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Report of Results
For

EBRILLE SRL
Strada Canelli 53 A,
14049 Nizza
Monferrato AT, Italy

**Water Vapor
Transmission for
COVERAL PE
Foam**

Tested
In Accordance With
ASTM E96

January 19, 2017

Report
4162.046.011917

Water Vapor Transmission for COVERAL PE Foam

Prepared for

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Background

EBRILLE SRL requested the water vapor transmission (WVT) testing for one of their pipe insulation products for air-conditioning lines, COVERAL PE (polyethylene) foam product, per Desiccant Method, or “Dry Cup” method in accordance with ASTM E96, titled “Standard Test Method for Water Vapor Transmission of Materials”, section 11 specifically.

An agreement was entered into October 26, 2016, between EBRILLE SRL and Home Innovation. Test sample materials were received on November 18, 2016.

Samples

There were one foam sample tested in accordance with ASTM E96. Three identical specimens for each sample were prepared for the testing. The values of their thickness were measured and recorded. The identification of each sample material is listed in the following table:

Table 1: COVERAL PE Foam Sample

PE Foam	Skin	Nominal Thickness (in)
COVERAL	PET/Aluminum/PE	1/2”

The actual tested sample (with aluminum tape applied to the edge for testing) are shown in the following photos:



Figure 1A. Photo of COVERAL PE Foam Test Specimen – Front Surface



Figure 1B. Photo of PE Foam Test Specimens – Back Surface

Test Method

The test method followed is ASTM E96, Desiccant Method. The test conditions were: 73.4°F (23°C), 50% relative humidity (RH). A Tenney environment chamber was used to control the test conditions. It was calibrated to the test conditions in November, 2016.

A square stainless steel test cup that has an opening of 3.75" x 3.75" and a depth of 2.05" was used for each specimen. The edge of each foam specimen was sealed around using aluminum tape to be attached to the rim of the square stainless steel cup. The exposed (un-taped) area of the foam specimen is 3.75" x 3.75" on both top and bottom surfaces. The foam specimen was then placed on the cup and sealant was applied to the edge of the foam specimen and the rim of the test cup. The sealant used was wax.

Each test cup was filled with desiccant to be within ¼" from the bottom surface of the foam specimen when attached to the cup. The desiccant was dried in an oven for over 12 hours before used.

All sample materials are homogenous PE foam with skins. All test specimens have flat top (with a skin) and bottom (with no skin) surfaces. The flat top surface was facing the desiccant in the test cup during testing.

Results

The calculation procedure for the WVT data analysis followed ASTM E96 and the average test results are listed in Table 2 below. The detailed test data and charts for each sample are shown in the appendix that is attached to the end of this report.

Table 2: Water Vapor Transmission Test Results for PE Foam Samples

<i>Water Vapor Transmission (WVT) Testing per ASTM E96</i>			
<i>Dry Cup Method</i>	<i>Thickness</i>	<i>Permeance</i>	<i>Permeability</i>
<i>Material</i>	<i>(inches)</i>	<i>(perm)</i>	<i>(perm-in)</i>
COVERAL	0.454	0.044	0.020

Declarations & Disclaimers

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Testing and Report by: _____



Appendix

Table A1: WVT Test Data for Sample COVERAL

Condition	At 25% Mean RH		
Sample	1	2	3
Grams/hour	0.000090	0.000185	0.000106
Grains/hour	0.001393	0.002848	0.001643
Area, ft ²	0.0977	0.0977	0.0977
Grains/(hr-ft ²)	0.0143	0.0292	0.0168
RH Fraction	0.489	0.489	0.489
Sat. Press. - S (in. Hg)	0.9361	0.9361	0.9361
Δp (in. Hg)	0.4574	0.4574	0.4574
Perms (grains/(hr-ft²-inHg))	0.031	0.064	0.037
R-Square	0.734	0.881	0.838
Average Perms	0.044		
Standard Dev.	0.017		
Thickness (in.)	0.475	0.450	0.437
Permeability (perm inch)	0.015	0.029	0.016
Average Permeability	0.020		

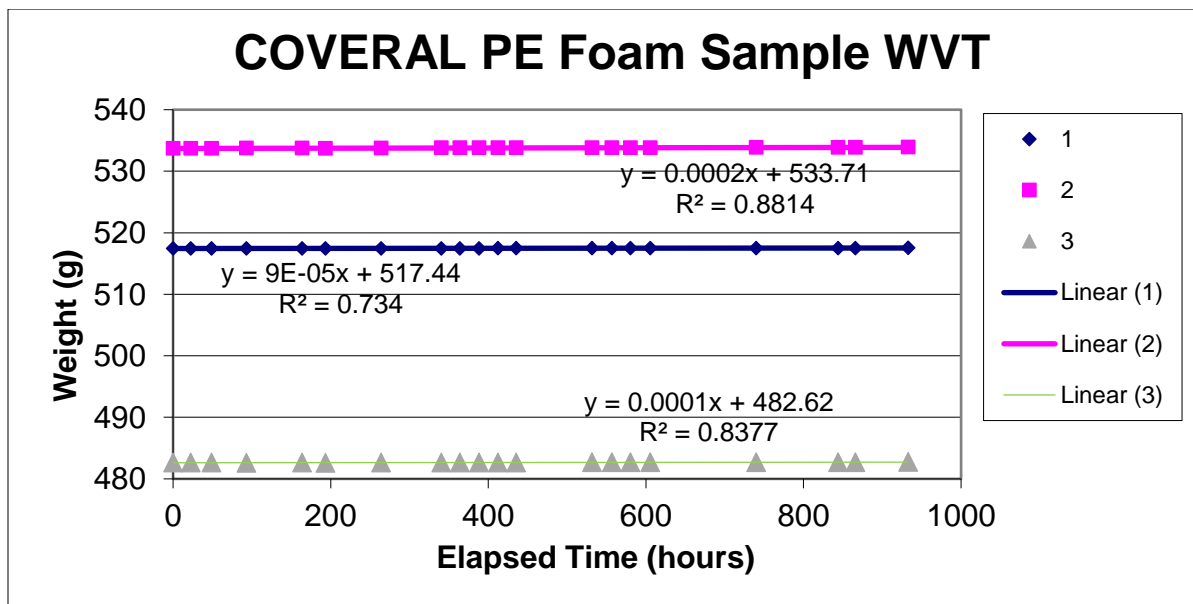


Figure A1. WVT Data Chart for Sample COVERAL