



Celotex Corporation
Testing Services

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PHYSICAL TESTING LABORATORY REPORT

December 17, 1997

Client: Tenneco Packaging - AVI
1411 Pidco Drive
Plymouth, IN 46563

MTS Job No.: 258218B

Metro Dade Notification No.: CAE 97301

Project: Adhesive Performance (Pliability) of Astro-Foil Reflective Insulation

Introduction:

This report presents the results of physical tests conducted on material submitted to our laboratory on August 26, 1997. Testing was completed on December 17, 1997. 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, Incorporated, dated July 23, 1997. The test was performed in accordance with the following test method.

ASTM C 1224-93, "Standard Specification for Reflective Insulation for Building Applications" - Section 9.2.2, Pliability

Specimen Preparation:

One (1) roll of foil/bubble/bubble/foil (FBBF) material was supplied by the client and identified as Astro-Foil Reflective Insulation. Two (2) sets of three (3) 6 by 6 by 5/16 inch samples were cut from separate locations on the insulation roll. One sample in each set contained a factory produced edge.

Specimen Conditioning:

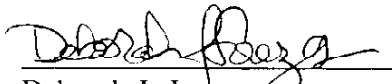
One set of specimens was conditioned at $70^{\circ}\text{F} \pm 2^{\circ}\text{F}$ with $50\% \pm 5\%$ relative humidity and the second set at $32^{\circ}\text{F} \pm 2^{\circ}\text{F}$ with $50\% \pm 5\%$ relative humidity a minimum of 24 hours prior to immediate testing.

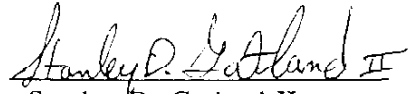
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Observations:

The specimens were folded in accordance with Section 9.2.2.4(b) and TAPPI Standard T512 om-86. The single bubblepack reflective insulation specimens were observed to have no cracking or delamination when folded to a 180° bend, thus, meeting the acceptance criteria of Section 6.2.6.2.

Tested by: 
Deborah J. Lorezca
Laboratory Technician

Approved by: 
Stanley D. Gatland II
Research Engineer

R. Ameller
10/19/97

LAB: Celotex Technical Center
 FILE NAME: 2582188.SDT
 TEST DATE: 12/16/97, 09:26 a.m.
 OPERATOR: Huton Gwynn

TEST TYPE: CONSTANT TEMPERATURE at 330.0 deg C
 AIR FLOW: 25.40 mm/sec
 PILOT LIGHT: ON - Flash Ignition Temperature

SPECIMEN ID: ASTRU-FULL
 SPECIMEN DESCRIPTION:

TEST DURATION: 845 seconds
 IGNITION TIME: 686 seconds
 FLAME DURATION: 0 seconds
 INITIAL MASS: 3.00 gm
 FINAL MASS: 0.00 gm
 MASS LOSS: 100.00 %

