August 07, 2020

DWYER INSTRUMENTS INC
102 Indiana Highway 212
Michigan City IN 46360

Our Reference: File SV31316 / Project 4789583626

Subject: UL Standard 2043, Fourth Edition, dated October 2, 2013, including revisions through July 13, 2018 - Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces.

Dear Bob Hanna:

This Report summarizes the data developed on the samples you provided which were subjected to the flame test described in UL Standard 2043, Fourth Edition, dated October 2, 2013, including revisions through July 13, 2018. Testing was conducted at UL LLC (UL) on August 07, 2020 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.

It is important to understand that authorities having jurisdiction may require that products such as covered by this report, intended for installation in a building plenum, be listed and labeled for such use in accordance with UL2043, based on current model building and electrical codes. Accordingly, you may wish to consider undergoing a Listing program with UL on your product(s) to address this possible need.

The Classification Marking or Listing Mark of UL on the product is the only method provided by UL to identify products that have been produced under its Classification or Listing and Follow-Up Service.

In no event shall UL be responsible to anyone for whatever use or nonuse is made of the information contained in this Report and in no event shall UL, its employees, or its agents incur any obligation or liability for damages, including, but not limited to, consequential damages, arising out of or in connection with the use, or inability to use, the information contained in this Report.

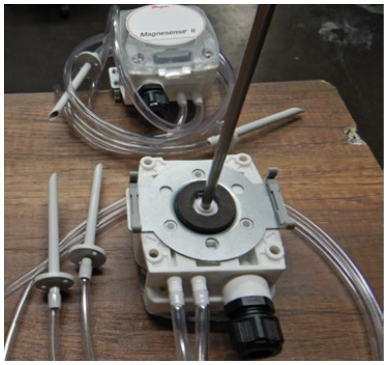
T E S T R E C O R D

SAMPLES:

The product evaluated are described in Table 1. UL 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

Sample Reference	Description
A	Magnesenese MSX Pro (Makrolon plastic material)



METHOD:

The tests were conducted in accordance with the test procedure described in UL Standard 2043, Fourth Edition, dated October 2, 2013, including revisions through July 13, 2018 - Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces. 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.

ACCEPTANCE CRITERIA:

Each product specimen shall have the following properties when tested as described herein:

a) The peak rate of heat release measured during each test shall be 100 kilowatts or less, HRRs.
b) The peak smoke release rate measured during each test shall be 0.21 m^2/s or less, SRRs.
c) The total smoke released (10 minute test duration) shall be 75 m^2 or less, TSR.

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, video records can be provided upon request.

Table 2 - Test Results

Sample - Test Ref.	Peak Heat Release Rate (kW)	Peak Normalized Optical Density	Average Normalized Optical Density	Peak Smoke Release Rate (m^2/s)	Total Smoke Released (m^2)
A-1	20	0.28	0.05	0.12	25.9
A-2	20	0.36	0.04	0.15	22.5
A-3	21	0.27	0.05	0.11	27.3

Note: Test Results documented in this report are representative for both models, Magnesenese MSX Pro and Magnesenese MSX.

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.

CONCLUSION:

The product, identified by the test sponsor as shown in Table 1 - Sample Description, in the form it was submitted to UL LLC, was evaluated in accordance with UL2043 standard and it was found compliant with standard's requirements.

COMPLETION OF INVESTIGATION

Since this completes the anticipated work, we have instructed our Accounting Department to terminate the investigation and invoice you for the charges incurred to date.

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

Very truly yours

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A P P E N D I X A

TEST NOTES:

File SV31316, Project 4789583626

TEST A-1

08072004

Sample Description: Magnesenese MSX Pro (Makrolon plastic material)

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

Post Test Observations: The sample was still burning with light smoke at the conclusion of the test.

Photos:

Pre-Test

Post-Test

TEST A-2

08072005

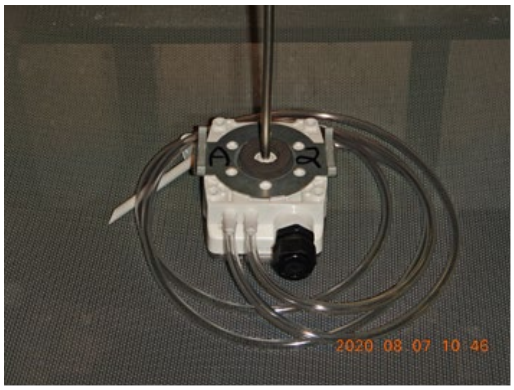
Sample Description: Magnesenese MSX Pro (Makrolon plastic material)

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

Post Test Observations: The sample was still burning with light smoke at the conclusion of the test.

