Australian Standard®

Specification and supply of concrete

This Australian Standard was prepared by Committee BD/49, Manufacture of Concrete. It was approved on behalf of the Council of Standards Australia on 22 August 1997 and published on 5 October 1997.

The following interests are represented on Committee BD/49:

Ash Development Association of Australia

AUSTROADS

Australasian Slag Association

Australian Premixed Concrete Association

Cement & Concrete Association of Australia

Housing Industry Association

Master Builders Australia

The Association of Consulting Engineers, Australia

University of Newcastle

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PREFACE

This Standard was prepared by the Standards Australia Committee BD/49, Manufacture of Concrete. It is intended as a revision of, and to supersede, AS 1379—1991, *The specification and manufacture of concrete*.

Since its inception in 1941 as AS (E)A.502, the document which in 1973 became AS 1379 has undergone many significant changes. The most recent were in 1991 when the second edition was revised to expand the scope from the 1973 version and to cover plant-mixed and site-mixed concrete in addition to truck-mixed concrete. It also covered the production of flexural and indirect-tensile strength grades as well as compressive strength grades within and outside the range specified in AS 3600—*Concrete structures*.

All of the detailed specification, classification, ingredient materials and quality control requirements included in previous editions of AS 3600 were incorporated into AS 1379 in 1991 and deleted from AS 3600 in 1994. This was the final step in the process of formulating AS 1379 as an independent material/product Standard.

The logical inclusion of requirements for the use of chemical admixtures and fly ash in the 1991 edition also allowed for the subsequent withdrawal of the 'Codes of Practice' for these materials and the development of AS 3582 as an independent suite of Standards for supplementary materials.

A growing number of concrete plants are either partially or fully automated with programmable controls and digital readouts. In addition to the traditional single-opening tilting mixers, split-drum and continuous mixers are appearing in concrete plants. Both of these developments in plant technology were also covered in the 1991 edition.

This edition

Objective The objective of this edition is to—

(a) update the 1991 edition with new and revised reference Standards;

(b) where possible, improve the appropriateness and clarity of requirements in the light of comments received from users; and

(c) align the requirements more closely to the ability of the industry to comply with them.

Principal changes The principal changes from the 1991 edition are the following, in brief:

(a) *Normal-class concrete*—

  (i) introduction of default values for maximum aggregate size and minimum 7-day strength; and

  (ii) changes to cement materials requirements to take account of the revised Standard AS 3972 *Portland and blended cements* and AS 3582.3—1994 *Silica fume*.

(b) *Mixing water*—a reduction in the number of impurities requiring separate laboratory testing for their presence.

(c) *Mixer performance*—clarification when maintenance and repairs are required and the introduction of a reduced uniformity test for some of these aspects.

(d) *Batch production*—clarification of various aspects including a more detailed 'Table of tolerances' for ingredients other than water and the introduction of alternatives for controlling water.

(e) *Sampling and testing*—grouping of plants for the purpose of strength determination and chemical content (chlorides and sulfates) has now been separated to reflect the difference in the underlying causes of variations.

(f) *Assessment for compliance with strength requirements*—Section 6 has been radically simplified for production assessment. It now distinguishes only two grade designations, namely ‘controlled grades’ and ‘associated grades’. A single set of sampling and testing frequencies cover the full range of production rates and eliminates problems previously encountered with small production runs and runs that were intermittent, irregular, or both. All this has been achieved without affecting the validity of the statistical basis of the assessment. Project assessment has likewise been simplified.

(g) *Special-class concrete*—Appendix B is a new addition, which sets out some different specification options for special-class concrete.

A companion document, Supplement 1—Commentary is also being published, which gives more detailed information and explanations for particular Clauses in the Standard. It is intended to assist users in gaining a better understanding of the particular requirements and their application to specific circumstances.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard sets out the minimum requirements for—

(a) the materials, plant and equipment used in the supply of concrete;

(b) the production and, if applicable, the delivery of concrete in the plastic state;

(c) specifying, sampling, testing and compliance with specified properties of plastic and hardened concrete; and

(d) the uniformity of mixing.

This Standard applies to the supply of all concrete. It is not intended to apply to mortars or grouts.

NOTES:

1 Requirements for mortars for masonry construction are given in AS 3700 and the methods for sampling and testing mortars in AS 2701.

2 Requirements for grouts to be used for the grouting of prestressing tendons in ducts, are given in AS 3600.

3 It is not intended that this Standard should take precedence over existing Australian Standards for the manufacture of specific concrete products.

4 For additional requirements specified by the customer the applicable contract documents should be consulted.

1.2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS	
1012	Methods of testing concrete
1012.1	Part 1: Sampling of fresh concrete
1012.2	Part 2: Preparation of concrete mixes in the laboratory
1012.3	Part 3: Methods for the determination of properties related to the consistence of concrete
1012.4	Part 4: Methods for the determination of air content of freshly mixed concrete
1012.5	Part 5: Method for determination of mass per unit volume of freshly mixed concrete
1012.8	Part 8: Method for making and curing concrete compression, indirect tensile and flexure test specimens in the laboratory or in the field
1012.9	Part 9: Method for the determination of the compressive strength of concrete specimens
1012.10	Part 10: Method for the determination of indirect tensile strength of concrete cylinders (‘Brazil’ or splitting test)
1012.11	Part 11: Method for the determination of the flexural strength of concrete specimens
1012.12	Part 12: Method for the determination of mass per unit volume of hardened concrete