Australian Standard®

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

Method 5: Determination of relative density

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 relative density of supplementary cementitious materials.

2 REFERENCED DOCUMENT The following document is referred to in this Standard.

AS
3582 Supplementary cementitious materials for use with portland cement
3582.1 Fly Ash

3 PRINCIPLE The relative density is determined from displacement measurements conducted in a Le Chatelier flask.

4 APPARATUS.

(a) Balance, capable of weighing the test portion to an accuracy of 0.01 g.

(b) Le Chatelier flask, as shown in Figure 1.

(c) Water bath, to provide a depth of immersion of 150 ±5 mm, capable of maintaining the water temperature at 23 ±0.1°C, and having a thermometer suitably mounted to facilitate reading of the temperature.

(d) Test liquid, i.e. kerosine, free of water.

5 PROCEDURE The procedure shall be as follows:

(a) Fill the flask with kerosine to a point on the stem between the 0 mL and 1 mL mark. If necessary, dry the inside of the flask above the level of liquid.

(b) Immerse the flask in the water bath for a minimum of 1 h and record the volume reading (V_1) and the temperature of the waterbath ($T1$), (see Note to Step (e)).

NOTE: A lead ring weight or burette clamp may be required to hold the flask upright.

(c) Place the flask on a rubber pad or equivalent and introduce about 45 g of oven-dry test-portion, determined to the nearest 0.01 g, (m_1) taking care not to leave any material above the neck of the flask.

NOTE: Vibrating apparatus may be used to assist in introduction of the sample.

(d) Place the stopper in the flask and roll or whirl the flask until no air bubbles rise to the surface. Shake down any sample adhering inside the neck of the flask.

(e) Re-immerse the flask in the water bath for a minimum of 30 min. Take and record the second reading of volume (V_2), and the temperature ($T2$).

NOTE: Ensure that the flask remains in the water bath long enough for the difference in temperature between the first and second readings to be no greater than 0.2°C.