

SINGLE USE MOLDS FOR FORMING 6 in. by 12 in.

CONCRETE COMPRESSION TEST CYLINDERS

AN INVESTIGATION OF PAPER MOLDS

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ABSTRACT

Paper cylinder molds for use in forming concrete cylinders were tested and found to comply with ASTM specifications.

INTRODUCTION

This is a test to check compliance with ASTM specifications, of single use paper molds for use in forming concrete cylinders for compression tests.

MATERIALS

The three molds tested were of paper construction with metal bottom caps. They were distributed by Soiltest Inc., Chicago, Illinois.

PROCEDURE

The sampling and testing procedures followed are defined in ASTM designation: C470-71T. Tentative Specification for Single-Use Molds For Forming 6 by 12 in. Concrete Test Cylinders. Measurements were taken to check compliance with general requirements for dimensions including side walls, bottom caps and waterproofing.

Physical requirements were checked by means of the test for elongation and absorption of paper molds. The apparatus used for this test was a modified Length Comparator manufactured by Humbolt Mfg. Co. of Chicago, Illinois. The micrometer dial gauge has .0001" graduations.

Samples #1 and #2 were tested by the above procedure. Sample #3 was filled with sand in three layers, rodded and tapped on the outside to simulate conditions during actual construction use. The sand was dumped out and the mold was filled with water and tested according to ASTM specifications.

RESULTS

	Sample #1	Sample #2	Sample #3	Specification
Absorption	4 Grams	3 Grams	4 Grams	25 Grams Max.
Elongation	.003 in.	.001 in.	.003 in.	.020 in. Max.
Leakage	None	None	None	None
Ave. Cap. Thickness	.009 in.	.009 in.	.009 in.	.009 in. Min.
Ave. Wall Thickness	.077 in.	.078 in.	.078 in.	.070 in. Min.
Inside Diameter	6 in.	6 in.	6 in.	6 \pm 1/16 in.
Inside Height	12 1/8 in.	12 in.	12 in.	12 \pm 1/2 in.
Crimp. Vert. Indentation	1/8 in.	1/8 in.	1/8 in.	1/8 in. Max.
Crimp. Hor. Indentation	1/8 in.	3/16 in.	1/8 in.	3/16 in. Max.

The paper molds with metal bottom caps meet requirements of Tentative Specifications for Single-Use Molds for Forming 6 by 12 in. Concrete Test Cylinders, ASTM C470-71T. No appreciable change in results occurred when the sample was abused to simulate actual construction conditions.

It should be noted that in some cases there was an excess of paraffin in the bottom of the molds.

CONCLUSIONS & RECOMMENDATIONS

The molds tested are satisfactory for use by the Vermont State Highway Department.

In the event cylinders are used for determining strength of concrete in the field, random samples of molds should be submitted and tested for compliance with specifications.

It is recommended that resamples be taken when excess paraffin is found in the bottom of molds. This condition could be detrimental to the concrete cylinder specimen.