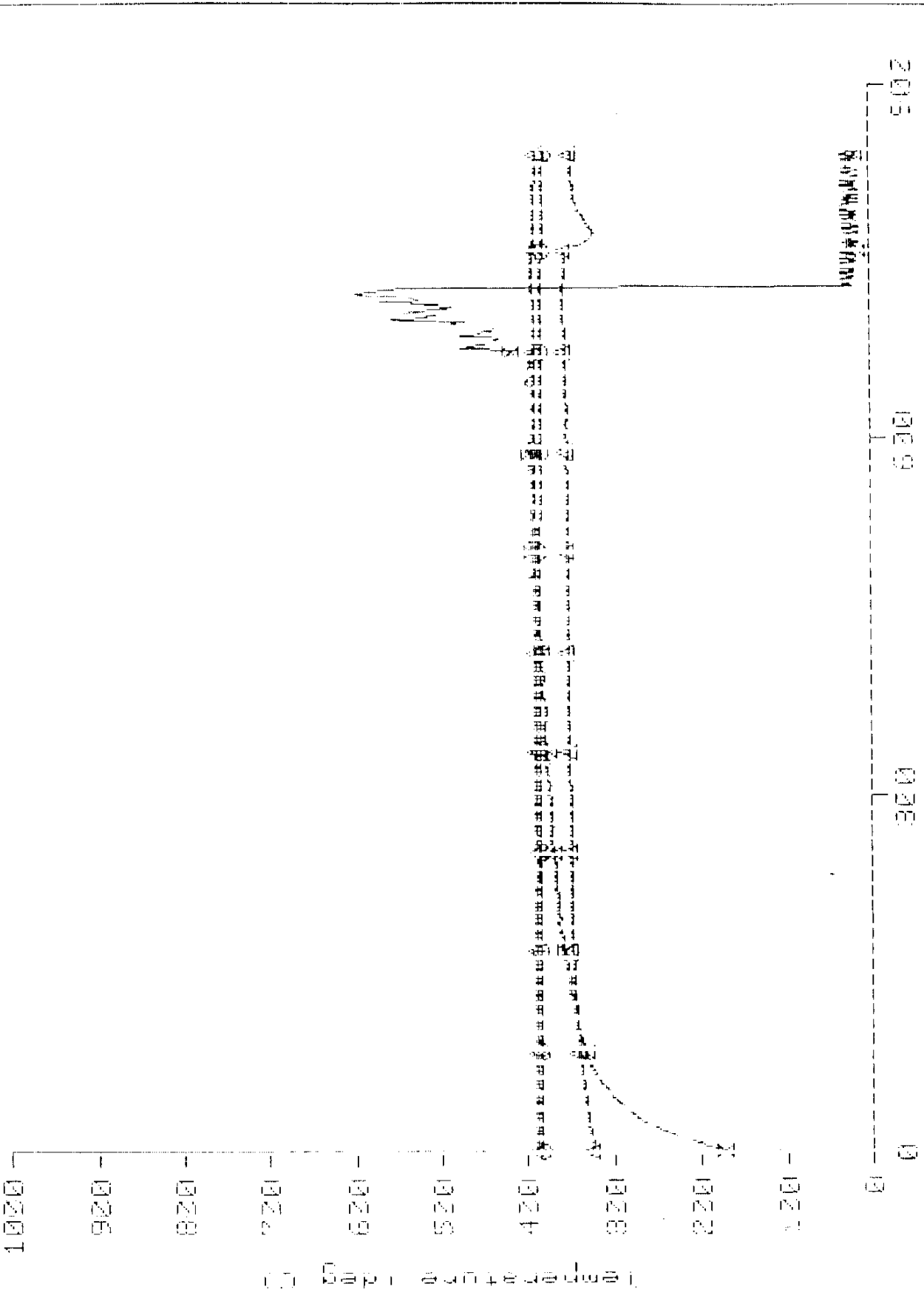
IGNITION TEMPERATURES:
 Air temp at sample. (12) : 333.33 deg C
 Annular Space temp. : 388.57 deg C
 Sample Temp. (11) : 473.71 deg C
 Heating Coil Temp. (13) : 381.14 deg C

INITIAL TEMPERATURES:
 Air temp at sample. (12) : 324.00 deg C
 Annular Space temp. : 388.00 deg C
 Sample Temp. (11) : 173.00 deg C
 Heating Coil Temp. (13) : 382.00 deg C

FINAL TEMPERATURES:
 Air temp at sample. (12) : 344.00 deg C
 Annular Space temp. : 385.00 deg C
 Sample Temp. (11) : 23.00 deg C
 Heating Coil Temp. (13) : 375.00 deg C

MAXIMUM TEMPERATURES:
 Air temp at sample. (12) : 333.33 deg C
 Annular Space temp. : 390.52 deg C
 Sample Temp. (11) : 596.38 deg C
 Heating Coil Temp. (13) : 384.25 deg C

TEMPERATURE RISES:
 Air temp at sample. (12) : 31.33 deg C
 Annular Space temp. : 2.92 deg C
 Sample Temp. (11) : 423.38 deg C
 Heating Coil Temp. (13) : 2.25 deg C



NDr temp at sample. (T2) - Δ, Annular space temp. - □, Sample Temp. (T1) - X, Health