Transport Roads & Maritime Services

NSW GOVERNMENT

Test method T329

Wet sieving of concrete

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 T329 (other than minor editorial changes) are indicated by a vertical line in the margin as shown here.

Test method T329

Wet sieving of concrete

1. Scope

This method covers the quantitative determination by sieve analysis of the particle size distribution from 26.5 mm down to 75 μm in freshly mixed concrete.

2. Apparatus

(a) Buckets, scoops, 20 or 40 litre container with top designed to place sieves

(b) Set of sieves ranging from 26.5 mm to 75 μm preferably 300 mm diameter

(c) Brushes, etc. for cleaning sieves

(d) Oven or hotplate for drying samples capable of keeping temperature within the range 105 - 110oC

(e) Balance of suitable capacity with a limit of performance of 5 g

(f) Dishes of various sizes

(g) Trowels and spatulas

3. Procedure

(a) Concrete to be sampled in accordance with AS 1012 Part 1. 2. 3

(b) Wash the material through a range of sieves from 26.5 mm to 1.18 mm depending on the analysis requirements.

(c) Place the sieves on top of a 20 or 40 litre container and allowing the -1.18 mm fraction to collect in the container.

(d) Repeat washing process until the wash water is essentially clear and all the material has been washed on the sieves. Keep fractions separate and dry to a constant mass.

(e) Decant -1.18 mm material by adding water to container, stirring and pouring off after settling (care should be taken to pour off only dark coloured cementitious material).

(f) Continue to decant until all or most cement has been removed, dry to a constant mass. Sieve all materials on appropriate sieves. Record the mass of material retained on each sieve.

4. Calculations

Calculate the mass of material retained on each sieve as a percentage of total dry samples

5. Reporting

Report the percentage passing or retained on each sieve (as desired) to the nearest 2 percent. Alternatively, plot the results on semi-logarithmic paper.

6. Notes

(a) If the amount of -1.18 mm material is considered too much to sieve, a sub-sample maybe obtained by quartering or riffling. Care must be taken in the calculations to make allowance for the sub-sample grading.

(b) **Protection of sieve cloth**. Because of the ease with which a 75 <$Emu>m sieve can be damaged, the use of a special washing sieve, in which the sieve cloth is reinforced underneath with a coarser sieve or punched plate screen, is recommended. Other wash sieves may be used, provided that they have a woven wire mesh of 63 <$Emu>m aperture or finer.

(c) **Load on Sieves**. Overloading of sieves will damage them and affect the accuracy of the results. At the completion of sieving the recommended maximum load is shown in Table 1. If any sieve becomes overloaded, sieve the sample in two or more portions.

(d) **Methods of sieve shaking**. The sieving may be done by hand or with a mechanical shaker. When sieving by hand, keep the sample moving continuously over the surface of the sieve by use of a lateral and vertical motion accompanied by a jarring action. Continue sieving until the mass passing the sieve in 1 min is approximately less than 1 percent of the mass of material retained on the sieve.

In the case of mechanical sieving, determine the minimum sieving time by comparison with hand sieving. Generally about 15 minutes of sieving is required. Remove particles caught in the sieve openings and add the material retained on the sieve. In the case of the larger sieves, particles can be removed by twisting and turning. For smaller sieves use a sieve brush.

Caution: Wet sieving on electrically driven shakers may be hazardous.

TABLE 1
RECOMMENDED MAXIMUM MASS OF MATERIAL TO BE RETAINED ON EACH SIEVE AT THE COMPLETION OF EACH SIEVING

Sieve Aperture	**200 mm diameter g**	**300 mm diameter g**	**450 mm diameter g**
200 mm	-	3750	7500
75.0	-	3000	6000
63.0	-	2750	5500
37.5	1000	2200	5000
26.5	800	1800	4000
19.0	600	1200	3000
13.2	400	900	2000
9.50	250	600	1500
6.70	230	500	1200
4.75	200	400	1000
2.36	150	300	
1.18	100		
600 μ m	75		
425	60		
300	50		
212	45		
150	40		
75	25		

(e) **Nesting of Sieves**. If the assembly is not too heavy, several sieves, in order of size, may be fitted together and used at the same time

(f) **Oven-drying of Samples**. Oven drying of the sample increments can be time consuming when large quantities are to be dried.

In this case a gas hotplate could be used to speed up the process.