



March 10, 2010

ERICO INTERNATIONAL CORP

Mr. Ward Judson  
34600 Solon Rd  
Solon, OH 44139

Our Reference: File E165702 / Project 10NK02776

Subject: UL Standard 2043, Third Edition "Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces".

Dear Mr. Judson:

This Report summarizes the data developed on the samples you provided which were subjected to the flame test described in UL Standard 2043, Third Edition. Testing was conducted on March 02, 2010 at our Northbrook testing facility.

**GENERAL:**

It should be understood that these results apply only to the particular sample submitted for testing. The test results indicated in this Report are not intended to imply Listing, Classification or Recognition of any product or materials.

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# **TEST RECORD**

## **SAMPLES:**

Samples of plastic far side supports were submitted by the manufacture for evaluation to UL 2043. Model 766PMD and Model 766PM are made from the same material (Diamond Polymers 3500 ABS) with model 766PMD being slightly more massive than Model 766PM. The constructions are similar enough that model 766PMD was selected for UL 2043 testing with the results judged to be representative of model 766PM.

The plastic far side standoffs evaluated are described in Table 1. Underwriters Laboratories Inc. did not witness the production of the test sample nor were we provided with information relative to the formulation or identification of component materials used in the manufacture of the test samples.

Table 1 - Sample Description

<b>Sample Reference</b>	<b>Description</b>
A	766PMD PLASTIC FAR SIDE SUPPORTS - 6 Supports
B	766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports
C	766PMD PLASTIC FAR SIDE SUPPORTS - 4 Supports

## **METHOD:**

The tests were conducted in accordance with the test procedure described in UL Standard 2043, Third Edition ("Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces"), dated August 20, 2008. This test method is used to determine the heat release rate, smoke release and optical density of the samples. The test samples were positioned and installed in the test enclosure as described in Appendix A.

## **CRITERIA:**

Test samples fail to meet the requirements of UL 2043 if any of the following criteria are exceeded:

- 1) The peak heat release rate shall be 100 kW or less during the test.
- 2) The peak optical density shall be 0.50 or less during the test.
- 3) The average normalized optical density shall be 0.15 or less during the test.

Note: The above criteria do not include the contribution of the propane ignition burner.

**RESULTS:**

The summary of test results is tabulated in Table 2 below. Graphs of heat release rate, smoke release rate, and normalized optical density are given in Appendix B. Pre and post-test photographs for each test are given in Appendix A. In addition, a videotape of each test was made and provided.

Table 2 - Test Results

<b>Sample - Test Ref.</b>	<b>Peak Heat Release Rate (kW)</b>	<b>Peak Normalized Optical Density</b>	<b>Average Normalized Optical Density</b>	<b>Peak Smoke Release Rate (m<sup>2</sup>/s)</b>	<b>Total Smoke Released (m<sup>2</sup>)</b>
A-1	18	0.87	0.06	0.36	28.1
B-1	11	0.39	0.03	0.16	16.6
B-2	13	0.51*	0.03	0.21	17.2
B-3	17	0.41	0.02	0.17	12.3
C-1	14	0.57	0.05	0.24	23.0

\* Specimen B-2 exceeded the maximum allowable 0.50 peak normalized optical density with a single data point by 0.009. Considering the relative uncertainty of smoke measurement with large scale fire tests, and since the other two B samples passed this criteria with good margin, it is reasonable to suggest that sample B should be considered compliant with the intent of this criteria.

Please note that the values in Table 2 above as well as the graphs in Appendix B omit the heat and smoke contribution from the propane ignition burner.

**COMPLETION OF INVESTIGATION**

This completes UL 2043 evaluation portion of this project. Other work on this project is continuing.

If you have any questions, please do not hesitate to contact the undersigned.

Very truly yours

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## APPENDIX A

### TEST NOTES:

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#### TEST A-1

03021005

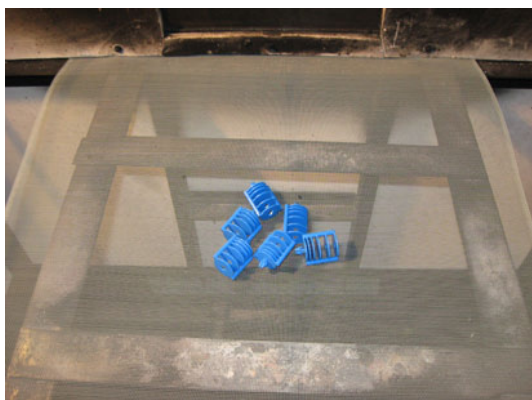
**Sample Description:** 766PMD PLASTIC FAR SIDE SUPPORTS - 6 Supports

**Test Notes:** The sample was positioned on fine wire mesh and situated above the center of the test burner.

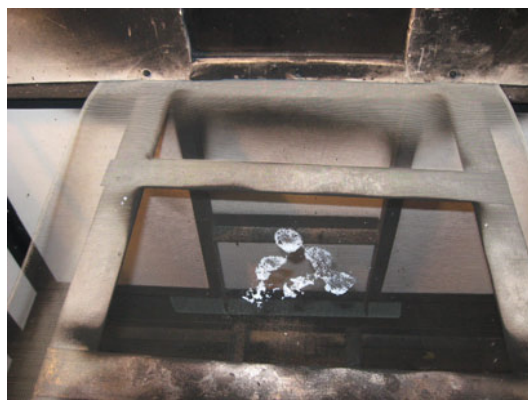
**Post Test Observations:** The sample was not still burning with no smoke at the conclusion of the test.

#### **Photos:**

**Pre-Test**



**Post-Test**



**TEST B-1**

03021006

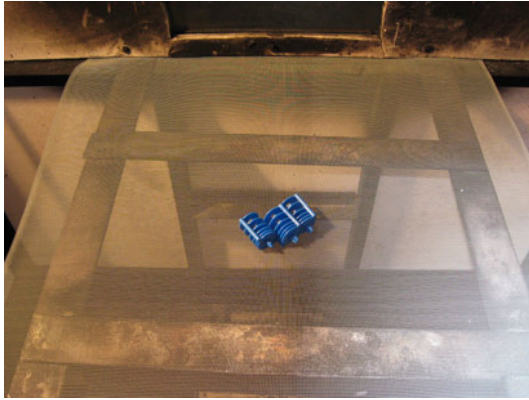
**Sample Description:** 766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports

**Test Notes:** The sample was positioned on fine wire mesh and situated above the center of the test burner.

**Post Test Observations:** The sample was not still burning with no smoke at the conclusion of the test.

**Photos:**

**Pre-Test**



**Post-Test**



**TEST B-2**

03021008

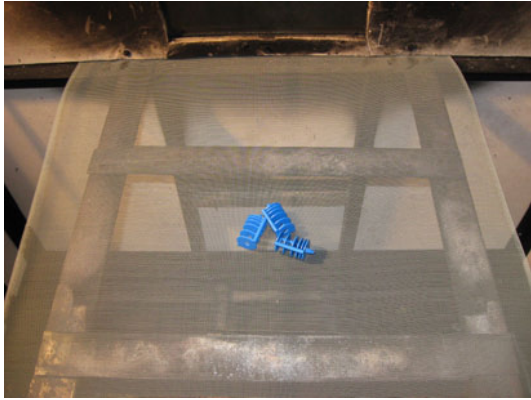
**Sample Description:** 766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports

**Test Notes:** The sample was positioned on fine wire mesh and situated above the center of the test burner.

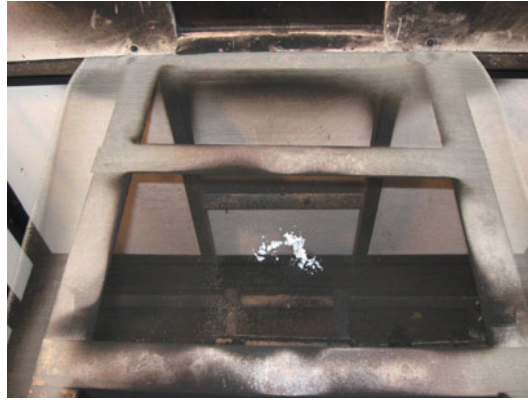
**Post Test Observations:** The sample was not still burning with no smoke at the conclusion of the test.

