Designation: D7357 – 07 (Reapproved 2012)

Standard Specification for Cellulose Fibers for Fiber-Reinforced Concrete[1]

This standard is issued under the fixed designation D7357; 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.

1. Scope

1.1 This specification covers minimum requirements for cellulose fibers intended for use in fiber-reinforced concrete, and other cementitious products.

1.2 This specification provides for measurement of properties, definition of types, typical properties, and prescribes testing procedures to establish conformance to these requirements.

1.3 In the case of conflict between a more stringent requirement of a product specification and a requirement of this specification, the product specification shall prevail. In the case of a conflict between a requirement of the product specification or a requirement of this specification and a more stringent requirement of the purchase order, the purchase order shall prevail. The purchase order requirements shall not take precedence if they, in any way, violate the requirements of the product specification or this specification; for example, by the waiving of a test requirement or by making a test requirement less stringent.

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

C1116 Specification for Fiber-Reinforced Concrete and Shotcrete

D6942 Test Method for Stability of Cellulose Fibers in Alkaline Environments

2.2 *TAPPI (Technical Association of the Pulp and Paper Industry):*[3]

T 205 Forming handsheets for physical tests of pulps

T 222 Acid-insoluble lignin in wood and pulp

T 231 Zero-span breaking strength of pulp (dry zero-span tensile)

T 232 Fiber length of pulp by projection

T 233 Fiber length of pulp by classification

T 234 Coarseness of pulp fibers

T 236 Kappa number of pulp

T 259 Species identification of non-wood plant fibers

T 263 Identification of wood and fibers from conifers

2.3 *ACI (American Concrete Institute) Documents:*[4]

544.1R Committee Report on Fiber-Reinforced Concrete

2.4 *ICC-ES Documents:*[5]

AC 217 Acceptance Criteria for Concrete with Virgin Cellulose Fibers

3. Terminology

3.1 *Definitions:*

3.1.1 *alkaline stability, n*—resistance to strength loss due to exposure to alkaline environments, as measured in Test Method D6942.

3.1.2 *coarseness, n*—linear density given in units of mg/100m. (See TAPPI T 234.) This unit is termed *decigrex*, and can be converted to the standard textile linear density unit, *denier*, which is weight in grams of 9000 meters of synthetic fiber.

3.1.3 *durability/compatibility with concrete, n*—resistance to strength loss based on ZSSR testing (Test Method D6942) using saturated calcium hydroxide and 1N sodium hydroxide as alkaline environments. (See ICC-ES AC 217, section 4.6.)

[1] This specification is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.36 on Cellulose and Cellulose Derivatives.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from Technical Association of the Pulp and Paper Industry (TAPPI), 15 Technology Parkway South, Norcross, GA 30092, http://www.tappi.org.

[4] Available from American Concrete Institute (ACI), P.O. Box 9094, Farmington Hills, MI 48333-9094, http://www.aci-int.org.

[5] Available from ICC-ES, 5360 Workman Mill Road, Whittier, CA 90601, http://www.icc-es.org, under "Approved Criteria."