Transport Roads & Maritime Services

NSW GOVERNMENT

Test method T433

Determination of sieve residue of fly ash and hydrated lime

OCTOBER 2012

Revision Summary

Ed/Rev Number	Clause Number	Description of Revision	Authorisation	Date
		Reformatted and Revision Summary Added	D.Dash	May 1999
		Date on Test Method Revised to Agree with Date on Revision Summary	D.Dash	Feb 2001
Ed 2/ Rev 0	All	Reformatted RMS template	J Friedrich	October 2012

Note that Roads and Maritime Services is hereafter referred to as 'RMS'.

The most recent revision to Test method T433 (other than minor editorial changes) are indicated by a vertical line in the margin as shown here.

Test method T433

Determination of sieve residue of fly ash and hydrated lime

1. Scope

This test method sets out the procedure for determining the residue retained on specific sieves for fly ash and hydrated lime. The method is derived from Australian Standard 1129 and Australian Standard 1672.

2. Apparatus

(a) A balance of at least 100 g capacity, accurate and readable to 0.0002 g within the operating range.

(b) A 200 mm diameter 300 μm AS sieve (for hydrated lime).

(c) Circular test sieves having a frame 50 mm nominal diameter and 75 mm deep fitted with sieve cloth, and conforming to AS 1152. Sieve meshes of 150 μm are required for fly ash.

(d) Spray nozzle consisting of non-corrodible tube 17.5 mm I.D fitted with a spray plate in which a central hole is drilled in line with the longitudinal axis, on each of 8 radial lines spaced evenly at 45° separation, one hole is drilled at a distance of 6.5 mm from the centre at an angle of 5° to the longitudinal axis and a second hole at 14.5 mm from the centre at an angle of 10° to the longitudinal axis. All holes shall be 0.5 mm in diameter. (See figure 1).

(e) Pressure gauge, 80 mm nominal diameter, of 250 kPa range, with the scale graduated in 10 kPa increments, and complying with AS 1349, Bourdon Tube Pressure and Vacuum Gauges.

(f) A thermostatically controlled oven with good air circulation capable of maintaining a temperature of $105 \pm 5^{\circ}$C

3. Procedure

3.1 Hydrated Lime

(a) Wet the 300 μm sieve before placing hydrated lime on it.

(b) (b) Place on the wetted sieve 100 ± 1 g of hydrated lime.

(c) Use the spray nozzle connected to a flexible tube to wash the sample through the sieve. Use a water pressure of 140 ± 5 kPa. Wash for not more than 12 minutes by stopping as soon as the water comes through clear.

(d) Dry the residue on the sieve in an oven for 2 hours at $105 \pm 5^{\circ}$C. Allow to cool.

(e) Determine the mass of the residue on the sieve to the nearest 0.1 g.

3.2 Fly Ash

(a) The sieves to be used must be clean and dry before placing the fly ash on them.

(b) Place on the 150 μm sieve $5.0 \pm$ 0.1 g of fly ash.

(c) Wet the sample thoroughly with a gentle stream of water. Remove the sieve from under the nozzle and adjust the water pressure to 80 ± 4 kPa. Return the sieve to its position under the nozzle and wash for 1 minute. Move the sieve with a circular motion in a horizontal plane at the rate of one movement per second in the spray. The bottom of the spray nozzle should extend below the top of the sieve frame about 12 mm.

Immediately upon removing the sieve from the spray, rinse once with about 50 mL of distiled water, taking care not to lose any of the residue. Blot the lower surface gently with a damp cloth.

(d) Dry the sieve and residue in an oven at $105 \pm 5^{\circ}$C. Support the sieve in a manner which allows air to pass freely under the sieve. Allow to cool.

(e) Brush the residue from the sieve onto a tared watch glass and determine its mass to the nearest 0.0005 g.

(f) Repeat *Procedure (a) to (e)* using a sample mass of 1 ± 0.01 g on a 45 μm sieve.

(g) Determine the correction factor for the 45 μm sieve by repeating *Procedure (f)* on a standard fly ash sample available from the Cement and Concrete Association, Walker Street, North Sydney, NSW, 2060.

The sieve correction is a factor to be multiplied by the residue obtained. The amount to be added to or subtracted from the residue in any given test is therefore proportional to the amount of residue

For example:-

If residue on 45 μm sieve with standard sample of fly ash = 8.1%
Residue for 1 g sample= 0.081g
Residue on sieve being calibrated= 0.091 g
Difference = 0.010 g
Correction factor (c) = $0.010/0.091 \times 100 = -10.99 = -11.0\%$

4. CALCULATION AND REPORTING

(a) Percentage residue on sieve = $\dfrac{\text{Mass of residue}}{\text{Mass of sample}} \times 100$

(b) For fly ash only

Percentage residue on 45μm sieve = $\dfrac{\text{Mass of residue}}{\text{Mass of sample}} \times 100$

Where C is the correction factor determined as described in *Procedure (g)*.

(c) Report the percentage residue on each sieve to the nearest 0.1%.

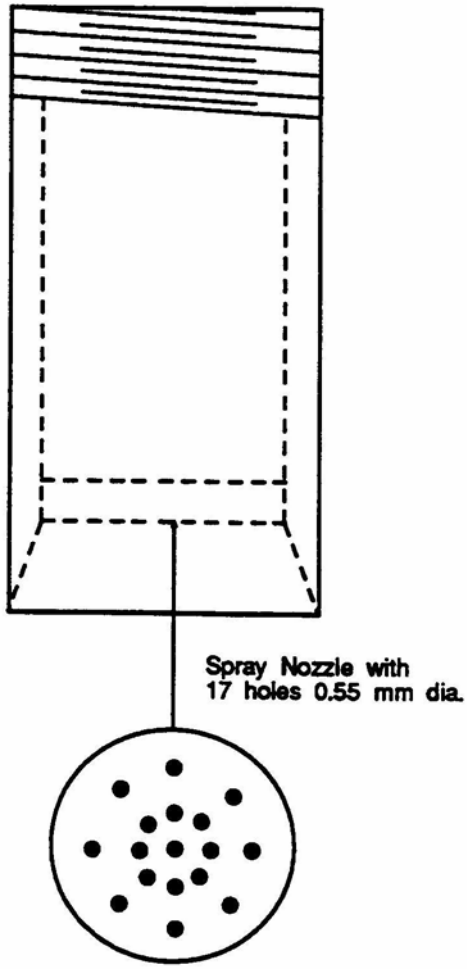

Fig. 1. SPRAY NOZZLE