**Photos:**

**Pre-Test**



**Post-Test**



**TEST B-3**

03021009

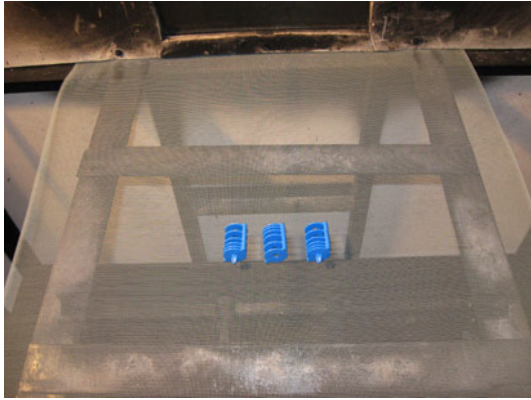
**Sample Description:** 766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports

**Test Notes:** The sample was positioned on fine wire mesh and situated above the center of the test burner.

**Post Test Observations:** The sample was not still burning with no smoke at the conclusion of the test.

**Photos:**

**Pre-Test**



**Post-Test**



**TEST C-1**

03021007

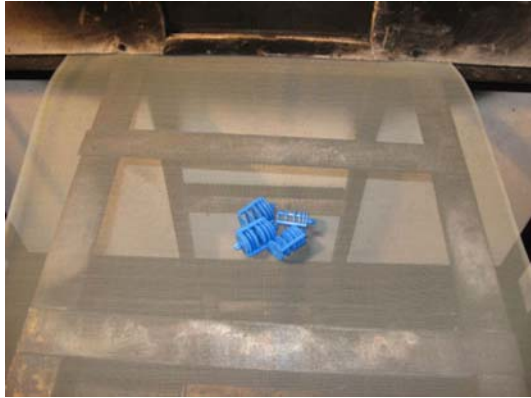
**Sample Description:** 766PMD PLASTIC FAR SIDE SUPPORTS - 4 Supports

**Test Notes:** The sample was positioned on fine wire mesh and situated above the center of the test burner.

**Post Test Observations:** The sample was not still burning with no smoke at the conclusion of the test.

**Photos:**

**Pre-Test**



**Post-Test**



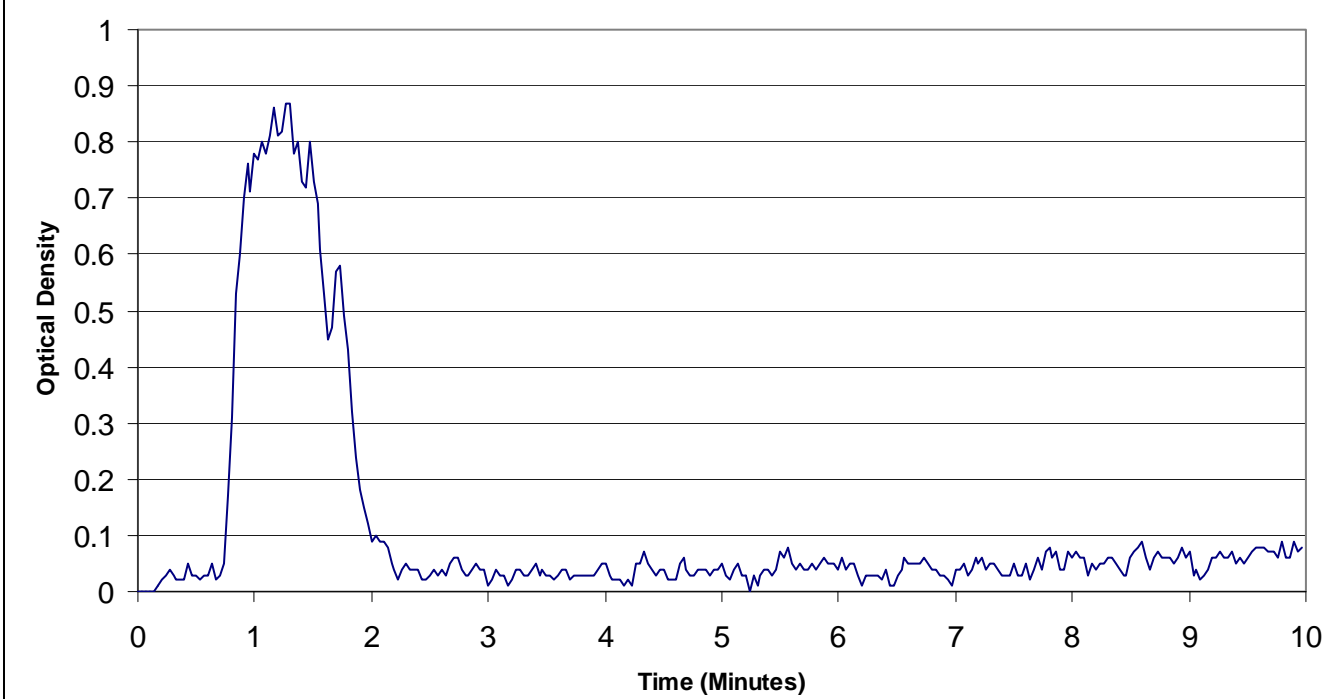


**APPENDIX B**

**GRAPHICAL DATA**

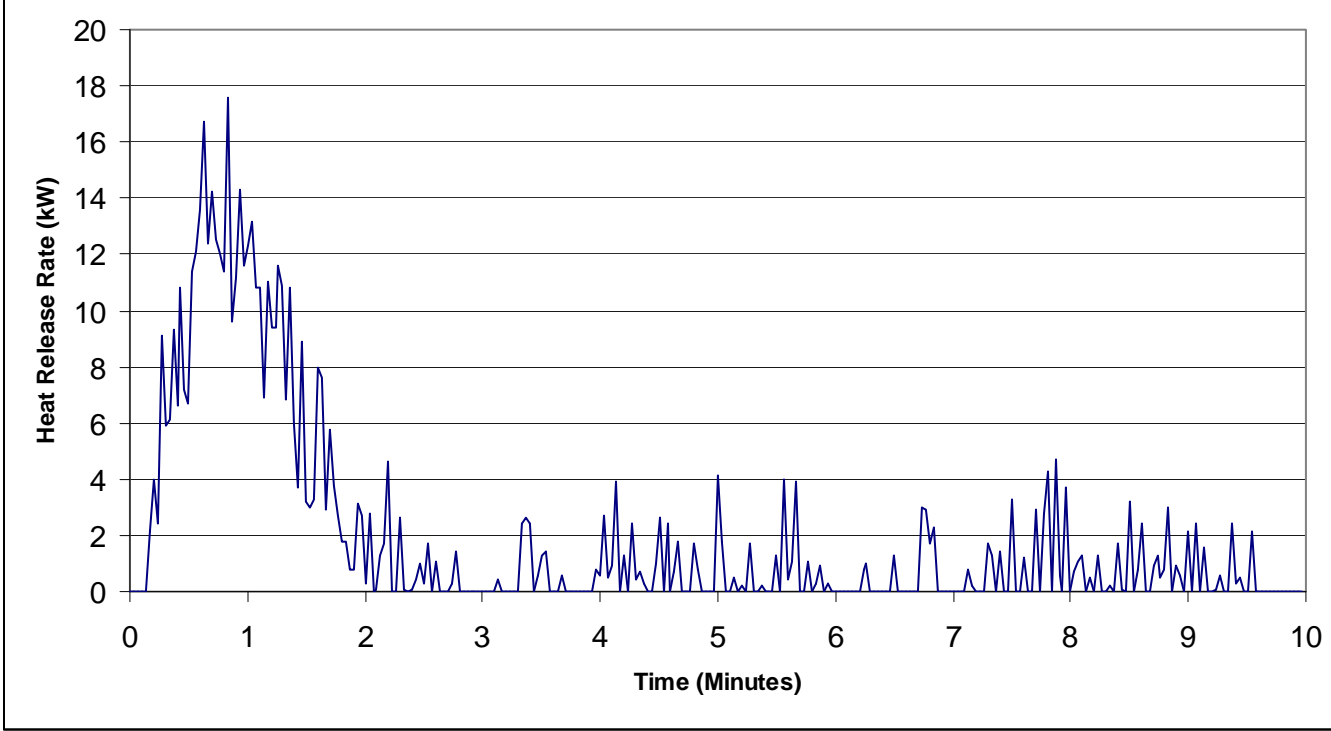
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**UL 2043 Test  
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 766PMD PLASTIC FAR SIDE SUPPORTS - 6 Supports**



