Australian Standard®

Test methods for limes and limestones

Method 4.2: Soundness—Le Chatelier

1 SCOPE This Standard sets out the method for determining the average expansion for three specimens from a mortar of hydrated lime, portland cement, sand and water.

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

AS
3972 Portland and blended cements

3 PRINCIPLE The sample is mixed with portland cement, sand and water and the expansion of the resulting mortar is measured after subjection to standard conditions of humidity and temperature. The expansion under the same conditions of a mortar of the same cement, sand and water only is measured and subtracted from the first measurement to give the expansion due to the lime.

4 MATERIALS

4.1 Sand The sand shall be clean quartz sand passing an 850 μm sieve and being retained on a 600 μm sieve.

4.2 Portland cement The portland cement shall comply with the relevant requirements for Type GP, general purpose portland cement, given in AS 3972.

5 APPARATUS

5.1 Le Chatelier moulds The Le Chatelier moulds shall conform to Figure 1 and the tolerances shown thereon. The apparatus consists of a small split cylinder of spring brass or other suitable metal of 0.5 mm thickness, forming a mould of 30 mm internal diameter and 30 mm high. On either side of the split are attached two indicators with pointed ends (AA), the distance from these ends to the centre of the cylinder being 165 mm.

The procedure for measuring the extensibility of each mould is as follows:

(a) Rigidly secure the mould by means of the clamp, C, as shown in Figure 2. Slip a small metal sleeve having a hook, E, at the end over the unclamped pointer and secure it by means of the set screw, D, so that the distance between the hook and the cylindrical surface of the mould is 50 ±2 mm and the distance between the ends of the pointers does not exceed 5 mm.

(b) Suspend a weight of mass 100 ±1 g from the hook as shown and measure in millimetres the distance between the ends of the points.

(c) Remove the weight and again measure in millimetres the distance between the ends of the pointers.

(d) Take the difference between the readings when loaded with the 100 g weight and after unloading. This is termed the extensibility of the mould.