



Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete¹

This standard is issued under the fixed designation C1017/C1017M; 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 reappraisal. A superscript epsilon (ε) indicates an editorial change since the last revision or reappraisal.

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

ε¹ NOTE—Corrected editorially in May 2015.

1. Scope*

1.1 This specification covers two types of chemical admixtures to be added to hydraulic cement concrete mixtures for the purpose of producing flowing concrete. The types are as follows:

1.1.1 *Type I*—Plasticizing, and

1.1.2 *Type II*—Plasticizing and retarding.

1.2 This specification stipulates tests of a chemical admixture with reference concreting materials or with concrete-making materials proposed for specific work. Unless otherwise specified by the purchaser, the tests shall be made using reference concreting materials.

1.3 If a chemical admixture has been tested and found to comply with the provisions of this specification using reference materials, and is being considered for use with other materials for specific work, additional tests for such use are allowed if agreed upon between the purchaser and the supplier and are allowed to consist of a portion of the tests described herein.

1.4 This specification provides for three levels of testing.

1.4.1 *Level 1*—During the initial approval stage, proof of compliance with the performance requirements defined in **Table 1** demonstrates that the admixture meets the requirements of this specification. Uniformity and equivalence tests of the section on Lot Uniformity and Equivalence shall be carried out to provide results against which later comparisons can be made.

1.4.2 *Level 2*—Limited retesting described in the section relating to general requirements may be requested at intervals by the purchaser. Proof of compliance with the requirements of **Table 1** demonstrates continued conformity of the admixture with the requirements of the specification.

1.4.3 *Level 3*—For acceptance of a lot or for measuring uniformity within or between lots, when specified by the purchaser, the uniformity and equivalence tests of the section on Lot Uniformity and Equivalence shall be used.

1.5 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. Some values have only SI units because the inch-pound equivalents are not used in practice.

NOTE 1—Sieve size is identified by its standard designation in Specification E11. The alternative designation given in parentheses is for information only and does not represent a different standard sieve size.

NOTE 2—It is recommended that, whenever practicable, tests be made using the concrete-making materials (cement, pozzolan, slag, aggregates, air-entraining admixture), the mixture proportions, and the batching sequence and other physical conditions proposed for the specific work. The specific effects produced by chemical admixtures may vary with the properties and proportions of the other ingredients of the concrete.

NOTE 3—Temperature has a pronounced effect on time of setting of concrete. This may be exaggerated by the use of admixture Types I and II. If concrete temperatures to be expected on a particular job differ significantly from the conditions set forth in this specification, further testing may be desirable.

NOTE 4—An unusually rapid loss of workability with time, sometimes termed “slump loss”, can be experienced with these admixtures. The rate of slump loss will vary with the particular concreting materials and proportions, mixing equipment and procedures, and temperatures experienced on any particular job. At elevated temperatures, the slump may be retained for a longer period if a Type II admixture is used.

NOTE 5—Admixtures that contain relatively large amounts of chloride may accelerate corrosion of prestressing steel. Compliance with the requirements of this specification does not constitute assurance of acceptability of the admixture for use in prestressed concrete (see ACI 318).

NOTE 6—Admixtures that contain relatively large amounts of alkali ($\text{Na}_2\text{O} + 0.658 \text{ K}_2\text{O}$) may contribute to reaction with some aggregates. Compliance with the requirements of this specification does not assure acceptability when used with alkali-reactive aggregates and some cements.

1.6 The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

¹ This specification is under the jurisdiction of ASTM Committee C09 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.23 on Chemical Admixtures.

Current edition approved Dec. 15, 2013. Published February 2014. Originally approved in 1985. Last previous edition approved in 2007 as C1017/C1017M – 07. DOI: 10.1520/C1017_C1017M-13.