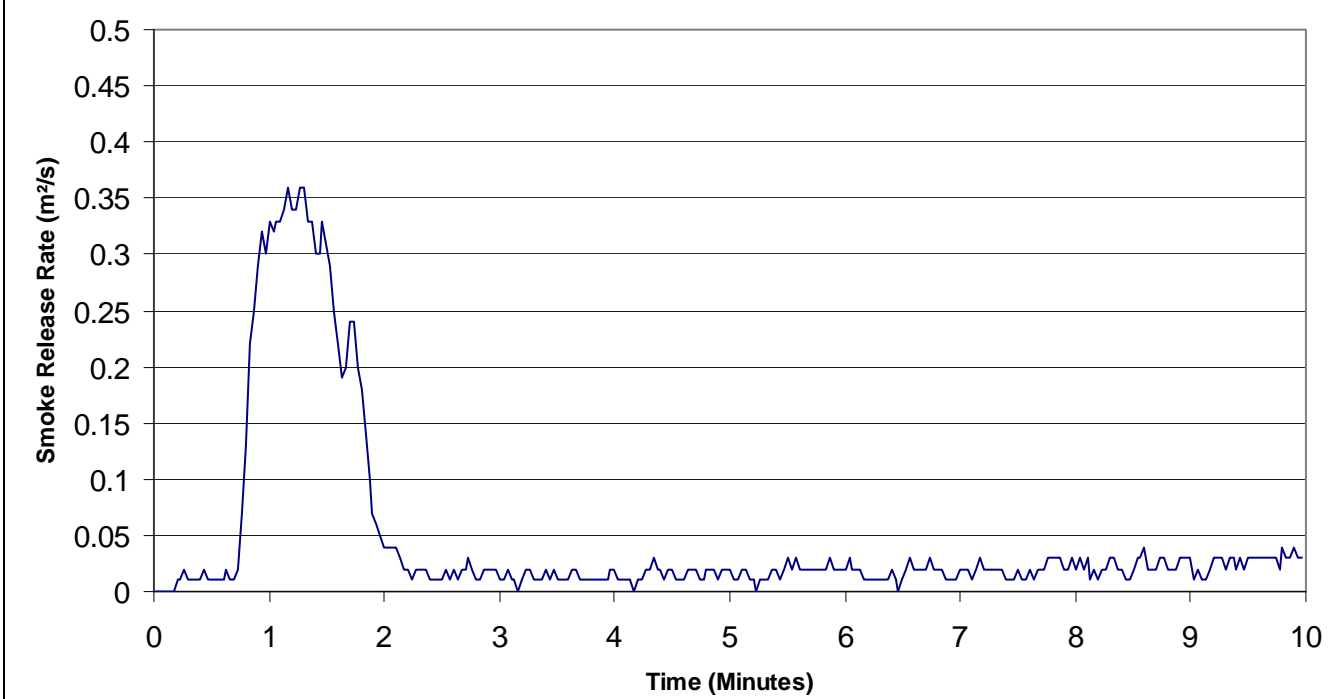
Test Number	Test Code	Description	Peak Normalized Optical Density	Average Normalized Optical Density
A-1	03021005	766PMD PLASTIC FAR SIDE SUPPORTS - 6 Supports	0.87	0.06

**UL 2043 Test**  
**ERICO INTERNATIONAL CORP**  
**766PMD PLASTIC FAR SIDE SUPPORTS - 6 Supports**



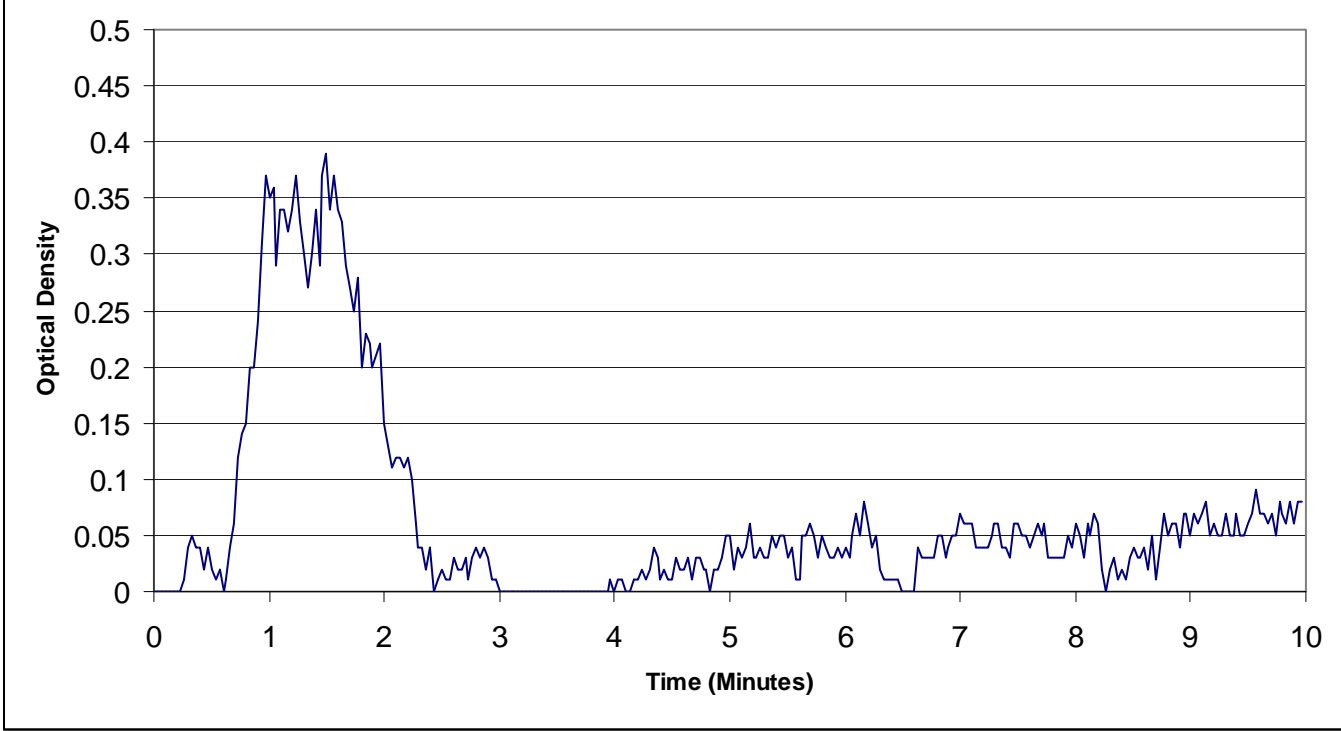
Test Number	Test Code	Description	Peak Heat Release Rate (kW)
A-1	03021005	766PMD PLASTIC FAR SIDE SUPPORTS - 6 Supports	18

