MortarNet

Test Results

MortarNet® - 0.4 & 1 Inch

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Comparative Study of the Effectiveness of Two Wall Drainage Systems Used in Masonry Cavity Wall Construction

Test Method
ASTM E514 (Modified), "Test Method for Water Permeance of Masonry"

Test Program
The purpose of this study is to determine the effectiveness of the Mortar Net® wall drainage system in comparison to the use of pea gravel (3/8") aggregate in a cavity wall masonry system.

Wall Fabrication
Walls for this study were constructed to ASTM E514-90 requirements. Two walls consisting of double wythes with standard face brick, nominal 4" CMU and a nominal 2" cavity between the wythes (56" wide x 72" high) were built in one day (2.5 hours each) by an experienced lead mason. Workmanship judged average. Ambient temperature maintained between 65–75° F during fabrication and curing period. The walls were constructed on an inverted steel channel and the bottom course of each wythe was laid on a bed of mortar which covered the full length of the mortar bed. Mortar droppings consistent with mortar dropping quantities and distributions common to normal construction were allowed to accumulate in the cavity of each wall. Full weep holes were maintained at the head joints of the lower brick wythe. Flashing with end dams was placed beneath the brick wythe and extended to the inside face of the CMU wythe to facilitate the collection of water which passed through the face brick wythe.

Test Procedures
ASTM E514-90, Section 4 test procedures and fixture specifications were followed throughout, except the test period was extended from four hours to 72 hours. ASTM E514-90 test chambers were constructed of welded aluminum angle stock and the observation face of the chamber was outfitted with Lexan sheet to allow full view into the chamber. Each frame was outfitted with a flow meter. During the testing, the frame was pressurized to 10 psf and the water flow was adjusted to 40.8 gal/hr. which is equal to 3.4 gal/ft2/hr. The units were held in place with clamps, and a closed cell foam gasket material and silicone caulking provided the proper tight seal. To facilitate a tight seal, the test frame was attached to the smooth face of the brick, making this the exposed face.

TEST RESULTS	WALL A	WALL B
Drainage System	Mortar Net®	Pea Gravel
First Visible Water on Cavity Side of Brick	10 minutes	7 minutes
Appearance of Flowing Water on Cavity Side of Brick	17 minutes	16 minutes
Water Passing Through Weephole at the Brick Wythe Face		
3 Hours	2.6 gal/hr.	.51 gal/hr.
72 Hours	2.9 gal/hr.	1.06 gal/hr.

Conclusion
This study indicates that the Mortar Net® *is clearly superior to pea gravel* in allowing water to pass from the cavity to the exterior of the wall via the weep holes, with a flow rate approximately five times that of pea gravel after three hours and more than twice that of pea gravel after 72 hours.

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PERFORMANCE TEST REPORT

Performed by Architectural Testing, Inc., York, PA.
April 2004

The purpose of the testing was to conduct airflow testing on a brick wall with two different mortar collection devices. A brick wall was constructed 5'0" wide and 10'0" high with three (3) ½" wide by 2 ¾" high open head joints at the top and three (3) at the bottom of the wall. The mortar collection devices were "Mortar Net*"and Product B (a straight strip device manufactured by another company). Airflow testing was done in accordance with ASTM E 283-91, *Standard Test Method for Determining the Rate of Air Through Wall Assemblies.* Airflow readings were measured before and after a consistently measured amount of mortar was evenly distributed in a 1" cavity. Mortar Net* Weep Vents were installed in all head joints for consistency throughout the testing.

Test results show the comparison between an open 1" cavity with no mortar droppings versus a 1" cavity with 23.8 pounds of mortar droppings and the respective mortar collection device.

Testing with Bottom Weep Vents open only

Wind Speed	Mortar Net*	Product "B"
15 mph	0% Air Flow reduction	15% Air Flow reduction
25 mph	0% Air Flow reduction	42% Air Flow reduction
50 mph	0% Air Flow reduction	47.5 % Air Flow reduction

Testing with Top and Bottom Weep Vents open

Wind Speed	Mortar Net*	Product "B"
15 mph	0% Air Flow reduction	0% Air Flow reduction
25 mph	0% Air Flow reduction	23.5% Air Flow reduction
50 mph	0% Air Flow reduction	28% Air Flow reduction

Conclusion: Airflow is a critical part of drying out a cavity wall assembly and the results show conclusively that Mortar Net* with its dovetail shaped design outperforms "straight strip" products in general. If there is a considerable amount of reduction in airflow, then it can also be assumed that there would be a corresponding reduction in drainage since liquids and air will seek a similar path to exit the cavity area. Please visit our website, www.mortarnet.com for more information.

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Weep / Vent Testing

Architectural Testing, Inc., York, PA.
April 2004

The purpose of this testing was to conduct airflow testing on a brick wall with two different types of weep/vent products. A brick wall was constructed 5'0" wide and 10'0" high with three (3) ½" wide by 2 ¾" high open head joints at the top and three (3) at the bottom of the wall. The Mortar Net® Weep/Vents and a cellular venting product were tested to determine a comparison between the two products in terms of airflow into and out of the cavity. Airflow testing was done in accordance with ASTM e 283-91 *Standard Test Method for Determining the Rate of Airflow Through Wall Assemblies.* The cavity was 1" thick with no mortar droppings and no mortar collection device. Both products were tested in the same brick test wall and using the same original head joints to develop a consistency throughout the testing.

Weep/Vent Testing

Wind Speed	Mortar Net®	Cellular Vent	Redesigned Mortar Net® Weep/Vent
15 mph	4.4 cu/ft/min	4.4 cu/ft/min	**5.9 cu/ft/min**
25 mph	11.5 cu/ft/min	9.2 cu/ft/min	**15.6 cu/ft/min**
50 mph	30.4 cu/ft/min	22.8 cu/ft/min	**41.3 cu/ft/min**

Conclusion: Even though the Mortar Net® Weep/Vent outperformed the cellular vent product in terms of airflow, and because of this test information, Mortar Net has redesigned our Weep/Vent product in June 2004 to achieve even greater airflow. The new Mortar Net® Weep/Vent was retested and found to provide **36% more airflow than our previously tested material**. Because of the dramatic improvement, Mortar Net® has changed all of its Weep/Vent products to the new redesigned material as of August 1, 2004. Please visit our website, www.mortarnet.com for more information.