

Australian Standard®

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

Method 9: Determination of magnesia content

PREFACE

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

METHOD

1 SCOPE This Standard sets out the reference method for determination of the magnesia content, expressed as magnesium oxide, of 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

3582 Supplementary cementitious materials for use with portland cement

3582.1 Part 1: Fly ash

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

3 PRINCIPLE A test portion 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 up by diluting with water and the magnesia content is determined spectrophotometrically using brilliant yellow indicator.

4 REAGENTS

4.1 General All reagents shall be of analytical reagent grade and free from impurity levels which will significantly interfere with the determination of magnesia by this method.

Distilled or demineralized water shall be used throughout the analysis.

4.2 Solutions and solids The following solutions are required:

- Hydrochloric acid (500/mL/L)—prepare from concentrated hydrochloric acid (ρ_{20} 1.180 kg/L).
- Hydroxylammonium chloride (500 g/L)—prepare about 50 mL in water.
- Polyvinyl alcohol (0.5 g/L)—add about 0.5 g to 50 mL cold water in a 1 L beaker and stir for a few minutes. Add, with stirring, 500 mL boiling water and dissolve the remaining solid. Add 102 g potassium hydrogen phthalate and 70 mL triethanolamine and allow to cool. Transfer solution to a 1 L stock bottle and dilute to 1 L, mixing thoroughly.