**UL 2043 Test  
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 766PMD PLASTIC FAR SIDE SUPPORTS - 6 Supports**



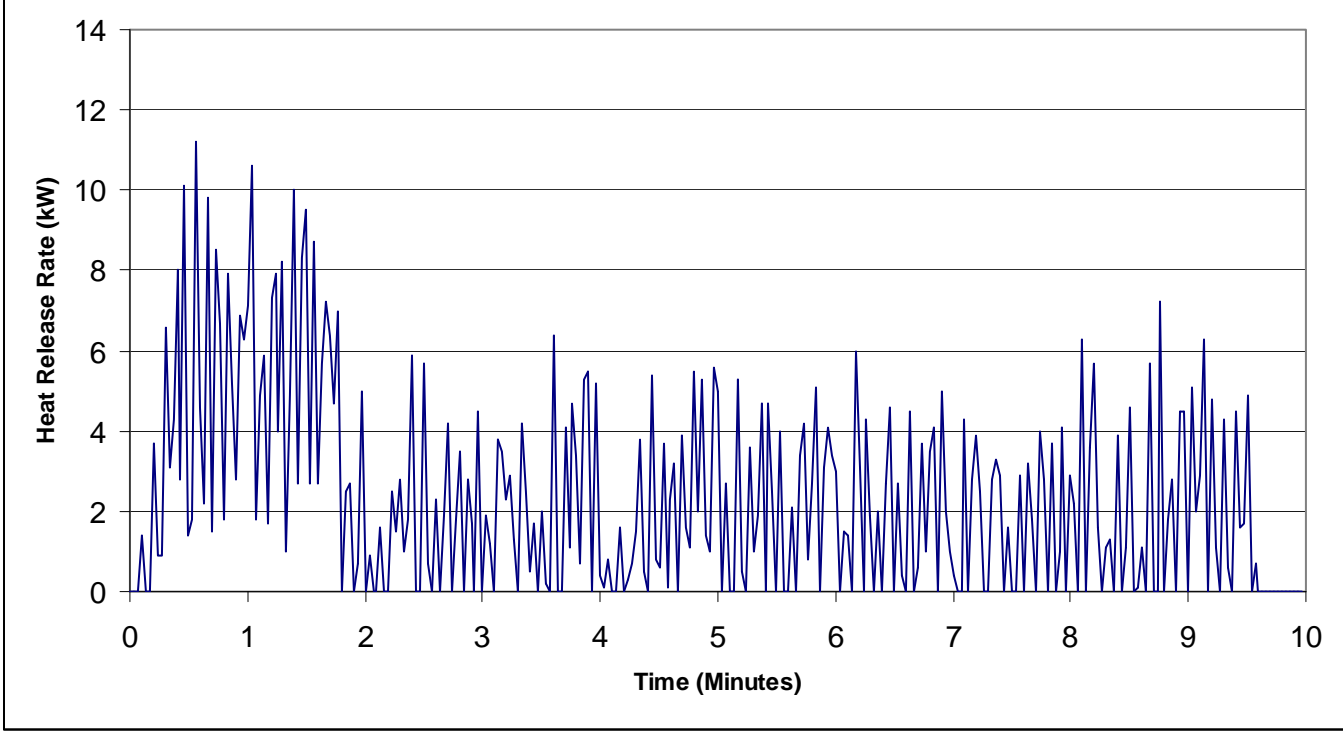
Test Number	Test Code	Description	Peak Smoke Release Rate (m²/s)	Total Smoke Released (m²)
A-1	03021005	766PMD PLASTIC FAR SIDE SUPPORTS - 6 Supports	0.36	28.1

**UL 2043 Test  
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 766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports**



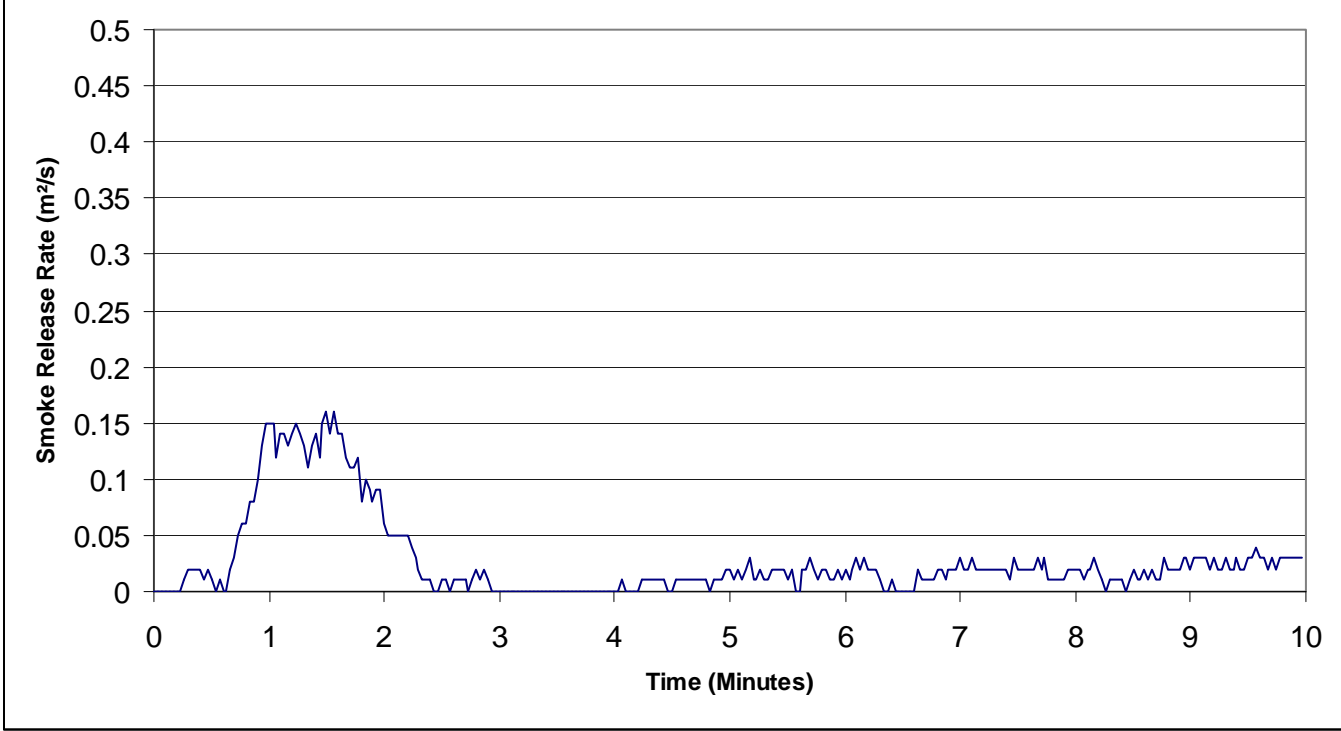
Test Number	Test Code	Description	Peak Normalized Optical Density	Average Normalized Optical Density
B-1	03021006	766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports	0.39	0.03

