



## HC-2993B, HC-2993A

# Concrete Moisture Vapor Emission Test Kit

ASTM F1869 & ASTM F1907 Compliant

Concrete Vapor Emission Tests Kits are used to determine the moisture escaping from a concrete surface. The results are compared with flooring adhesives, primers, coatings and other moisture-sensitive product requirements to establish concrete conditions prior to product use.



## About This Test Method and Usage

Humboldt Mfg. provides a high-quality design of the calcium chloride test following the exact specifications in the ASTM 2004 protocol. The calcium chloride test was developed over 40 years ago and remains the floor covering industry standard test for determining if the concrete slab is suitable for floor covering or polymer coating installations. The test works by absorbing moisture in a vapor form that is exiting the slab's surface due to natural environmental factors over a period of time. The test measures a roughly 70 square inch area of concrete surface for 60 to 72 hours, then a simple calculation is followed that determines the volume of vapor emission. The Moisture Vapor Emission Rate (MVER) is the equivalent weight of water (if the gas turned into liquid) that emits from 1,000 square feet of concrete surface area in 24 hours time. For additional industry information on floor moisture conditions, please visit our website at [www.dometest.com](http://www.dometest.com).

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## ASTM F-1869 Protocol Testing Checklist

**Provide the number of test kits required.**

Install 3 test kits for areas up to 1,000 sq. ft (or smaller), add 1 test kit for each additional 1,000 sq. ft. area thereafter.

**Ensure interior environment is conditioned correctly before performing tests.**

A properly conditioned building interior has a temperature between 65 to 85 degrees F, with a relative humidity of 40 to 60 % for at least 48 hours before the test begins and remains consistent throughout the testing period of 60 to 72 hours. Record values on worksheet. For greater accuracy in monitoring interior conditions, please visit [temperature/ humidity recorders at www.humboldtmfg.com](http://www.humboldtmfg.com)

**Clean the concrete surface of any foreign substances.**

A foreign substance can be floor covering, adhesive residue, epoxy coating, paint, curing and sealing compounds, waxes, dirt or oil stains, or any other material residue on the slab surface. Remove concrete contaminants by shot blasting or carbide wheel grinding. The use of wire brushes or razor scraping may not be suitable for achieving a clean, open concrete slab surface.

**Prepare test area and schedule testing.**

ASTM F1869 requires that a minimum of 20 x 20 inches of concrete surface area be cleaned for each test (as described above) and allowed to remain open for at least 24 hours before setting the calcium chloride test. Once the test is placed, it must remain undisturbed for a period of 60 to 72 hours. Always plan carefully in advance of testing to ensure open time after preparation and exposure time during the testing period will allow for proper placement and removal of test kits.

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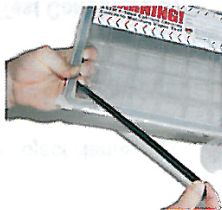
## Testing Instructions



### Weigh the calcium chloride dish and record the starting data.

Open the sealed bag containing the calcium chloride dish unit and place the dish with the black sealing tape on a gram scale and weigh it making sure the scale is set to grams. Starting weight is typically about 30.0 to 30.5 grams but can vary as much as one or two whole grams. This is normal.

Record the starting weight to 1/10 grams on the dish's lid and on the back of this instruction booklet. Record the starting time as well in both locations, assuming the test is about to begin. Always weigh the dish prior to exposure to ensure best results.



### Remove the black sealing tape and prepare to start the test.

Carefully peel off the black sealing tape. Make sure the tape does not become dirty or lost since it will be needed to reseal the container at the termination of the test. For best results, stick the black tape along the outer wall of the dome unit to keep it safe.

Peel off the white protective backing tape from the dome sealant material and properly discard it.

CAREFULLY remove the lid, turn it over and place it under the dish, or store it safely for reuse.



