STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
METHODS OF TESTING PORTLAND AND BLENDED CEMENTS

AS 2350.9
FINENESS OF PORTLAND FLY ASH CEMENT BY THE 45 μm SIEVE

1 SCOPE. This standard sets out the method for the determination of the fineness of portland cement by means of the 45 μm sieve.

2 APPARATUS.

2.1 Sieve. The sieve frame shall be constructed of metal not subject to corrosion by water and shall be circular, 50 μm nominal diameter, and 75 mm nominal depth and shall be fitted with a 45 μm stainless steel woven-wire sieve cloth. The cloth shall be mounted in the frame without distortion, looseness, or waviness. To prevent the cement from catching in the joint between the sieve cloth and the frame, the joint shall be made smooth.

2.2 Spray Nozzle. The spray nozzle (Fig. 1) shall be constructed of metal not subject to corrosion by water and shall be 17.5 mm in inside diameter with a central hole drilled in line with the longitudinal axis, an intermediate row of eight holes drilled 6 mm centre-to-centre at an angle of 5 degrees from the longitudinal axis and an outer row of eight holes drilled 11.1 mm centre-to-centre at an angle 10 degrees from the longitudinal axis. All holes shall be 0.5 mm in diameter.

2.3 Pressure Gauge. The pressure gauge shall be an industrial gauge of at least 80 mm dial diameter complying with AS 1349.

NOTE: A 160 kPa range gauge is recommended.

3 CALIBRATION OF 45 μm SIEVE. The 45 μm sieve shall be calibrated as follows: Place 1 g of the current lot of the American National Bureau of Standards sample of cement No 114 on the clean, dry 45 μm sieve and proceed as in Clause 4. The sieve correction factor is the difference between the amount of residue obtained and the amount of residue indicated by the precision micro-mesh fineness specified for the standard sample, expressed as a percentage of the former residue.

NOTES:

1. It is proposed that a standard sample of fly ash be prepared for calibration of sieves and be made available through the Cement and Concrete Association of Australia
2. It should be observed that the sieve correction as specified is a factor to be multiplied by the residue obtained and that the amount to be added to or subtracted from the residue in any given test is therefore proportional to the amount of residue.

Example of determination of sieve correction factor:

Residue on No 45 μm sieve, sample No 114	= 12.2 percent
Residue for a 1 g sample	= 0.122 g
Residue on sieve being calibrated	= 0.093 g
Difference	= + 0.029 g
Correction factor = + 0.029/0.093 × 100	= + 31.18
	= + 31.2 percent

4 PROCEDURE. The fineness of the cement shall be determined using the following procedure:

(a) Place a 1 g sample of the cement on the clean, dry 45 μm sieve. Wet the sample thoroughly with a gentle stream of water.

(b) Remove the sieve from under the nozzle and adjust the pressure on the spray nozzle of 80 ± 5 kPa.

(c) Return the sieve to its position under the nozzle and wash for 1 min, moving the sieve with a circular motion in a horizontal plane at the rate of one motion per second in the spray. The bottom of the spray nozzle should extend below the top of the sieve frame about 12 mm.

(d) Immediately upon removing the sieve from the spray, rinse once with about 50 mL of distilled or deionized water, using caution not to lose any of the residue, and then blot the lower surface gently upon a damp cloth.