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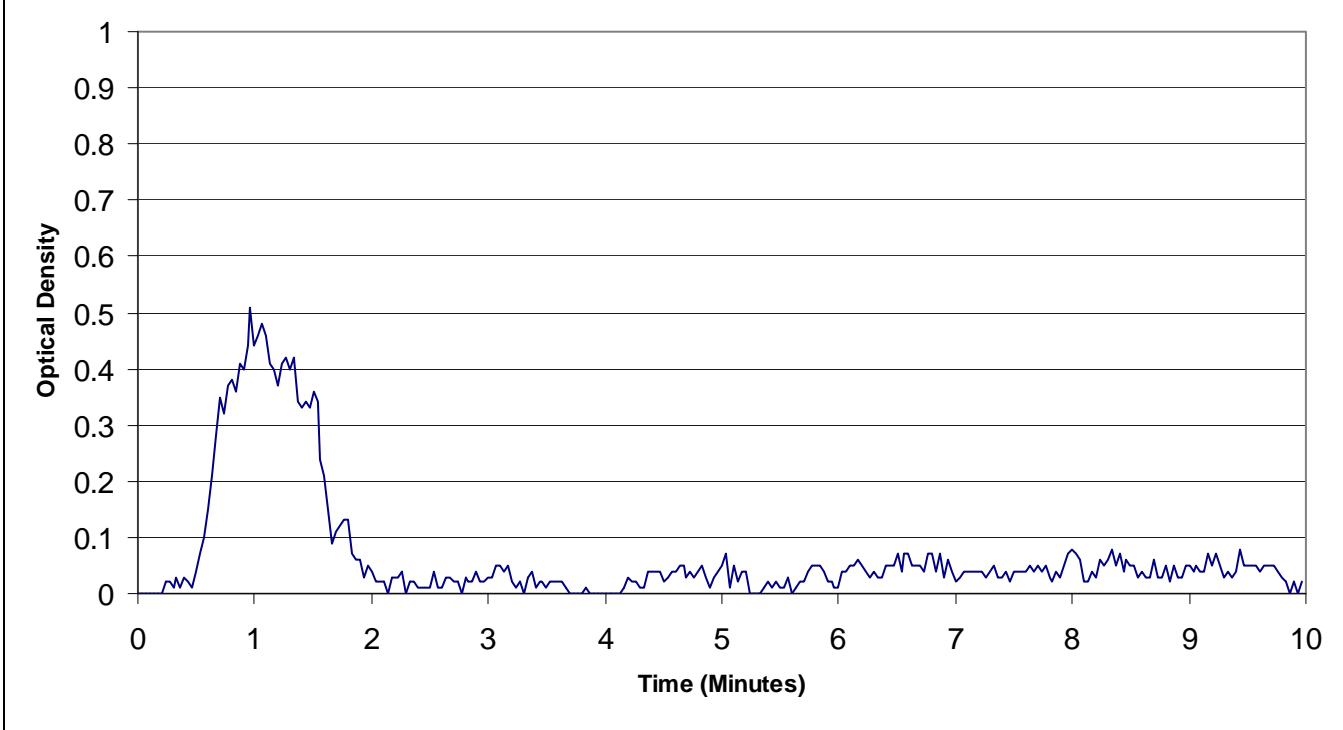
Test Number	Test Code	Description	Peak Heat Release Rate (kW)
B-1	03021006	766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports	11

**UL 2043 Test  
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Test Number	Test Code	Description	Peak Smoke Release Rate (m²/s)	Total Smoke Released (m²)
B-1	03021006	766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports	0.16	16.6

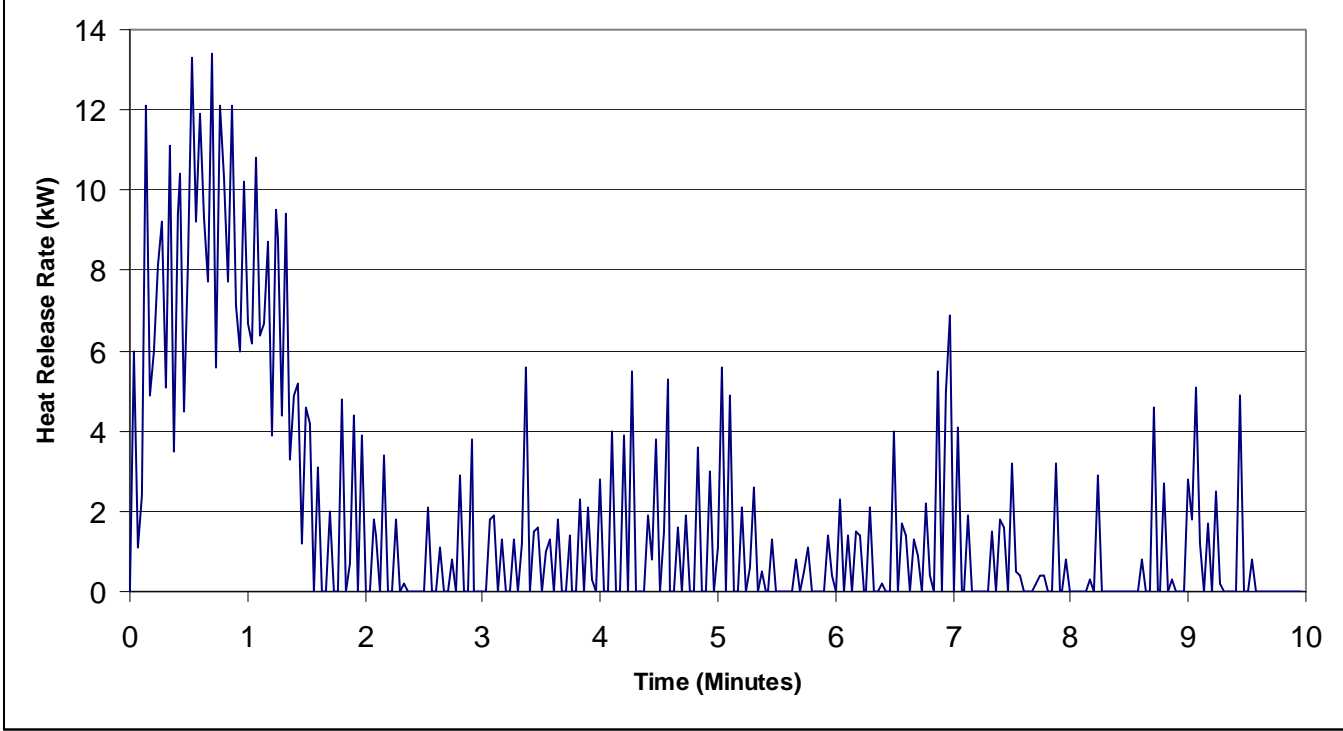
**UL 2043 Test  
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Test Number	Test Code	Description	Peak Normalized Optical Density	Average Normalized Optical Density
B-2	03021008	766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports	0.51	0.03

