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Australian STANDARD®

STANDARDS Australia

Methods for sampling and testing aggregates

Method 60.4: Combinations of supplementary cementitious materials and aggregates — Potential alkali silica reactivity — Concrete prism method



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Ash Development Association of Australia
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Australian Flexible Pavement Association
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Cement Concrete & Aggregates Australia
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To conform to a Standard, all requirements in the Standard need to be met.

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(b) "may" means that something is permitted.

(c) "can" means that something is possible.

Structure of Standards

A Standard always has the following parts:

(i) The Preface states who developed the Standard, what the Standard is aiming to do, and how it relates to other documents.

(ii) The Scope states what the Standard is about, what it covers and what it does not cover.

(iii) The Normative references clause lists other documents that are referenced in the Standard as part of requirements.

(iv) The Terms and definitions clause defines important terms to help with understanding the Standard.

A Standard may also include other parts, such as the following:

(1) A normative appendix sets additional requirements that need to be conformed to.

(2) An informative appendix provides additional information or guidance. They usually do not contain requirements. If an informative appendix does contain requirements, the Standard will explain when those requirements apply.

(3) A Bibliography lists documents referenced in the Standard but not as part of requirements.

Many Standards include notes. Notes provide recommendations and/or guidance only. They never contain requirements.

Preface

This Standard was prepared by the Standards Australia Committee CE-012, Aggregates and Rock for Engineering Purposes.

The objective of this document is to set out the procedure to classify an aggregate according to its susceptibility to alkali attack leading to expansive reactions in concrete that contains a combination of cementitious materials. This expansion is known as alkali-silica reaction (ASR). The classification is determined from the measured increase in length of concrete prisms prepared using the aggregate under consideration, during storage of the prisms under the prescribed test conditions.

This test method for alkali silica reaction is based on international methods, however, the classification limits for the test have been drawn from local methods based on Australian experience of alkali-silica reaction. The method has been modified to include procedures, based on Australian and international research, intended to improve repeatability and reproducibility.

WARNING: SOME OF THE CHEMICALS OR PROCEDURES SPECIFIED IN THIS DOCUMENT COULD LEAD TO A HAZARDOUS SITUATION IF CORRECT SAFETY MEASURES ARE NOT FOLLOWED. PERSONS USING THIS DOCUMENT NEED TO BE FAMILIAR WITH NORMAL LABORATORY PRACTICE. THIS DOCUMENT DOES NOT ADDRESS THE SAFETY PROBLEMS, IF ANY, ASSOCIATED WITH ITS USE. IT IS THE RESPONSIBILITY OF THE LEGAL ENTITY USING THIS DOCUMENT TO ESTABLISH APPROPRIATE SAFETY AND HEALTH PRACTICES, TO ENSURE COMPLIANCE WITH ANY NATIONAL, STATE OR LOCAL REGULATORY REQUIREMENTS, AND TO INSTRUCT IN, AND ENFORCE COMPLIANCE OF, THE SAFETY AND HEALTH PRACTICES.

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1 Scope

This document sets out the procedure to classify an aggregate according to its susceptibility to alkali attack leading to expansive reactions in concrete containing a combination of cementitious materials. This expansion is known as alkali-silica reaction (ASR). This test is not suitable for alkali-carbonate reactivity. The classification is determined from the measured increase in length of concrete prisms prepared using the aggregate under consideration, during storage of the prisms under the prescribed test conditions.

NOTE 1 The method has been found to correlate well with field performance.

The method is suitable for both coarse and fine aggregates.

NOTE 2 Appendix A provides guidance on alkali-silica reaction.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS 1012.2, *Methods of testing concrete, Method 2: Preparing concrete mixes in the laboratory*

AS 1012.3.1, *Methods of testing concrete, Method 3.1: Determination of properties related to the consistency of concrete — Slump test*

AS 1012.4.2, *Methods of testing concrete, Method 4.2: Determination of air content of freshly mixed concrete — Measuring reduction in air pressure in chamber above concrete*

AS 1012.5, *Methods of testing concrete, Method 5: Determination of mass per unit volume of freshly mixed concrete*

AS 1012.8.4, *Methods of testing concrete, Method 8.4: Method for making and curing concrete — Drying shrinkage specimens prepared in the field or in the laboratory*

AS 1141.1, *Methods for sampling and testing aggregates, Part 1: Definitions*

AS 1141.3.1, *Methods for sampling and testing aggregates, Method 3.1: Sampling — Aggregates*

AS 1141.3.2, *Methods for sampling and testing aggregates, Method 3.2: Sampling — Rock spalls and boulders*

AS 1141.4, *Methods for sampling and testing aggregates, Method 4: Bulk density of aggregate*

AS 3582.1, *Supplementary cementitious materials, Part 1: Fly ash*

AS 3582.2, *Supplementary cementitious materials, Part 2: Slag — Ground granulated blast-furnace*

AS 3582.3, *Supplementary cementitious materials, Part 3: Amorphous silica*

AS 3582.4, *Supplementary cementitious materials, Part 4: Pozzolans — Manufactured*

AS 3972, *General purpose and blended cements*

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