



Designation: C 1260 – 94

Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)¹

This standard is issued under the fixed designation C 1260; 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 test method permits detection within 16 days of the potential for deleterious alkali-silica reaction of aggregate in mortar bars.

1.2 The values stated in SI units are to be regarded as standard. The values in inch-pound units are shown in parentheses, and are for informational purposes only.

1.3 *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.* A specific precautionary statement is given in 5.3.1.

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)²

C 150 Specification for Portland Cement^{3,2}

C 151 Test Method for Autoclave Expansion of Portland Cement²

C 227 Test Method for Potential Alkali Reactivity of Cement-Aggregate Combinations (Mortar-Bar Method)³

C 295 Practice for Petrographic Examination of Aggregates for Concrete³

C 305 Practice for Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency²

C 490 Specification for Apparatus for Use in Measurement of Length Change of Hardened Cement Paste, Mortar, and Concrete^{3,2}

C 511 Specification for Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concretes^{3,2}

C 856 Practice for Petrographic Examination of Hardened Concrete³

E 11 Specification for Wire-Cloth Sieves for Testing Purposes⁴

D 1193 Specification for Reagent Water⁵

2.2 CSA Standards:

CAN/CSA-A23.2-14A-M90 Test Methods for Potential Expansivity of Cement-Aggregate Combination (Concrete Prism Expansion Method)⁶

3. Significance and Use

3.1 This test method provides a means of detecting the potential of an aggregate intended for use in concrete for undergoing alkali-silica reaction resulting in potentially deleterious internal expansion. It is based on the NBRI Accelerated Test Method (1-4).⁷ It may be especially useful for aggregates that react slowly or produce expansion late in the reaction. However, it does not evaluate combinations of aggregates with cementitious materials nor are the test conditions representative of those encountered by concrete in service.

3.2 Because the specimens are exposed to a NaOH solution, the alkali content of the cement is not a significant factor in affecting expansions.

3.3 When excessive expansions (see appendix) Appendix X1 are developed, it is recommended that supplementary information be developed to confirm that the expansion is actually due to alkali-silica reaction. Sources of such supplementary information include: (1) petrographic examination of the aggregate (Practice C 295) to determine if known reactive constituents are present; (2) examination of the specimens after tests (Practice C 856) to identify the products of alkali reaction; and (3) where available, field service records can be used in the assessment of performance.

3.4 When it has been concluded from the results of tests performed using this test method and supplementary information that a given aggregate should be considered potentially deleteriously reactive, the use of mitigative measures such as low-alkali portland cement, mineral admixtures, or ground granulated blast-furnace slag should be evaluated (see last sentence of 3.1).

¹ This test method is under the jurisdiction of ASTM Committee C-9 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.26 on Chemical Reactions.

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² Annual Book of ASTM Standards, Vol 04.01.

³ Annual Book of ASTM Standards, Vol 04.02.

⁴ Annual Book of ASTM Standards, Vol 14.02.

⁵ Annual Book of ASTM Standards, Vol 11.01.

⁶ Available from National Standards of Canada, Canadian Standards Association, 178 Rexdale Blvd., Toronto, Ont. Canada M9W 1R3.

⁷ The boldface numbers in parentheses refer to a list of references at the end of the text.