



Celotex Corporation  
Testing Services

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### PHYSICAL LABORATORY REPORT

January 27, 1998

**Client:** Tenneco Packaging - AVI  
1411 Pidco Drive  
Plymouth, IN 46563  
**MTS Job No.:** 258248-H  
**Metro Dade Notification No.:** CAE 97297  
**Test Date:** December 16, 1997 thru January 22, 1998

**Project:** Water Vapor Transmission of Astro-Foil Reflective Insulation

**Test Method:** ASTM E96-95, "Standard Test Methods for Water Vapor Transmission of Materials." The desiccant method was performed with the testing conducted in a controlled environment of 70°F and 50% relative humidity.

**Sample Identification:** Astro-Foil Reflective Insulation

The manufacture of the product was witnessed by J. Bridenstine on July 21, 1997 and documented in a P.E. sealed letter to R&D Services, Inc. Dated July 23, 1997.

Three samples, approximately 4 inches in diameter, were cut from the test specimen and sealed to a 100 mm pyrex dish. The sealant was a mixture of 60% Mobil Wax 2305 (yellow microcrystalline wax) and 40% Mobil Wax 130 (white paraffin).

**Mounting Method:** Foil face towards the desiccant.

**Conditioning:** All specimens were conditioned for a minimum of 48 hours at 70°F and 50% relative humidity.

**Results:** The following table summarizes the results for the sample.

Specimen ID	Thickness (inch)	WVTR (grains/hr.ft <sup>2</sup> )	Permeance (Perms)	Perm-inch
1	0.310	0.005	0.01	N/A
2	0.310	0.020	0.05	
3	0.310	0.008	0.02	
<b>Average</b>	0.310	0.010	<b>0.03</b>	

*R. Ameller  
1-27-98*

The permeance of this sample can be characterized as 0.03 perms or less.

**Tested by:** Scott T. Ryan  
Scott T. Ryan  
Laboratory Technician  
**Approved by:** W. A. Jackson  
W. A. Jackson  
Project Coordinator

*This report is for the information of the client. It may be used in its entirety for the purpose of securing product acceptance from duly constituted approval authorities; however, this report or the name of Celotex Corporation shall not be used in publicity or advertising.*

Test: ASTM E96  
 Client: R & D SERVICES MTS Job No: 258248  
 Requestor: R. GRAVES  
 Cup Method: DRY Homogeneous (applies for samples > 1/2" thick): N/A

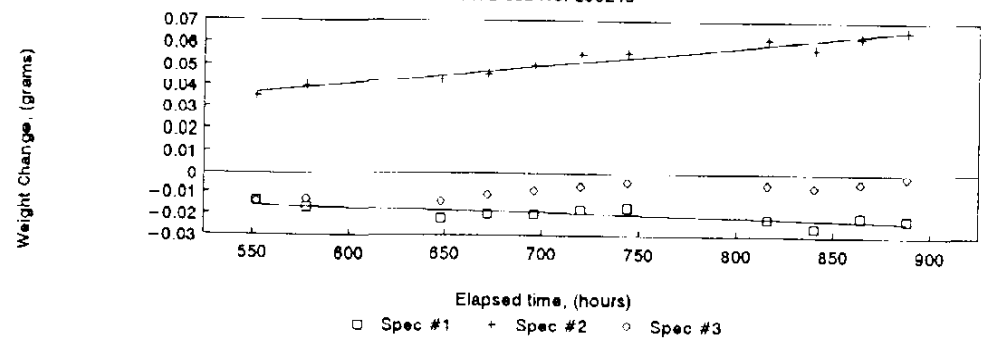
Date	Time	Sample ID Thickness, inches Elapsed time (h)	-1		-2		-3	
			Wt (g)	Wt Change	Wt (g)	Wt Change	Wt (g)	Wt Change
16-Dec	08:00 AM	0.00	153.555	0.000	142.683	0.000	143.183	0.000
17-Dec	07:00 AM	23.00	153.551	-0.004	142.678	-0.005	143.171	-0.012
18-Dec	07:00 AM	47.00	153.550	-0.005	142.678	-0.005	143.168	-0.015
19-Dec	07:30 AM	71.50	153.546	-0.009	142.681	-0.002	143.168	-0.015
22-Dec	08:00 AM	144.00	153.546	-0.009	142.683	0.000	143.163	-0.020
23-Dec	08:00 AM	168.00	153.545	-0.010	142.686	0.003	143.162	-0.021
29-Dec	08:00 AM	312.00	153.536	-0.017	142.692	0.009	143.161	-0.022
30-Dec	08:00 AM	336.00	153.536	-0.019	142.694	0.011	143.159	-0.024
05-Jan	08:00 AM	480.00	153.535	-0.020	142.706	0.023	143.163	-0.020
06-Jan	08:00 AM	504.00	153.537	-0.018	142.713	0.030	143.167	-0.016
07-Jan	08:00 AM	528.00	153.538	-0.017	142.716	0.033	143.168	-0.015
08-Jan	08:00 AM	552.00	153.541	-0.014	142.718	0.035	143.169	-0.014
09-Jan	10:00 AM	578.00	153.538	-0.017	142.723	0.040	143.170	-0.013
12-Jan	08:00 AM	648.00	153.533	-0.022	142.726	0.043	143.169	-0.014
13-Jan	08:00 AM	672.00	153.535	-0.020	142.729	0.046	143.172	-0.011
14-Jan	08:00 AM	696.00	153.535	-0.020	142.733	0.050	143.174	-0.009
15-Jan	08:00 AM	720.00	153.537	-0.018	142.738	0.055	143.176	-0.007
16-Jan	08:00 AM	744.00	153.538	-0.017	142.739	0.056	143.178	-0.005
19-Jan	08:00 AM	816.00	153.533	-0.022	142.745	0.062	143.177	-0.006
20-Jan	08:00 AM	840.00	153.529	-0.026	142.741	0.058	143.176	-0.007
21-Jan	08:00 AM	864.00	153.534	-0.021	142.746	0.063	143.178	-0.005
22-Jan	08:00 AM	888.00	153.533	-0.022	142.749	0.066	143.181	-0.002

X Coefficients	R	-0.0000203	0.0000873	0.0000329	
SEE * NOTE	WVT, grains/hr sq ft *	0.71	0.98	0.91	AVERAGE
SEE ** NOTE	Permeance	-0.0047	0.0202 *	0.0076	0.008
	Perm-inch	-0.0127	0.0546 **	0.0206	0.021
		NA	NA	NA	NA

\* The WVT for this specimen is best characterized as less than 0.01 grains/hr sq ft. (based on significant digits)  
 \*\* The Permeance for this specimen is best characterized as less than 0.03 perms. (based on significant digits)

REPORT graph showing data with best fit lines used for WVTR

R & D SERVICES/R. GRAVES  
 MTS Job No. 258248



STEADY Graph showing weight change to determine point of steady state

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