



Transport
Roads & Maritime
Services

Test method T333

Composite cylinder test for evaluation of
wet-to-dry concrete adhesive

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 T333 (other than minor editorial changes) are indicated by a vertical line in the margin as shown here.

Test method T333

Composite cylinder test for evaluation of wet-to-dry concrete adhesive

1. Scope

This test method sets out the procedure for evaluating the performance of wet-to-dry concrete adhesive by means of a composite cylinder. The method is derived from the University of Arizona Composite Cylinder Test.

2. Apparatus and Equipment

- (a) Standard 150 mm x 300 mm concrete test cylinder moulds.
- (b) Loose elliptical steel plates or similar mould dividers which divide the concrete cylinder moulds diagonally in half. (See diagram below.)

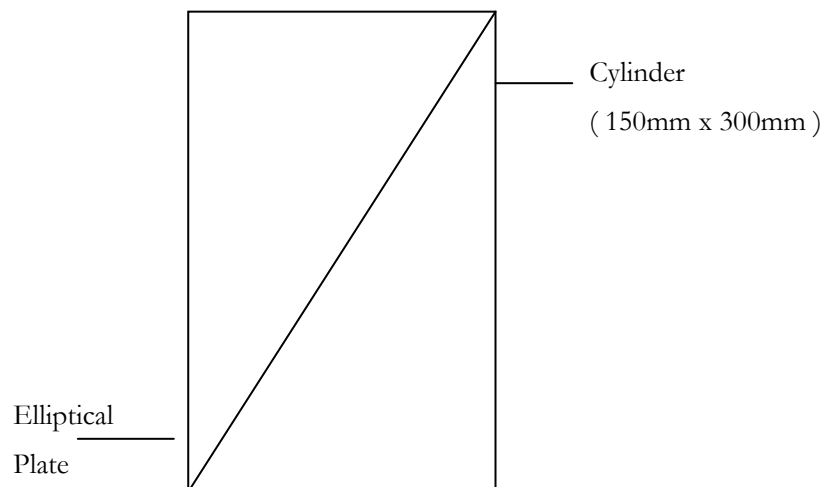


DIAGRAM OF COMPOSITE CYLINDER

- (c) Tamping rod or bar of steel 15 mm in diameter, 600 mm long and tapered for a distance of 25 mm to a spherically shaped head having a radius of approximately 5 mm.
- (d) Compression testing machine, Grade 'A', meeting the requirements as defined in the Australian Standard B128 "Verification of Testing Machines"
- (e) Containers and stirrers for mixing and implements (brushes) for applying the adhesive

3. Procedure

- (a) Prepare three half cylinders of concrete having a compressive strength of 22 to 27 MPa by positioning the mould dividers in the concrete cylinder moulds and placing and compacting the concrete in the top half in the manner outlined in Test Method T304 - Making and Curing of Concrete Cylinders. Cure in the approved manner for at least seven days.
- (b) Etch the elliptical surface of each specimen with 10% hydrochloric acid and wash free of acid. Allow the specimens to air dry for 24 hours at $23 \pm 2^\circ\text{C}$ and $50 \pm 5\%$ relative humidity.
- (c) Apply the adhesive mixed in accordance with the manufacturer's directions to the elliptical face of the specimen and place the specimen in the concrete cylinder mould.
- (d) Place a layer of concrete over the adhesive-pre-treated surface, taking care not to allow pieces of large aggregate to become lodged in the toe of the mould. Vibrate the concrete to compact it, and when compacted smooth the top.
- (e) Cast three cylinders in this manner from concrete having the same mix proportions as the original half-cylinders and prepare three normal cylinders for control purposes.

- (f) Strip the composite cylinders and the control cylinders in the normal manner and moist cure for 14 days.
- (g) Test the composite cylinders and control cylinders in compression.

4. Calculations

Divide the average failure load of the composite specimens by the average failure load of the control cylinders and multiply by 100 to obtain a percentage rating.

5. Reporting

Report the rating as a percentage (a 90% rating or better is considered satisfactory).

6. Safety Procedures

In common with many materials used in industry epoxy resins and their hardeners may cause dermatitis reactions in sensitive persons, particularly when there is repeated contact. The following practices should therefore be followed.

- (a) Use a skin-forming barrier cream on clean hands before commencing each working session and wash it off at the end of each session.
- (b) Use rubber or plastic coated gloves when there is a likelihood of touching the products. Disposable plastic gloves are generally suitable for laboratory work. Remove the gloves by pulling at the fingers and put gloves on clean hands only.
- (c) Use goggles if there is a likelihood of splashing occurring.
- (d) Do not use solvents to clean material spilt on the skin but use warm soapy water.
- (e) Do not leave rags or paper which have been used to wipe up these products where they will be subsequently handled by persons without protective clothing. Use small pieces of rag for cleaning and discard each piece as it is used.

7. Cleaning of Equipment

Use a mixture of toluol and acetone (80:20 by volume) to clean resin from tools, equipment etc. before it cures. No common solvent will remove cured resin.