### Install the test kit on the concrete floor.

Place the opened calcium chloride container on the concrete floor. Make sure the crystals inside are relatively level. If any of the crystals are spilled the test can be invalid. Spilled crystals must be vacuumed up quickly before leaving a damp residue.

Immediately place the dome unit over the center of the dish unit. Press down firmly along all the edges of the sealant material to securely bond the unit to the floor. Proper sealing will have the outside flange touching the floor. Put a slight amount of hand pressure on the dome to ensure its not leaking air.



### Allow the test to remain undisturbed for 60 to 72 hours.

Once the test is placed into service it must not be disturbed by foot traffic or allowed to be exposed to direct sunlight. If accidental bumping occurs and the seal is not broken or the crystals inside spilled, the test may still be useable. If exposed to sunlight it will bias the test and produce inaccurate results.

The use of protective cones is a good way to draw more attention to the test kit. It is also smart to inform people that this test is sensitive and may have to be re-conducted if disturbed or destroyed.



### Recover the dish after exposure and calculate the results.

At the end of the 60 to 72 hours of exposure, carefully open the dome with a razor blade and reach inside to retrieve the dish without spilling the calcium chloride. Immediately replace the dish lid and use the black sealing tape to re-seal the dish.

Re-weigh the dish on the same gram scale used at the start of the test, and once again record the weight and time on the dish's lid and on the worksheet. The used dome and sealant can be safely removed from the concrete with a razor scraper.

## Documenting Information and Calculating Results

Record information as shown here:

Test #	Location	START OF TEST		END OF TEST		Wt. Gain in grams	Total hours	MVER Pounds	pH reading
		weight	time	weight	time				
25	Hallway, room 203	30.1	11am	35.9	7:15am	5.8	68.25	10.0	13

### Use the simplified ASTM formula in Pounds (per 1,000 sq. ft. / 24 hours)

1. Subtract the End Weight from the Start Weight to find the Weight Gain.
2. Multiply the Weight Gain by 117.707 then divide that figure by the hours.

$$\text{Pounds} = \frac{\text{Wt. Gain} \times 117.707}{\text{Hours}}$$

EXAMPLE using a 5.8 gram weight gain at 68 hours and 15 minutes exposure:

$$10.0 = \frac{5.8 \times 117.707}{68.25}$$

Contractor  
*Humboldt Company*

**STARTING Date** 8-6-04

**WEIGHT** 30.1 **TIME** 11am

TEST # 25 Hallway, Room 203  
Test Location

**WEIGHT** 35.9 **TIME** 7:15am

**ENDING Date** 8-9-04

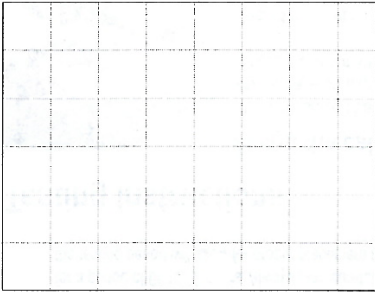
10.0 Pounds / pH 13

# Project Data

Project Name: \_\_\_\_\_ Date: \_\_\_\_\_

Site Location: \_\_\_\_\_

Test Conducted by: \_\_\_\_\_ Phone: \_\_\_\_\_



Test Location Map

Starting Date of Test: \_\_\_\_\_

Building Temperature: \_\_\_\_\_

Relative Humidity: \_\_\_\_\_ %

Ending Date of Test: \_\_\_\_\_

Building Temperature \_\_\_\_\_

Relative Humidity \_\_\_\_\_ %

Test #	Location	START OF TEST weight	time	END OF TEST weight	time	Wt. Gain in grams	Total hours	MVER Pounds	pH reading
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**Humboldt Mfg. Co.**  
 875 Tollgate Road  
 Elgin, Illinois 60123 U.S.A.

U.S.A. Toll Free: 1.800.544.7220  
 Voice: 1.708.468.6300  
 Fax: 1.708.456.0137  
 Email: [hmc@humboldtmgf.com](mailto:hmc@humboldtmgf.com)