μm (No. 200) sieve; or *(2)* that portion of an aggregate passing the 4.75-mm (No. 4) sieve and retained on the 75-μm (No. 200) sieve.

Discussion—The definitions are alternatives to be applied under differing circumstances. Definition *(1)* is applied to an entire aggregate either in a natural condition or after processing. Definition *(2)* is applied to a portion of an aggregate. Requirements for properties and grading should be stated in the specifications.

heavyweight aggregate, n—see *high-density aggregate*.

high-density aggregate, n—aggregate with relative density greater than 3.3, such as: barite, magnetite, limonite, ilmenite, iron, or steel.

lightweight aggregate, n—see *low-density aggregate*.

low-density aggregate, n—aggregate with bulk density less than 1120 kg/m^3 (70 lb/ft^3), such as: pumice, scoria, volcanic cinders, tuff, and diatomite; expanded or sintered clay, shale, slate, diatomaceous shale, perlite, vermiculite, or slag; and end products of coal or coke combustion.

normal-density aggregate, n—aggregate that is neither high nor low density.

Discussion—This term refers to aggregate with relative density typically ranging between 2.4 and 3.0, or with bulk density typically ranging between 1120 kg/m^3 (70 lb/ft^3) and 1920 kg/m^3 (120 lb/ft^3).

normalweight aggregate, n—see *normal-density aggregate*.

air-cooled blast-furnace slag, *n*—the material resulting from solidification of molten blast-furnace slag under atmospheric conditions; subsequent cooling may be accelerated by application of water to the solidified surface.

air content, *n*—the volume of air voids in cement paste, mortar, or concrete, exclusive of pore space in aggregate particles, usually expressed as a percentage of total volume of the paste, mortar, or concrete.

air void, *n*—a space in cement paste, mortar, or concrete filled with air; an entrapped air void is characteristically 1 mm or more in width and irregular in shape; an entrained air void is typically between 10 and 1000 μm in diameter and spherical or nearly so.

Discussion—The content of the voids may include atmospheric air incorporated into the concrete during mixing of air or other gases released by chemical or other processes within the fresh concrete.

blast-furnace slag, *n*—the nonmetallic product, consisting essentially of silicates and aluminosilicates of calcium and other bases, that is developed in a molten condition simultaneously with iron in a blast furnace.

bleeding, *n*—the autogenous flow of mixing water within, or its emergence from, newly placed concrete or mortar caused by the settlement of the solid materials within the mass, also called water gain.

bulk density, *n—of aggregate,* the mass of a unit volume of bulk aggregate material (the unit volume includes the volume of the individual particles and the volume of the voids between the particles).

Discussion—This term replaces the deprecated term **unit weight**—*of aggregate*.

bulk specific gravity, *n*—the ratio of the mass of a volume of a material (including the permeable and impermeable voids in the material, but excluding the voids between particles of the material) at a stated temperature to the mass of an equal volume of distilled water at a stated temperature.

bulk specific gravity *(saturated surface dry)***,** *n*—the ratio of the mass of a volume of a material including the mass of water within the pores in the material (but excluding the voids between particles) at a stated temperature, to the mass of an equal volume of distilled water at a stated temperature.

cellular concrete, *n*—a lightweight hydraulic-cement concrete having a homogeneous void or cell structure attained using gas-forming chemicals or foaming agents.

cementitious material *(hydraulic)***,** *n*—an inorganic material or a mixture of inorganic materials that sets and develops strength by chemical reaction with water by formation of hydrates and is capable of doing so under water.

cementitious mixture, *n*—a mixture (mortar, concrete, or grout) containing hydraulic cement.

concrete, *n*—a composite material that consists essentially of a binding medium within which are embedded particles or fragments of aggregate; in hydraulic-cement concrete, the binder is formed from a mixture of hydraulic cement and water.

consistency, *n—of fresh concrete, mortar, or grout,* the relative mobility or ability to flow.

Discussion—This characteristic of fresh cementitious mixtures is difficult to quantify and empirical test methods have been adopted to provide indicators of consistency. For example, the slump test described in Test Method C 143/C 143M is used for concrete, the flow table method described in Test Method C 109/C 109M is used for mortar, and the flow cone method described in Test Method C 939 is used for grout.

crushed gravel, *n*—the product resulting from the artificial crushing of gravel with substantially all fragments having at least one face resulting from fracture.

crushed stone, *n*—the product resulting from the artificial crushing of rocks, boulders, or large cobblestones, substantially all faces of which have resulted from the crushing operation.

curing, *n*—action taken to maintain moisture and temperature conditions in a freshly-placed cementitious mixture to allow hydraulic cement hydration and (if applicable) pozzolanic reactions to occur so that the potential properties of the mixture may develop (see ACI 308).

curing compound, *n*—a liquid that, when applied as a coating to the surface of newly-placed concrete, forms a membrane