Australian Standard®

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

Method 14: Determination of insoluble residue 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 test method for determination of the insoluble residue content of supplementary cementitious materials.

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

2 PRINCIPLE A weighed test portion is ground and digested with hydrochloric acid and the insoluble portion is recovered by filtration. After washing and neutralizing, it is ignited to constant mass and the insoluble residue is calculated as a percentage of the original mass.

3 REAGENTS

3.1 Purity of reagents All reagents shall be of analytical reagent grade.

Distilled or demineralized water shall be used throughout the analysis.

3.2 General solutions The following are required:

(a) Hydrochloric acid (500 mL/L)—prepare from concentrated hydrochloric acid (ϱ_{20} 1.180 kg/L).

(b) Sodium carbonate solution (50 g/L)—this solution should be heated to boiling immediately prior to use.

4 APPARATUS The following apparatus is required:

(a) Balance, capable of weighing the sample and crucible to an accuracy of 0.001 g.

(b) Desiccator.

(c) Drying oven, capable of being maintained at 105°C to within ±5°C.

(d) Grinding apparatus, of material sufficiently hard not to contribute matter to the sample to be ground. An agate mortar and pestle has been found to be suitable.

(e) Inert crucible, with close fitting lid of same material, capable of withstanding the ignition temperature and which has been ignited at 950°C to constant mass (m_c). It shall be stored in a desiccator until required.

(f) Muffle furnace, capable of being heated to 950°C and maintained at within ±50°C of that temperature.

6 PROCEDURE The procedure shall be as follows:

(a) Grind about 5 g of test portion until grittiness is no longer apparent.

(b) Accurately weigh about 2 g of material to the nearest 0.02 g (m_s) into a 400 mL beaker and make it into a paste with a small quantity of cool water.