



**ASTM C1338 (2008): Standard Test Method for
Determining Fungi Resistance of Insulation
Materials and Facings.**

**Cavity Weep, Stone Cavity Weep, Wall Opening
Weeps, and Sure Cavity**

Project No. 3161679COL-001

October 27, 2008

Prepared for:
Masonry Technology Inc.
24235 Electric Street
Cresco, IA 52136

Intertek Testing Services NA, Inc.
1717 Arlingate Lane
Columbus, Ohio 43228
Telephone: 614-279-8090 Fax: 614-279-4642
Email: www.intertek.com

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INTERTEK TEST REPORT
1717 Arlingate Lane COLUMBUS, OHIO 43228

PROJECT NO.: 3161679

DATE: October 27, 2008

REPORT NO. 3161679COL-001

RENDERED TO:
Masonry Technology Inc.
24235 Electric Street
Cresco, IA 52136

STANDARD REFERENCED AND TEST METHOD:

ASTM C1338 (2008): Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings.

AUTHORIZATION:

The test was authorized by Steve Samec; A representative from Masonry Technology Inc.

TEST DESCRIPTION:

Intertek has conducted testing for Masonry Technology Inc on Cavity Weep, Stone Cavity Weep, Wall Opening Weeps, and Sure Cavity to evaluate Fungal Resistance. The test performed was ASTM C 1338(2008): Standard test Method for Determining Fungi Resistance of Insulation Materials and Facings. The microbiological test sample evaluations were conducted at the Intertek Laboratory located in Columbus, OH between September 26, 2008 and October 27, 2008. The samples were received at the testing site on September 12, 2008 in good condition. The Cavity Weep, Stone Cavity Weep, Wall Opening Weep (white corrugated material that was tested is used for the Cavity Weep, Stone Cavity Weep, and the Wall Opening Weeps), and Sure Cavity are currently in production. The Cavity Weep, Stone Cavity Weep, Wall Opening Weeps, and Sure Cavity were tested for their ability to resist contaminants when exposed to *Aspergillus niger* (ATCC # 9642), *Penicillium pinophilum* (ATCC # 11797), *Chaetomium globosum* (ATCC # 6205), *Aspergillus flavus* (ATCC # 9643) and *Aspergillus versicolor* (ATCC # 11730). Three samples of the material were exposed to the fungi.

SAMPLE DESCRIPTION:

Sure Cavity (SC 5016 and SC 5032) is a 0.024" (0.6 mm) thick high impact polystyrene strips and (SCMM 2516, SCMM 2532) are 0.024" (0.6 mm) thick high impact polystyrene strips. They are formed with corrugations and a spunbond polypropylene fabric on one side with a 4" (102 mm) skirt on one edge.

Cavity Weep (CV 5010) is a 2.25" (57 mm) wide weep legs at 9.5" (241 mm) on center; continuous belt 1" (25.4 mm) wide; and total width of 6" (152mm).

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Wall Opening Weeps (WOW 9095) are a 0.024" (0.6 mm) thick high-impact polystyrene strip formed with 3/16" (4.8 mm) deep corrugations, bent into L-shape, 9" (229 mm) Leg - 2.5" (57 mm) wide and 5" (127 mm) leg - 2.5" (57mm) wide.

Stone Cavity Weep (SCV 5012) is 2.25" (57 mm) wide weep legs at 9.5" (241 mm) on center; continuous belt 1" (25.4 mm) wide; and total width of 1'-0" (152 mm).

SAMPLE SELECTION:

Samples were prepared at the client's site by the client's project manager and shipped to the Intertek Columbus, located at 1717 Arlingate Lane, Columbus, Ohio 43228.

SPECIMEN PREPARATION

The samples provided by the client were cut to the proper thickness of 0.75 in (20mm). The samples were pre-conditioned for 4 hours at $86 \pm 4^{\circ}\text{F}$ ($30 \pm 2^{\circ}\text{C}$) and $95 \pm 4\%$ and the test was maintained at $86 \pm 4^{\circ}\text{F}$ ($30 \pm 2^{\circ}\text{C}$) and $95 \pm 4\%$ for a period of 28 days \pm 8 hours.

TEST DESCRIPTION

Samples:

1. Czapek Dox agar was prepared according to quantities used in ASTM C1338-08
2. Czapek Dox agar was sterilized using an autoclave with a temperature of $121 \pm 1^{\circ}\text{C}$
3. Mixed fungus spore suspension using pregrown cultures acquired from ATCC-American Type Culture Collection or MTCO-Mycological Services, with respective numbers describing each fungus were prepared as outlined in ASTM C1338-08
4. A spore suspension of each of the five fungal cultures was prepared by pouring sterile buffered dilution water (SBDW) containing 0.05g/L of nontoxic wetting agent such as Tween 80 over the individual fungal cultures
5. The surface growth from the culture of the test organism was gently scraped using a sterile platinum inoculating wire.
6. The spore charge was poured into Erlenmeyer flask containing SBDW and 50-75 glass beads, 5mm in diameter. The flask was shaken vigorously to free the spores from the fruiting bodies and to break the spore clumps
7. The suspension was filtered through a thin layer of sterile glass wool at least 0.24 in deep in a funnel to remove the mycelial fragments