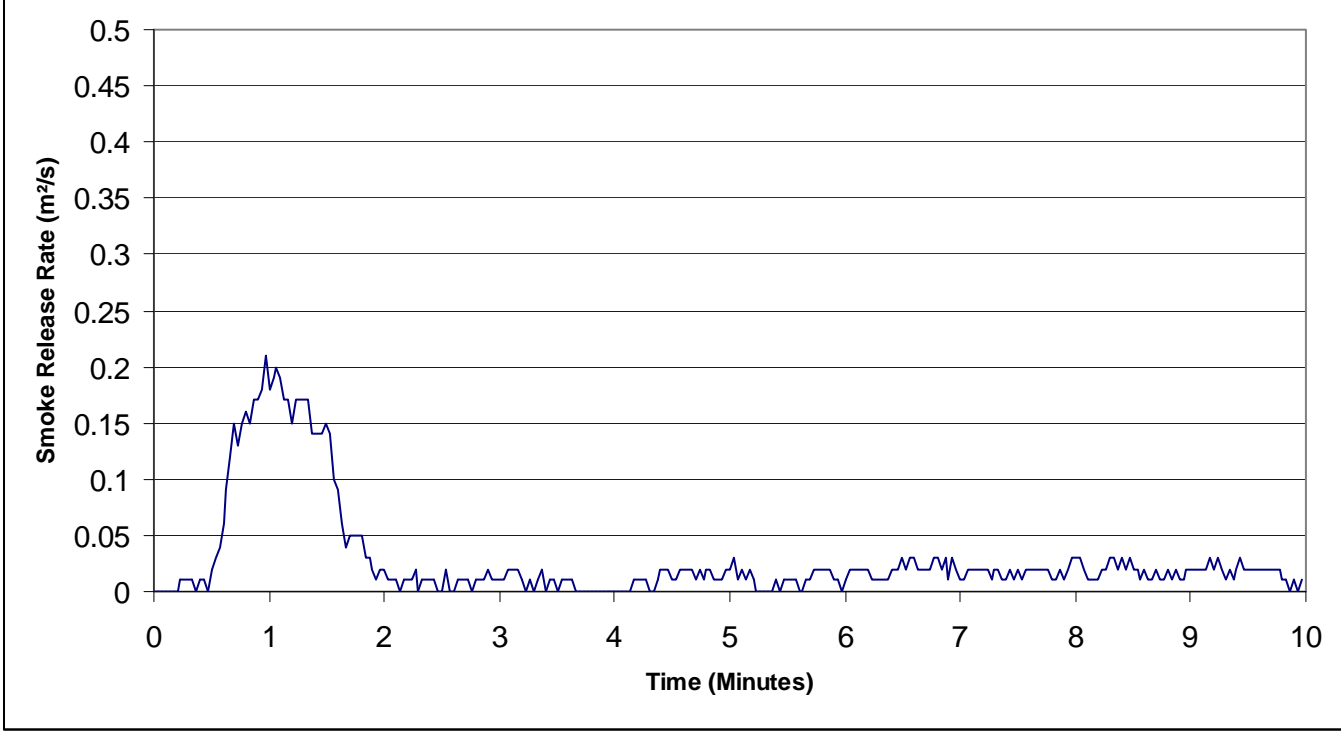


**UL 2043 Test  
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 766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports**



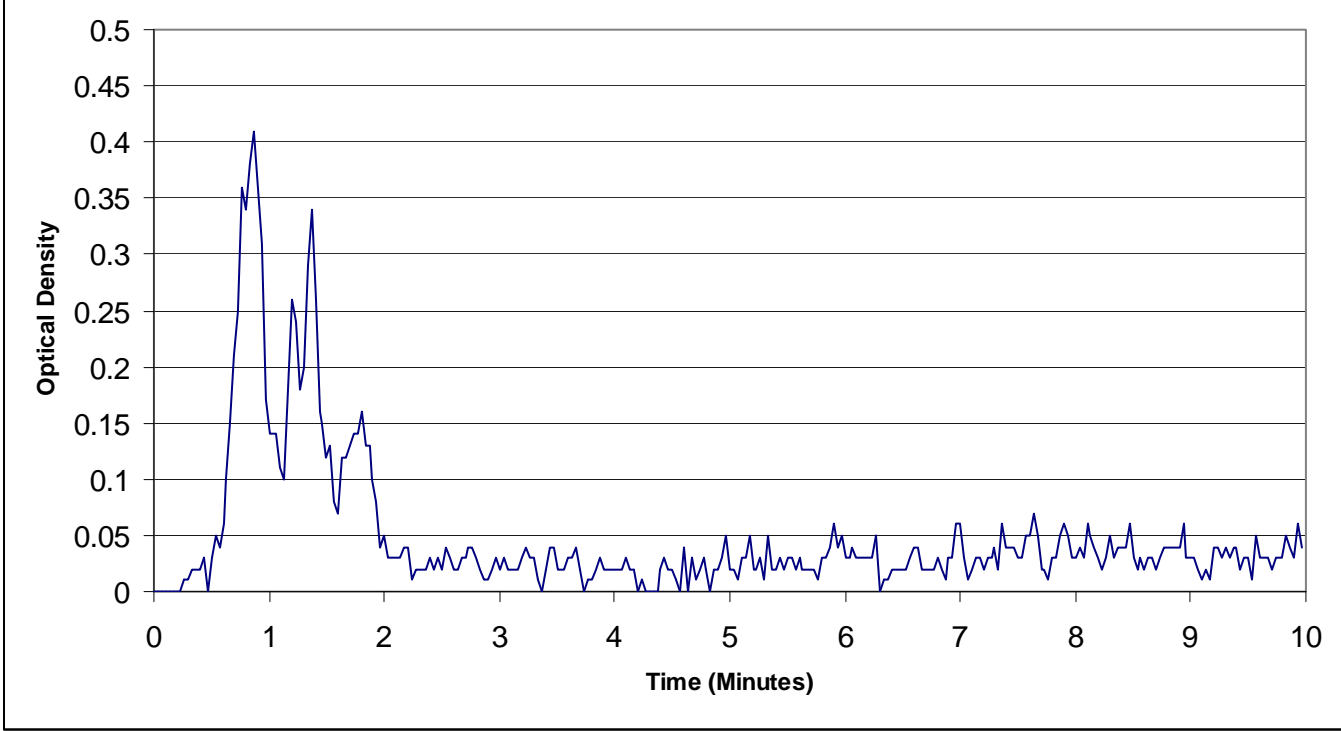
Test Number	Test Code	Description	Peak Heat Release Rate (kW)
B-2	03021008	766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports	13

**UL 2043 Test  
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 766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports**



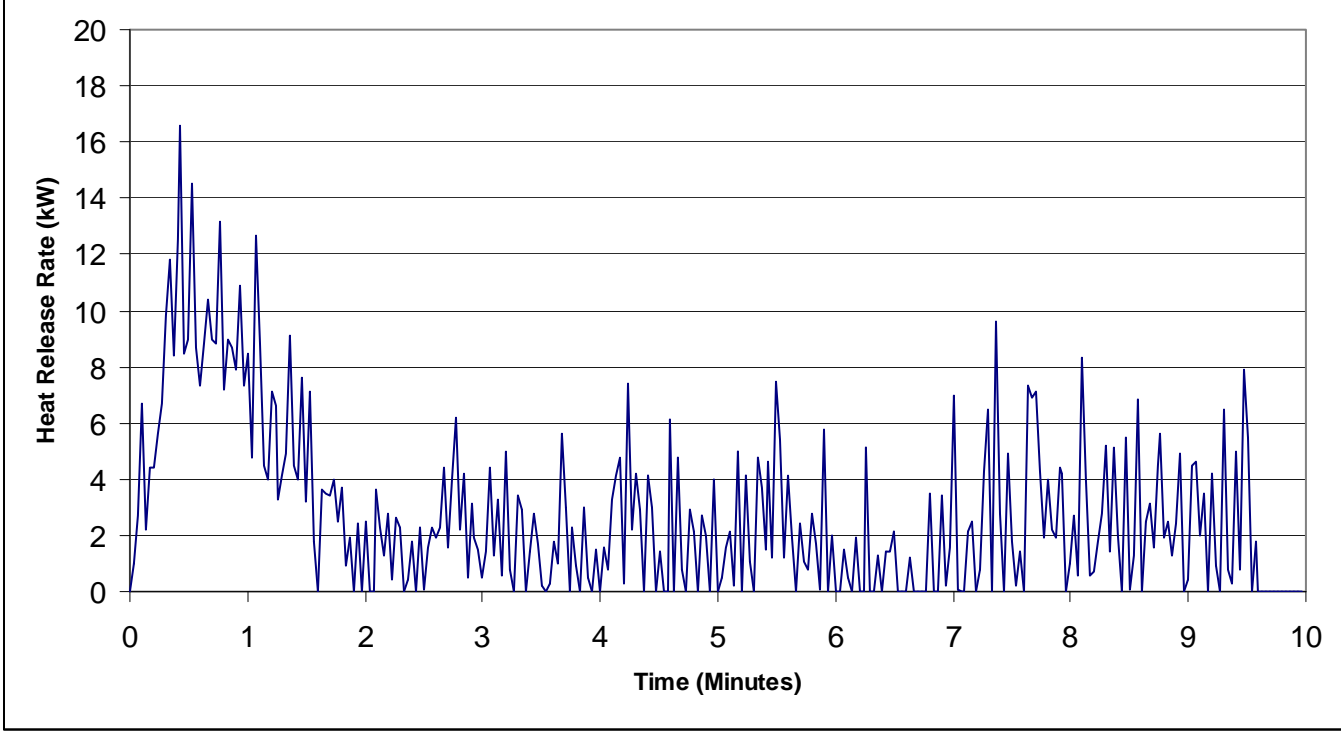
Test Number	Test Code	Description	Peak Smoke Release Rate (m²/s)	Total Smoke Released (m²)
B-2	03021008	766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports	0.21	17.2

