



Celotex Corporation  
Testing Services

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## FIRE TESTING LABORATORY REPORT

December 17, 1997

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

**MTS Job No.:** 258218F

**Metro Dade Notification No.:** CAE 97299

**Project:** Rate of Burning Characteristics of Astro-Foil Reflective Insulation

### Introduction:

This report presents the results of fire tests conducted on material submitted to our laboratory on August 26, 1997. Testing was completed on December 15, 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.

### Specimen Preparation:

One (1) roll of foil/bubble/bubble/foil (FBBF) material was supplied by the client and identified as Astro-Foil Reflective Insulation. Twenty (20) 125 by 12 by 8 millimeter samples were cut from each specimen. The samples were conditioned in a controlled laboratory at 70°F and 50% relative humidity a minimum of 24 hours prior to testing.

### ASTM D635 Test Method:

The following results were determined in accordance with the test method below.

ASTM D 635-91, "Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position"

The plastic materials rate of burning and/or extent and time of burning were determined using a small scale laboratory apparatus as described in section 6 of the above standard test method. The following caveat is required by section 9.3.8 of the D 635 standard test method. *This standard should be used to measure and describe the properties of materials, products, or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products, or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use.*

*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.*

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Summary of ASTM D 635 Test Results

Specimen I.D.	Average Rate of Burning
Astro-Foil Reflective Insulation	11.0 cm/min. [4.3 in/min.]

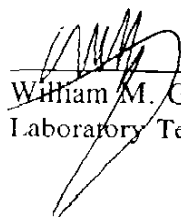
Observations:

The above reported rate of burning result is the average of 3 out of 10 samples which burned to the 100-mm gage mark. The average specimen thickness was 8 mm. The range of time to burn was 49 to 52 seconds.

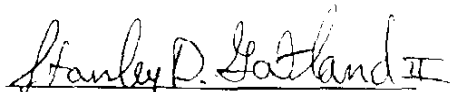
This test method was developed to establish the relative burning characteristics of self-supporting plastic materials, in the form of bars, rigid sheets, plates, or panels, as stated in the document's title and scope. Results obtained for the Astro-Foil reflective insulation with this method may not be comparable with other rigid plastic material results, as described above, since the material was not self-supporting.

*RH Miller*  
*12/19/97*

Tested by:

  
William M. Gwynn  
Laboratory Technician

Approved by:

  
Stanley D. Gatland II  
Research Engineer

LAB: Celotex Technical Center  
 FILE NAME: 258218F.SDI  
 TEST DATE: 12/16/97, 01:39 p.m.  
 OPERATOR: HUTCH BRYNN

TEST TYPE: CONSTANT TEMPERATURE at 350.0 deg C  
 AIR FLOW: 25.40 mm/sec  
 PILOT LIGHT: OFF Pre-Self Ignition Temperature

SPECIMEN ID: ASTRO-FULL  
 SPECIMEN DESCRIPTION:

TEST DURATION: 796 seconds  
 IGNITION TIME: No Ignition  
 FLAME DURATION: No Ignition  
 INITIAL MASS: 6.00 gm  
 FINAL MASS: 0.00 gm  
 MASS LOSS: 100.00 %

## IGNITION TEMPERATURES:

Air temp at sample. (12) : 351.36 deg C  
 Annular space temp. : 352.60 deg C  
 Sample temp. (11) : 381.74 deg C  
 Heating Coil temp. (13) : 383.48 deg C

## INITIAL TEMPERATURES:

Air temp at sample. (12) : 316.00 deg C  
 Annular space temp. : 331.00 deg C  
 Sample temp. (11) : 134.00 deg C  
 Heating Coil temp. (13) : 324.00 deg C