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8. The filtered spore suspension was centrifuged and the supernatant was discarded. The residue was resuspended with SBDW and centrifuged. This washing procedure was repeated three more times, and then the final washed residue was diluted with sterile nutrient-salts solution in such a manner that the resultant spore suspension shall contain 1,000,000 +/- 200,000 spores/ml as determined with a counting chamber
9. This operation was completed for each fungal culture, and combine equal volumes of the resultant spore suspension to obtain a final mixed spore suspension

Safety Precautions and Hazards:

1. Steam Sterilized samples were handled with protective gloves when being removed from the autoclave
2. All microbiological samples and contaminated test samples were steam sterilized to 121 +/- 1°C at 15psi for a minimum of 20 minutes prior to being discarded

Negative Control:

1. Nine separate sterile Petri dishes (three for each different component) were plated with 1ml of SBDW, samples of the sterile pipets and uninoculated test samples on solidified Czapek Dox agar.
2. All samples were incubated at 28-30°C with a relative humidity of not less than 85% and examine them after 3-7 days.

Viability Control:

1. With each daily group of tests, three pieces of sterilized filter paper, 25mm square, were each placed on hardened Czapek Dox agar in separate Petri dishes.
2. These samples were inoculated with the spore suspension by spraying the suspension from the sterilized atomizer so the entire specimens were moistened.
3. These samples were incubated at 28°C -30°C with a relative humidity of not less than 85% and examine them after 14 days.
4. There were copious amounts of growth on all three filter papers. Absence of this growth requires repetition of the test.

Comparative Material:

1. A white birch tongue depressor, 0.75 by 6 in was the comparative material to determine the relative growth on the specimens being tested.

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Test Procedure:

1. The test chamber was preconditioned for 4 hours at $30 \pm 2^{\circ}\text{C}$ with a relative humidity of not less than 95%.
2. For visual evaluation three 4in x 4in samples were inoculated, unless otherwise specified by client
3. Sufficient amount of Czapek Dox agar were poured into sterile containers based on size of specimens. Once agar was solidified, specimens were placed on agar
4. The surface of the agar/specimen, the comparative material, and the viability controls were inoculated with the approximately 0.5ml of composite spore suspension each by spraying the suspension over the specimens
5. The test specimens were loosely covered and incubated at $30 \pm 2^{\circ}\text{C}$ with a relative humidity of not less than 95%, for 28 days +/- 8 hour.
6. The viability control samples were inspected after 3 to 7 days. If control samples do not show an abundance of growth, then repeat the entire test.
7. Specimens were periodically checked for growth during the incubation period
8. If the test samples have more growth than the comparative material, the samples have failed
9. If any growth was detected, pictures were taken of the growth and placed into a comprehensive report folder.
10. All samples that meet the acceptance criteria and should be verified under a microscope using a power of 40X or higher.
9. Samples were disinfected after test completion. Samples were autoclaved (if possible) or disposed with the hazardous waste. Autoclave all glassware.

CALIBRATED EQUIPMENT:

Calibrated Equipment	Sample Id No.	Manufacturer	Calibration Date	Calibration Due
Micropipette	CE 1141	Fisher Scientific	03/07/08	03/07/09
Environmental chamber	CE 1142	Thermotron	For Reference only	
Digital Hygrometer	CE 1150	Fisher Scientific	01/09/08	01/09/09

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RESULTS:

The comparative material has shown 90% growth over the material's surface. The original number of fungus aerosolized onto the surface was 1.0×10^8 cfu/ml.

Material	<i>A. niger</i>	<i>P. Pinophilum</i>	<i>C. globosum</i>	<i>A. flavus</i>	<i>A. versicolor</i>
Black Corrugated Material (Sure Cavity)	Devoid of Growth	Devoid of Growth	Devoid of Growth	Devoid of Growth	Devoid of Growth
White Corrugated Material (Cavity Weep, Stone Cavity Weep, and Wall Opening Weeps)	Devoid of Growth	Devoid of Growth	Devoid of Growth	Devoid of Growth	Devoid of Growth

CONCLUSION:

This report documents the performance of the Sure Cavity, Cavity Weep, Stone Cavity Weep, and Wall Opening Weeps' ability to resist fungal contaminants. The Sure Cavity, Cavity Weep, Stone Cavity Weep, and Wall Opening Weeps do meet the acceptance criteria and do demonstrate the resistance of fungal contamination.

Test Performed by:



Shannon Meier
Microbiologist
Columbus Office

Report Approved by:



Ramzi Amawi
Operations Manager
Columbus Office

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