Test Report

Quarterly Quality-Control Tests on Applegate Loose-Fill and Applegate Stabilized Cellulose Selected by R&D Services at the Applegate-MI Facility on December 9, 2009

Prepared For:

Mr. Bob Thorpe
Applegate Insulation of Michigan, LLC
1000 Highview Drive
Webberville, MI 48892

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

Report: RD10135

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

January 25, 2010

R&D Services

P.O. Box 2400
Cookeville, Tennessee 38502-2400
Phone: 931-372-8871
Fax: 931-525-3896

Design Density Test Report

Test Number: RD101120DD Date of Test: December 28, 2009

Specimen Number: 1028091211-11 Date of Manufacture: December 3, 2009

Description of Test Specimen: Applegate-MI; Applegate Loose-Fill Cellulose; Blown Using a Krendl Machine and Conditioned for > 72 hours at 69.8 +/- 3.6°F and 50 +/- 5% RH

Test Method: ASTM C 739-08, Section 8 "Specification for Cellulosic Fiber Loose-Fill Thermal Insulation."

Report Prepared For: Applegate Insulation of Michigan, LLC / Bob Thorpe

	Test 1	Test 2	Test 3	Test 4	
Wt:	94.1	92.0	91.4	93.4	(grams)
Area:	0.018385	0.018385	0.018385	0.018385	(m^2)
Depth:	220	220	218	217	(mm)
	222	224	222	220	
	225	218	218	225	
	220	215	215	220	
Ave:	221.75	219.25	218.25	220.50	(mm)
Set. Den:	23.0814	22.8236	22.7787	23.0396	(kg/m^3)
Set. Den:	1.441	1.425	1.422	1.438	(lb/ft^3)

Settled Density: 1.43 (lb/ft^3)

Ronald L Straden
Reviewed by:

1-25-10
Date:

The results in this report apply only to the specimen tested.

P.O. Box 2400
Cookeville, Tennessee 38502-2400
Phone: 931-372-8871
Fax: 931-525-3896

Critical Radiant Flux (Gas) Test Report

Test Number: RD101121CR Date of Test: December 18, 2009

Specimen Number: 1028091211-11 Date of Manufacture: December 3, 2009

Description of Test Specimen: Applegate-MI; Applegate Loose-Fill Cellulose; Blown Using a Krendl Machine and Conditioned for > 72 hours at 69.8 +/- 3.6°F and 50 +/- 5% RH

Test Method: ASTM C 739-08, Section 10, "Specification for Cellulosic Fiber Loose-Fill Thermal Insulation" and ASTM E 970, "Test Method for Critical Radiant Flux of Exposed Attic Floor Using a Radiant Heat Energy Source".

Report Prepared For: Applegate Insulation of Michigan, LLC / Bob Thorpe

Density (lb/ft^3)	Length of Burn (cm)	Critical Radiant Flux (W/cm^2)	Pass / Fail
1.06	66.5	0.21	Pass
1.06	68.5	0.19	Pass
1.11	62.0	0.24	Pass

The average CRF is: 0.21 W/cm^2
The standard deviation is: 0.03
The coefficient of variation for repeatability is: 14.3 %

Ronald S Shrader
Reviewed By:

1-25-10
Date:

P.O. Box 2400
Cookeville, Tennessee 38502-2400
Phone: 931-372-8871
Fax: 931-525-3896

Smoldering Combustion Test Report

Test Number: RD101122SC Date of Test: December 30, 2009

Specimen Number: 1028091211-11 Date of Manufacture: December 3, 2009

Description of Test Specimen: Applegate-MI; Applegate Loose-Fill Cellulose; Blown Using a Krendl Machine and Conditioned for > 72 hours at 69.8 +/- 3.6°F and 50 +/- 5% RH; Tested at 1.43 PCF

Test Method: ASTM C 739-08, Section 14, "Specification for Cellulosic Fiber Loose-Fill Thermal Insulation."

Report Prepared For: Applegate Insulation of Michigan, LLC / Bob Thorpe

Initial Weight (grams)	Final Weight (grams)	% loss	Pass / Fail
92.9	92.8	0.11	Pass
93.5	93.2	0.32	Pass
93.3	93.1	0.21	Pass

Ronald S Shrader
Reviewed By:

1-25-10
Date:

The results in this report apply only to the specimen tested.

P.O. Box 2400
Cookeville, Tennessee 38502-2400
Phone 931-372-8871
Fax 931-525-3896

Thermal Resistance Test Report

Date of Test: January 8-11, 2010

Date of Manufacture: December 3, 2009

HFM File Number: 10-6177

Specimen Number: 1028091211-11

Test Number: RD101123TR

Description of Test Specimen: Applegate-MI; Applegate Loose-Fill Cellulose.

Test Method: ASTM C 518-04, "Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus."

Report Prepared For: Applegate Insulation of Michigan, LLC / Bob Thorpe

The results in this report were obtained with a heat-flow meter built and operated in accordance with ASTM C 518-04.

Heat flow meter:	24 by 24	in. by in.
Specimen thickness:	4.000	inches
Specimen density:	1.43	lb/ft^3
Cold plate temperature:	55.02	°F
Hot plate temperature:	95.04	°F
Average specimen temperature:	75.03	°F
Apparent thermal conductivity:	0.2898	$Btu \cdot in./ft^2 \cdot hr \cdot °F$
Thermal resistivity (R-per-inch):	3.451	$ft^2 \cdot hr \cdot °F/Btu.in$
Thermal resistance of specimen:	13.8	$ft^2 \cdot hr \cdot °F/Btu$

Notes: Calibration factor used for manual calculation? NA EMF NA
Edge guards or cabinet temperature satisfactory? Yes
Excessive moisture on cold plate? No
Length of time for test (hours) 66.6
The precision of this test is estimated to be 2.5% (Section 10.8, ASTM C 518-04)

Ronald L Beaver
Reviewed By:

1-25-10
Date:

The results in this report apply only to the specimen tested. This test conforms to ASTM Test Method C 518-04 except for the report requirements. The report includes summary data but a full complement of data is available upon request.

R&D Services

P.O. Box 2400
Cookeville, Tennessee 38502-2400
Phone: 931-372-8871
Fax: 931-525-3896

pH Test Report

Test Number: RD101124PH

Date of Test: December 31, 2009

Specimen Number: 1028091211-11

Date of Manufacture: December 3, 2009

Description of Test Specimen: Applegate-MI; Applegate Loose-Fill Cellulose; Blown Using a Krendl Machine and Conditioned for > 72 hours at 69.8 +/- 3.6°F and 50 +/- 5% RH

Test Method: ASTM D778, "Test Methods for Hydrogen Ion Concentration (pH) of Paper Extracts (Hot-Extraction and Cold-Extraction Procedure)."

Report Prepared For: Applegate Insulation of Michigan, LLC / Bob Thorpe

pH= 6.79

Ronald L Sharber
Reviewed By:

1-25-10
Date: