

C - 15: Concrete Test Cylinders

Test cylinders cast from properly gathered samples of the discharge stream of freshly mixed concrete during a concrete placement can provide a valid representation of the compressive strength of the concrete in the structure.

At least two concrete samples should be gathered from the ready-mix discharge stream at regular intervals, although not at the beginning or the end of the load. The samples should be gathered at the point of placement and transported to a nearby area where the cylinders are to be cast.

Gathered samples should be consolidated and mixed into a composite sample of at least one cubic foot (30 L in Canadian units) and covered to protect it from the elements and contamination. Start molding specimens for strength tests within 15 minutes after fabricating the composite sample.


Corresponding tests for slump, air content, concrete temperature and unit weight should be started within 5 minutes after obtaining the final portion of the composite sample.

Test cylinders should be cast in watertight molds on a rigid, level base near where they can be stored undisturbed for up to 48 hours. In the United States, when using 6" x 12" molds, fill the molds in three equal volume layers and rod each layer 25 times with a

tamping rod. If instead, 4' x 8" molds are used, fill the molds in two equal volume layers and rod each layer 25 times. In Canada, when using 150 mm x 300 mm molds, fill the molds in three equal volume layers and rod each equal volume layer 25 times with a tamping rod. If instead, 100 mm x 200 mm molds are used, fill the molds in two equal volume layers and rod each layer 20 times with a tamping rod..

After each rodding, lightly tap the sides of the mold 10 to 15 times with a rubber mallet, or your hands, to release any large trapped air bubbles and close any rodding holes. If the slump is less than one inch (25 mm), use a vibrator instead of a tamping rod.

Gently place the cylinders in a 60° F to 80° F (16° C to 27° C) moist environment. After no more than 48 hours in the controlled environment, remove the cylinders from storage and transport them to a laboratory for testing within another 48 hours. The cylinders should be protected from bumping, freezing and moisture loss during transportation.

Data from tests conducted on the cured cylinders are the owner's assurance that the specified compressive strengths for the concrete have been met, provided the samples were obtained and handled in accordance with ASTM C 172 (CSA A23.2-1C) and ASTM C 31 (CSA A23.2-3C). 

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