

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

Review of Australian Standards. To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

This Standard was issued in draft form for comment as DR 96016.

AS 1379—1997

Australian Standard[®]

Specification and supply of concrete

Originated as AS (E)A502—1941.
Previous edition AS 1379—1991.
Third edition 1997.

Incorporating:
Amdt 1—2000

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7337 1468 4

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.

© Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	6
1.2 REFERENCED DOCUMENTS	6
1.3 OTHER MATERIALS, PLANT OR METHODS	7
1.4 DEFINITIONS	7
1.5 NOTATION	9
1.6 SPECIFICATION OF CONCRETE	10
1.7 METHODS OF ORDERING	11
1.8 BASIS OF SUPPLY	12
SECTION 2 CONCRETE MATERIALS AND CONSTITUENT LIMITATIONS	
2.1 GENERAL	13
2.2 CEMENT CONSTITUENTS	13
2.3 AGGREGATES	13
2.4 MIXING WATER	13
2.5 CHEMICAL ADMIXTURES	13
2.6 BULK STORAGE OF MATERIALS	14
2.7 LIMITATIONS ON CHEMICAL CONTENT OF CONCRETE	14
SECTION 3 PLANT AND EQUIPMENT	
3.1 BINS AND SILOS	15
3.2 WEIGHING EQUIPMENT	15
3.3 LIQUID DISPENSING EQUIPMENT	16
3.4 MIXERS	16
SECTION 4 PRODUCTION AND DELIVERY	
4.1 GENERAL	19
4.2 BATCH PRODUCTION	19
4.3 CONTINUOUS PRODUCTION	22
4.4 DELIVERY	22
SECTION 5 SAMPLING AND TESTING OF CONCRETE	
5.1 GENERAL	23
5.2 SLUMP	23
5.3 STRENGTH	24
5.4 AIR CONTENT	25
5.5 CHLORIDE AND SULFATE CONTENT	26
5.6 DRYING SHRINKAGE	26
5.7 7-DAY STRENGTH OF NORMAL-CLASS CONCRETE	27
5.8 OTHER PARAMETERS	27

Page

SECTION 6 SAMPLING, TESTING AND ASSESSMENT FOR COMPLIANCE OF CONCRETE SPECIFIED BY COMPRESSIVE STRENGTH	
6.1	GENERAL REQUIREMENTS 28
6.2	SAMPLING AND TESTING 28
6.3	PRODUCTION ASSESSMENT 29
6.4	RECORDING AND DISSEMINATION OF PRODUCTION ASSESSMENT INFORMATION 32
6.5	PROJECT ASSESSMENT OF STRENGTH GRADE 33
6.6	ASSESSMENT BY ALTERNATIVE METHODS WITH AN ACCEPTED OPERATING CHARACTERISTIC 33
APPENDICES	
A	UNIFORMITY OF MIXING 34
B	GUIDE TO THE SPECIFICATION OF SPECIAL-CLASS CONCRETE 37

STANDARDS AUSTRALIA

Australian Standard

Specification and supply of concrete

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