## FINAL TEMPERATURES:

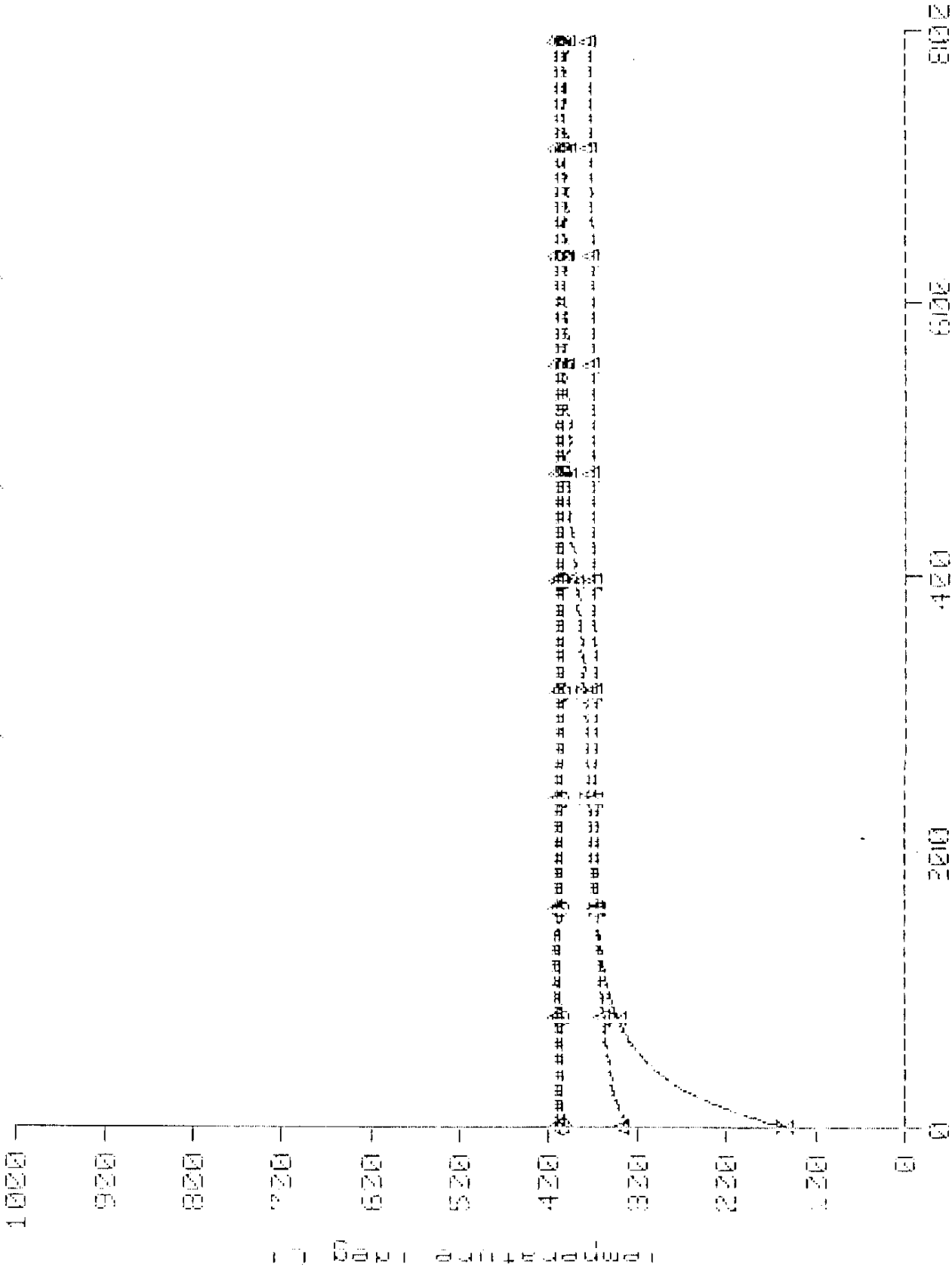
Air temp at sample. (12) : 351.00 deg C  
 Annular space temp. : 352.00 deg C  
 Sample temp. (11) : 382.00 deg C  
 Heating Coil temp. (13) : 383.00 deg C

## MAXIMUM TEMPERATURES:

Air temp at sample. (12) : 351.65 deg C  
 Annular space temp. : 393.32 deg C  
 Sample temp. (11) : 391.55 deg C  
 Heating Coil temp. (13) : 387.32 deg C

## TEMPERATURE RISES:

Air temp at sample. (12) : 35.65 deg C  
 Annular space temp. : 2.32 deg C  
 Sample temp. (11) : 257.55 deg C  
 Heating Coil temp. (13) : 3.32 deg C



Air temp at sample. (T2) -  $\Delta$ , Arrular Space temp. -  $\circ$ , Sample Temp. (T1) -  $\square$ , Health