**UL 2043 Test  
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 766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports**



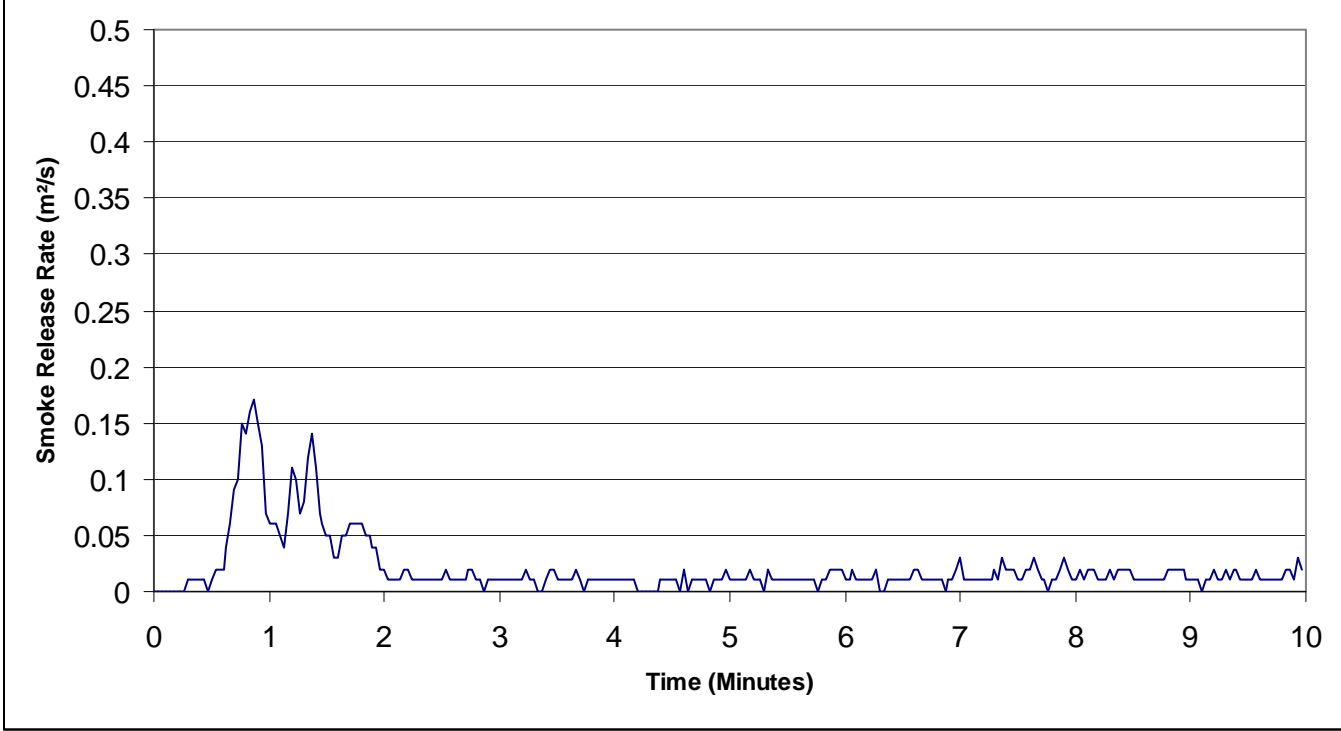
Test Number	Test Code	Description	Peak Normalized Optical Density	Average Normalized Optical Density
B-3	03021009	766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports	0.41	0.02

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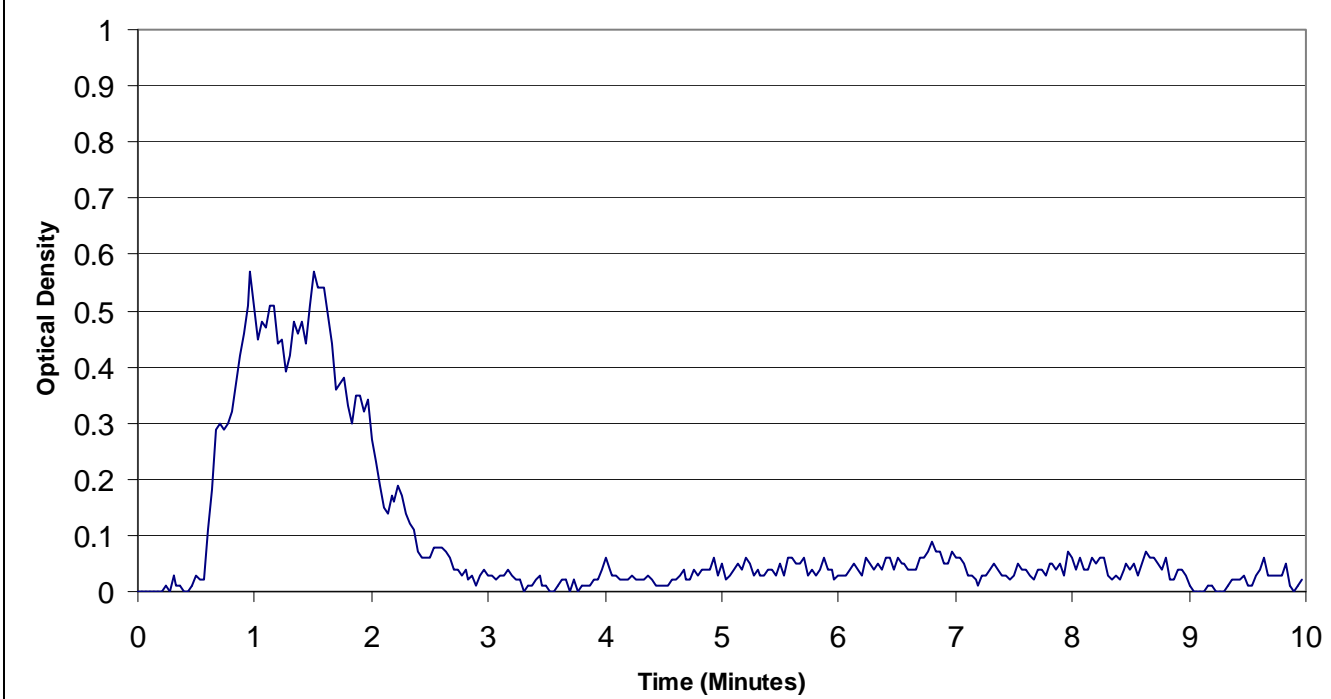
Test Number	Test Code	Description	Peak Heat Release Rate (kW)
B-3	03021009	766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports	17

**UL 2043 Test  
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 766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports**



