Australian Standard®

Supplementary cementitious materials for use with portland and blended cement

Part 1: Fly ash

This Australian Standard was prepared by Committee BD/31, Supplementary Cementitious Materials for Use with Portland and Blended Cement. It was approved on behalf of the Council of Standards Australia on 14 November 1997 and published on 5 January 1998.

The following interests are represented on Committee BD/31:

Ash Development Association of Australia

The Association of Consulting Engineers Australia

Australasian Slag Association

Australian Pre-Mixed Concrete Association

AUSTROADS

Bureau of Steel Manufacturers of Australia

Cement and Concrete Association of Australia

Concrete Institute of Australia

CSIRO, Division of Building, Construction and Engineering

Department of Public Works and Services, N.S.W.

Pacific Power

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PREFACE

This Standard was prepared by the Standards Australia Committee BD/31, Supplementary Cementitious Materials for Use with Portland and Blended Cement, to supersede AS 3582.1—1991, *Supplementary cementitious materials for use with portland cement,* Part 1: *Fly ash.*

Significant changes in this edition include the introduction of a special grade and deletion of requirements for determination of magnesia content and autoclave expansion. Limits on fineness and loss on ignition, set out in Table 1, have been tightened.

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

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FOREWORD

With the ever-increasing use of fly ash and the expansion of knowledge of its characteristics, this latest revision of the Standard is an important update. The specification of grades of fly ash to reflect use in concrete of materials from coal-fired power stations across Australia with different coal sources and firing and collection systems has been the subject of much investigation and debate. The resulting provisions as set out in Table 1 now provide for grades, with each having associated with it limits on fineness, limits on loss on ignition and uniform limits on moisture and SO_3 content. The requirements on fineness and loss on ignition have been tightened. A new special grade has been introduced for highly reactive fly ash.

Since fly ash available in Australia does not contain expansive periclase, the requirements for magnesia determination and autoclave expansion testing have been withdrawn.

There was much debate during the revision over requirements for relative water requirement and relative strength. While each of these tests may provide a means of comparing performance of ashes from within a power station, they are proving to be not necessarily so helpful in assessing the relative merits of ashes from different power stations. Based on data reported to the Committee the caution about the effects of cement on the results obtained with each of these two tests has been retained.

In addition, again because of experience in the field, further documentation requirements have been specified, e.g. more data on the test certificate, as shown in Figure 1.

Attention is also drawn to the extensive changes made to the frequency of testing provisions as set out in Table B1. Again, this was the subject of much debate between the specifier/user and supplier representatives on the Committee and the end result represents the consensus between the parties.

Where a manufacturer or supplier can demonstrate an audited and registered quality management system complying with the requirements of this Standard for a supplier’s quality system, this may provide the necessary confidence that the specified requirements will be met. The quality assurance requirements need to be agreed between the customer and supplier and should include a quality or inspection and test plan to ensure product conformity.

STANDARDS AUSTRALIA

Australian Standard

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Part 1: Fly ash

1 SCOPE This Standard sets out requirements for fly ash as a cementitious material in concrete and mortar.

NOTE: Alternative methods for determining compliance with this Standard are given in Appendix A.

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

AS	
1199	Sampling procedures and tables for inspection by attributes
1399	Guide to AS 1199—Sampling procedures and tables for inspection by attributes
3583	Methods of test for supplementary cementitious materials for use with portland cement
3583.1	Method 1: Determination of fineness by the 45 μm sieve
3583.2	Method 2: Determination of moisture content
3583.3	Method 3: Determination of loss on ignition
3583.5	Method 5: Determination of relative density
3583.6	Method 6: Determination of relative water requirement and relative strength
3583.8	Method 8: Determination of sulfuric anhydride content
3583.12	Method 12: Determination of available alkali
3583.13	Method 13: Determination of chloride ion content
AS/NZS	
ISO 9000	Quality management and quality assurance standards
ISO 9000.1	Part 1: Guidelines for selection and use
ISO 9004	Quality management and quality system elements
ISO 9004.1	Part 1: Guidelines
SAA	
HB18	Guidelines for third-party certification and accreditation
HB18.28	Guide 28—General rules for a model third-party certification scheme for products

3 DEFINITIONS For the purpose of this Standard the definition below applies.

3.1 Fly ash—solid material extracted from the flue gases of a boiler fired with pulverized coal.

NOTE: The term does not apply to ash extracted from the bottom of a boiler (furnace ash) or economizer grits.

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