

STANDARDS AUSTRALIA

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RECONFIRMATION

OF

AS 3583.10—1991

**Methods of test for supplementary cementitious materials for use with portland  
cement**

**Method 10: Determination of alumina and total iron content**

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**RECONFIRMATION NOTICE**

Technical Committee BD-031 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 29 March 2016.

The following are represented on Technical Committee BD-031:

Amorphous Silica Association of Australia  
Ash Development Association of Australia  
Australasian (iron & steel) Slag Association  
AUSTROADS  
Bureau of Steel Manufacturers of Australia  
Cement & Concrete Association of New Zealand  
Cement Concrete & Aggregates Australia—Cement  
Cement Concrete & Aggregates Australia—Concrete  
Concrete Institute of Australia  
Engineers Australia  
The University of New South Wales  
University of Technology, Sydney

## NOTES

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# Australian Standard®

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## Methods of test for supplementary cementitious materials for use with portland cement

### Method 10: Determination of alumina and total iron content

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#### PREFACE

This Standard was prepared by the Standards Australia Committee on Supplementary Cementitious Materials for use with Portland Cement.

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#### METHOD

**1 SCOPE** This Standard sets out the reference method for determination of alumina and total iron content in supplementary cementitious materials.

**WARNING: OBSERVE SAFE PROCEDURES FOR DILUTING CONCENTRATED ACIDS AND ALKALIS AND WHERE TOXIC GASES ARE GENERATED.**

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

AS

2162 Code of practice for the use of volumetric glassware

3753 Recommended practice for chemical analysis by ultraviolet/visible spectrophotometry.

**3 PRINCIPLE** A sample is decomposed by fusion with sodium hydroxide. The cooled melt is dispersed in boiling water followed by dissolution in hydrochloric acid. A test solution is made by diluting with water and the iron(II) oxide content is determined spectrophotometrically using ferron solution; the alumina content is also determined spectrophotometrically and is corrected for the contribution of the iron(II) oxide present.

#### 4 REAGENTS

**4.1 Purity of reagents** All reagents shall be of analytical reagent grade and free from impurity levels which will significantly interfere with the determination of alumina and total iron by this method.

Distilled or demineralized water shall be used throughout the analysis.

**4.2 General solutions and solids** The following are required:

- (a) Ferron solution (0.15 percent in 2.5 mol/L acetate buffer) — dissolve 370 g sodium acetate trihydrate ( $\text{CH}_3\text{COONa}\cdot 3\text{H}_2\text{O}$ ) in 800 mL warm water. Filter the solution through a glass filter funnel with a qualitative filter paper (see Note) and add 470 mL 5 mol/L acetic acid. In a separate container dissolve 3.00 g ferron (7-iodo-8-hydroxy quinoline-5-sulfonic acid) in 100 mL of 1 percent (m/V) sodium hydroxide solution. Decant into the acetate buffer solution. If necessary, use more sodium hydroxide solution to dissolve any remaining ferron. Finally dilute the buffer solution to 2 L and store in a container shielded from direct light.

#### NOTES:

1. Whatman No. 4 qualitative paper or equivalent has been found to be suitable.
2. This solution will darken and give high blank readings if left exposed to light. Its stability should be confirmed by weekly determinations of a blank.