R&D Services

Test Report

Fungi Resistance Tests According to ASTM C 1338 on Foam Supplied by Demilec, Inc. - Canada

Prepared For:

Mr. Mario Charlebois
Demilec, Inc. - Canada
870 Cure´ Boivin
Boisbriand, Quebec
Canada J7G 2A7

R & D Services, Inc.
P.O. Box 2400
Cookeville, Tennessee 38502-2400

Report: RD04150

Reviewed by: Ronald S Graves
Ronald S. Graves
Vice President

March 17, 2004

R&D Services

Test Report for Resistance to the Growth of Fungi According to ASTM C 1338

Report Summary

Manufacturer: Demilec, Inc. - Canada
Material Description: Heatlok 0240 / Airmetric 0223 Rigid Foam
ASTM Test Method: C 1338
Project Number: 1265
Specimen Number: 1265040130-1,3
Report Number: RD04970FR
Date of Report: March 17, 2004
Period of Test: February 18, 2004- March 17, 2004
Test Result: Pass
Number of Specimens Observed: 3
Comparative Material: Southern Yellow Pine
Fungi Checked for Viability: Yes
Regular or Extended Test: Regular

Background

The ASTM Standard Specification for many thermal insulations requires a test for the resistance of the insulation to the growth of fungi. Section 10 of C 1497, ASTM C 1338, Section 6.6 of ASTM C 1149, or Section 11 of ASTM C 739 are commonly used in the case of building materials. Evaluations for fungi growth are based on visual examinations at 40X magnification. The examinations at 40X magnification compare fungal growth on the material being evaluated with the fungal growth on an untreated comparative material that is exposed to the same environment as the test specimens. Both the material being tested and the comparative material are inoculated with a mixed spore suspension containing five specific fungal species to start the test. Since most fungi thrive in a relatively narrow range of temperature and humidity, inoculated specimens and comparative materials are maintained within temperature and relative

humidity ranges specified in the test method for the 28-day growth period. The purpose of the test is to provide an evaluation of the potential for fungal growth present in the insulation material relative to common types of wood used in building construction. The fungal species used in the tests for thermal insulation are listed below.

Aspergillus niger	*ATCC 9642*
Aspergillus flavus	*ATCC 9643*
Aspergillus versicolor	*ATCC 11730*
Penicillium funiculosum	*ATCC 11797*
Chaetomium globosum	*ATCC 6205*

A mixed spore suspension is produced from the above five species in accordance with the test method being followed. The viability of each of the five species is verified with each test as required by the test method being used. The ASTM test methods for resistance to fungal growth require a 40X visual comparison of test material and comparative materials 28 days after inoculation. The criteria for a pass/fail result at the end of the 28-day test period depends on the test method being followed.

Test using ASTM C 739 or C 1149

Each of the three test specimens shall be judged to have fungal growth that is less than, equal to, or greater than the comparative material. The insulation fails the test if two or more of the replicate test specimens have greater fungal growth than the comparative material.

Results	Specimen	Fungal Growth Comparison
	1	N/A
	2	
	3	

The pass/fail result: _____
Basis for the pass/fail result: _____

Test using ASTM C 1338

Each of the replicate test specimens shall be determined to have either no fungal growth, fungal growth not greater than the comparative material, or fungal growth greater than the comparative material.

Results	Specimen	Fungal Growth Comparison
	1	No growth.
	2	No growth.
	3	No growth.

The pass/fail result: Pass
Basis for the pass/fail result: All three specimens passed.

Extended Evaluation of Resistance to Fungal Growth

An extended evaluation of fungal growth resistance is completed when requested. The extended evaluation grades the test specimens four times during the course of the 28-day long growth period in order to provide additional information to the manufacturer. The grading scheme has been adapted from MIL-STD-810E. Grading takes place 7, 14, 21, and 28 days after inoculation. The extended evaluation is not intended to replace the evaluation required by the particular standard being used.

Grade	Amount of Growth	Description
0	None	No fungal growth observed on test specimen.
1	Trace	Sparse or very restricted fungal growth and reproduction. Little or no physical or structural change of specimen detected.
2	Slight	Intermittent infestations or loosely spread fungal colonies on test specimen surface, moderate reproduction.
3	Moderate	Substantial fungal growth and reproduction. Test specimen exhibiting physical or structural change.
4	Severe	Massive fungal growth or reproduction. Test specimen decomposed or rapidly deteriorating.

Observations

	Day 7	Day 14	Day 21	Day 28
Specimen 1	N/A	_____	_____	_____
Specimen 2	_____	_____	_____	_____
Specimen 3	_____	_____	_____	_____

This R&D Services, Inc. test report and the evaluation contained in the report are limited to the material tested. The extent to which the material tested is representative of the product being manufactured is the sole responsibility of the manufacturer. The test results are not purported to predict the performance of the material in a building or installation.

Rita M. Thompson — Evaluation — 03-17-04 — Date

Ronald S. Seale — Review — 03-12-04 — Date

References:

ASTM C 739, "Standard Specification for Cellulosic Loose-Fill Thermal Insulation", 2002 Annual Book of ASTM Standards, Vol. 04.06, pp. 362-372.

ASTM C 1149, "Standard Specification for Self-Supported Spray Applied Cellulosic Thermal Insulation", 2002 Annual Book of ASTM Standards, Vol. 04.06, pp. 630-637.

ASTM C 1338, "Standard test Method for Determining Fungi Resistance of Insulation Materials and Facings", 2002 Annual Book of ASTM Standards, Vol. 04.06, pp. 721-723.

ASTM C 1497, "Standard Specification for Cellulosic Fiber Stabilized Thermal Insulation", 2002 Annual Book of ASTM Standards, Vol. 04.06, pp. 849-852.

MIL-STD-810E, Method 508.4, "Fungus", 14 July 1989.