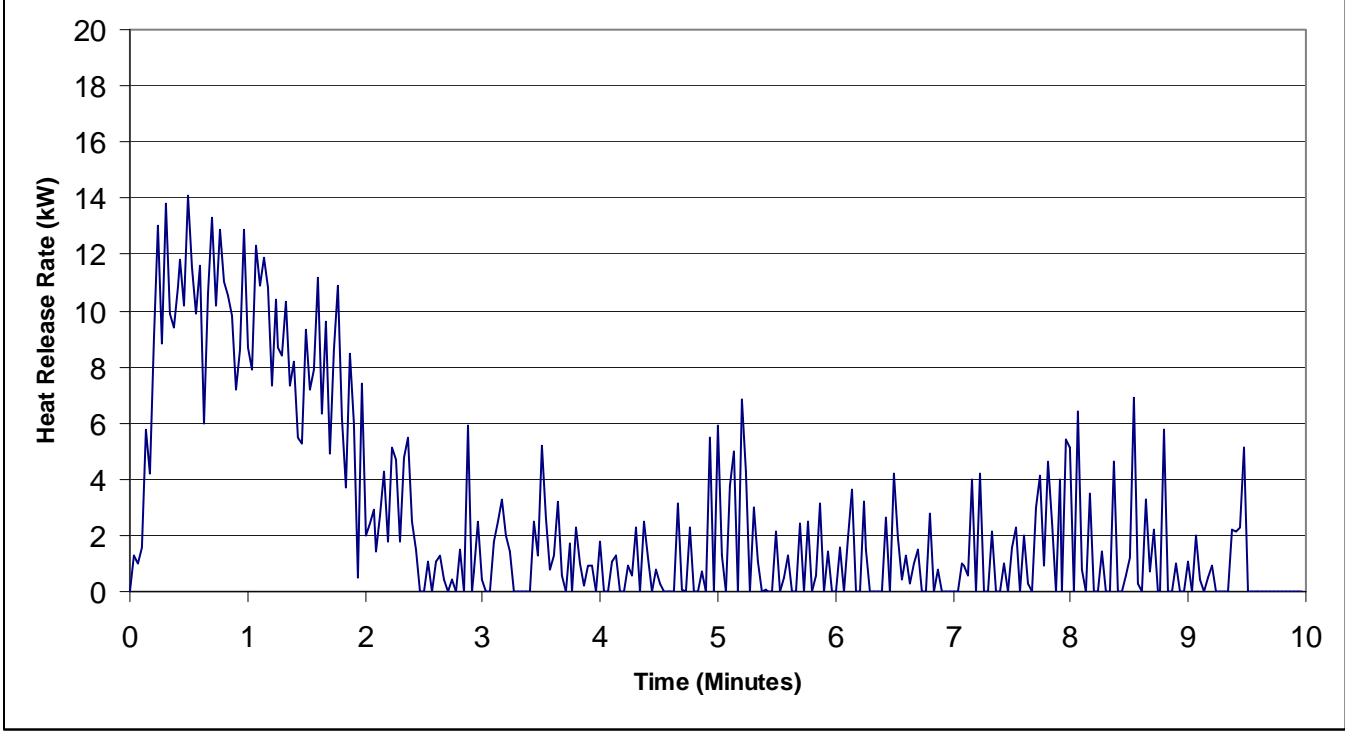
Test Number	Test Code	Description	Peak Smoke Release Rate (m²/s)	Total Smoke Released (m²)
B-3	03021009	766PMD PLASTIC FAR SIDE SUPPORTS - 3 Supports	0.17	12.3

**UL 2043 Test  
 ERICO INTERNATIONAL CORP  
 766PMD PLASTIC FAR SIDE SUPPORTS - 4 Supports**



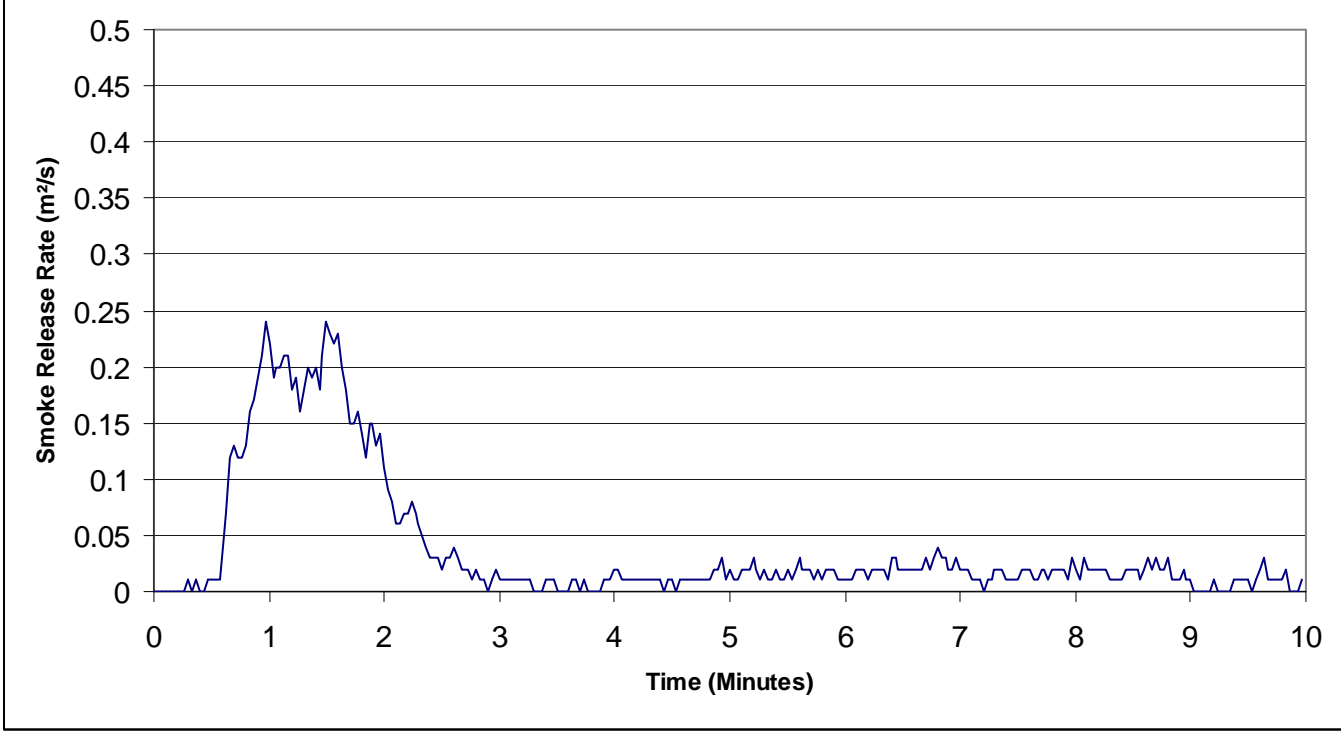
Test Number	Test Code	Description	Peak Normalized Optical Density	Average Normalized Optical Density
C-1	03021007	766PMD PLASTIC FAR SIDE SUPPORTS - 4 Supports	0.57	0.05

**UL 2043 Test  
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 766PMD PLASTIC FAR SIDE SUPPORTS - 4 Supports**



Test Number	Test Code	Description	Peak Heat Release Rate (kW)
C-1	03021007	766PMD PLASTIC FAR SIDE SUPPORTS - 4 Supports	14

**UL 2043 Test  
 ERICO INTERNATIONAL CORP  
 766PMD PLASTIC FAR SIDE SUPPORTS - 4 Supports**



Test Number	Test Code	Description	Peak Smoke Release Rate (m²/s)	Total Smoke Released (m²)
C-1	03021007	766PMD PLASTIC FAR SIDE SUPPORTS - 4 Supports	0.24	23.0