Photos:

Pre-Test



Post-Test

TEST A-3

08072006

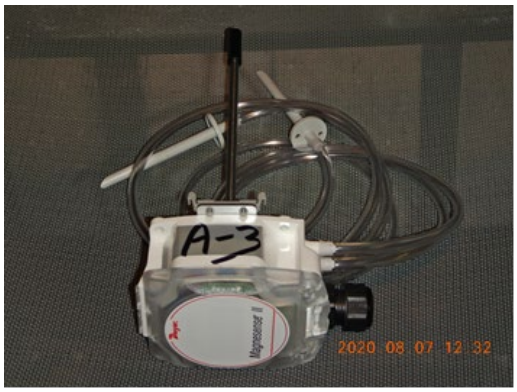
Sample Description: Magnesenese MSX Pro (Makrolon plastic material)

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

Post Test Observations: The sample was still burning with light smoke at the conclusion of the test.

Photos:

Pre-Test

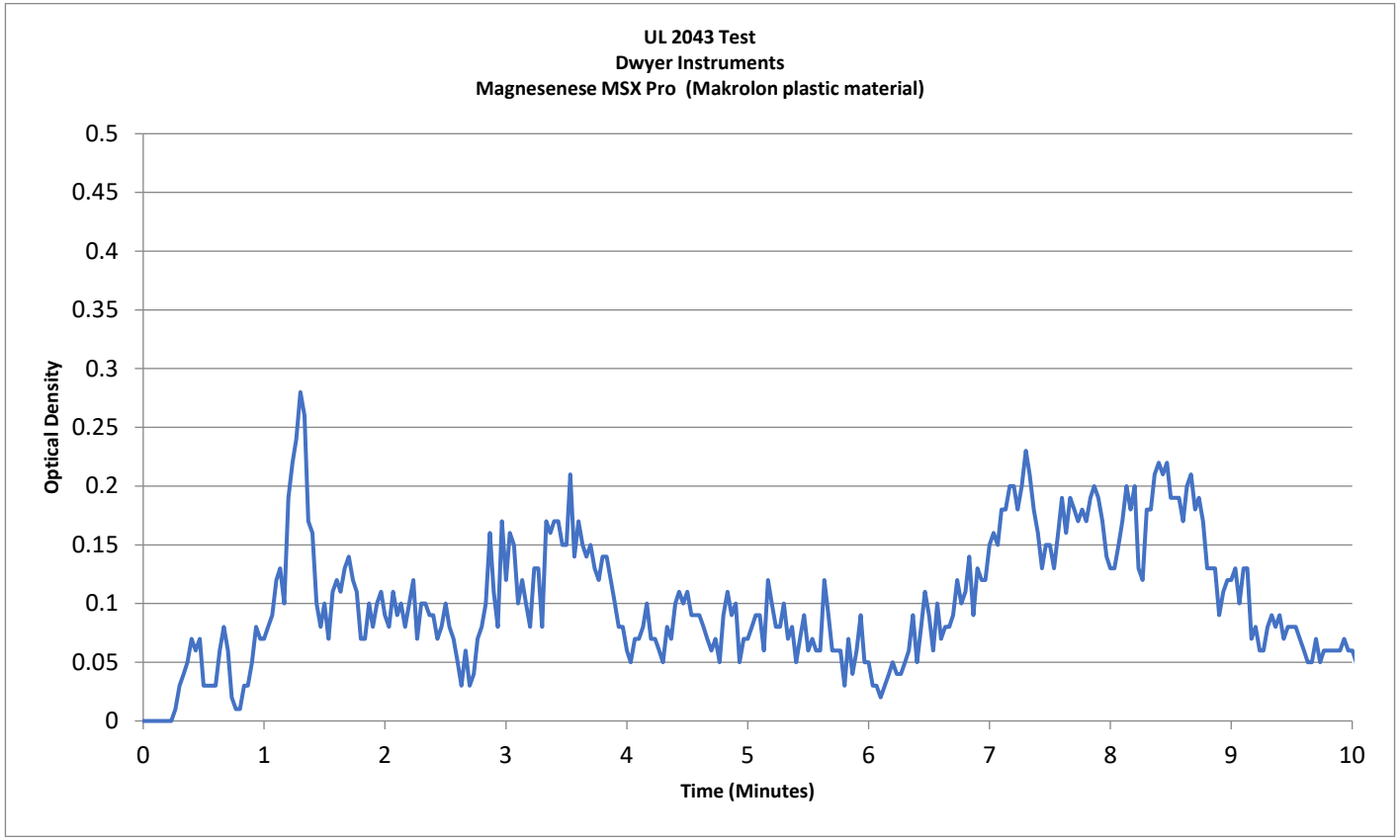


Post-Test

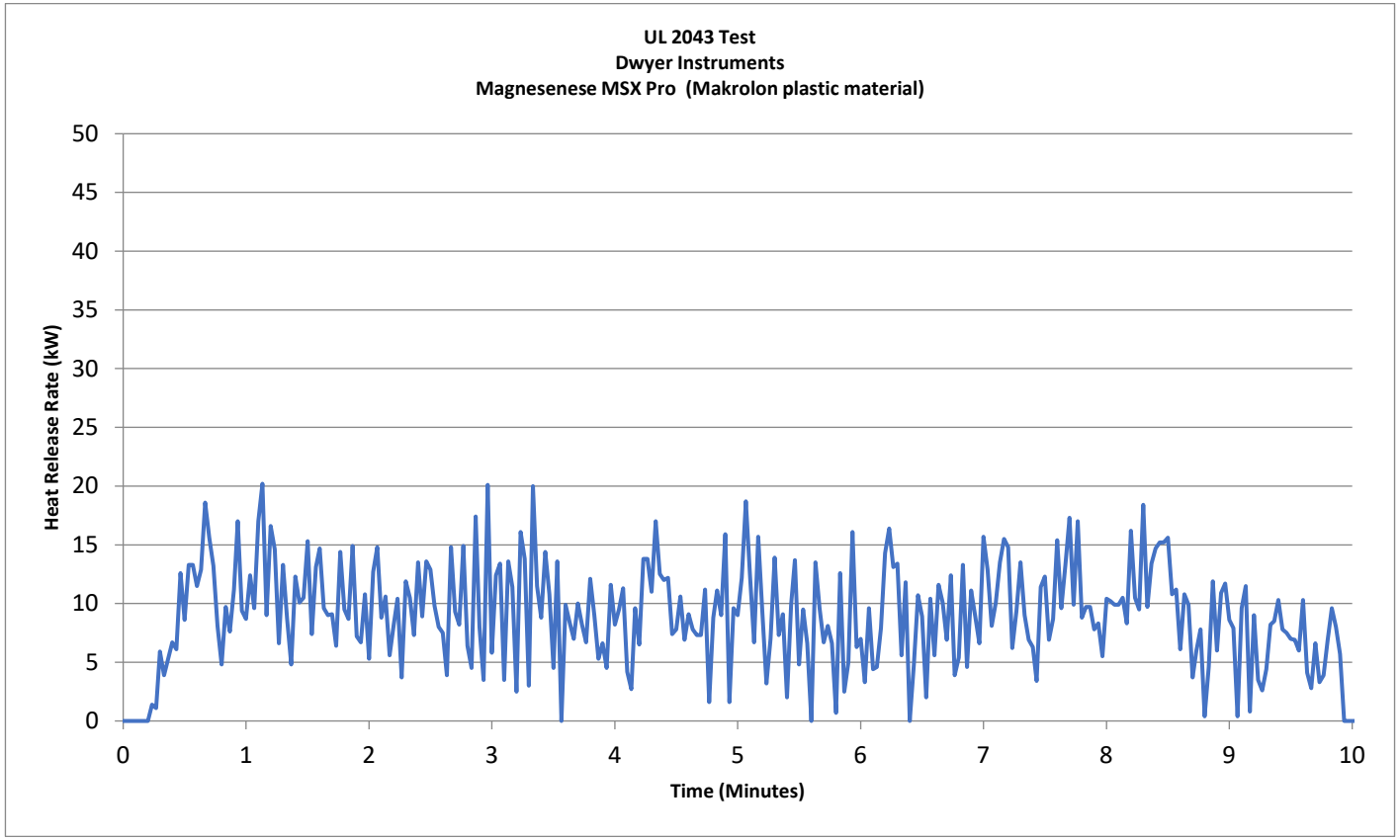
A P P E N D I X B

GRAPHICAL DATA

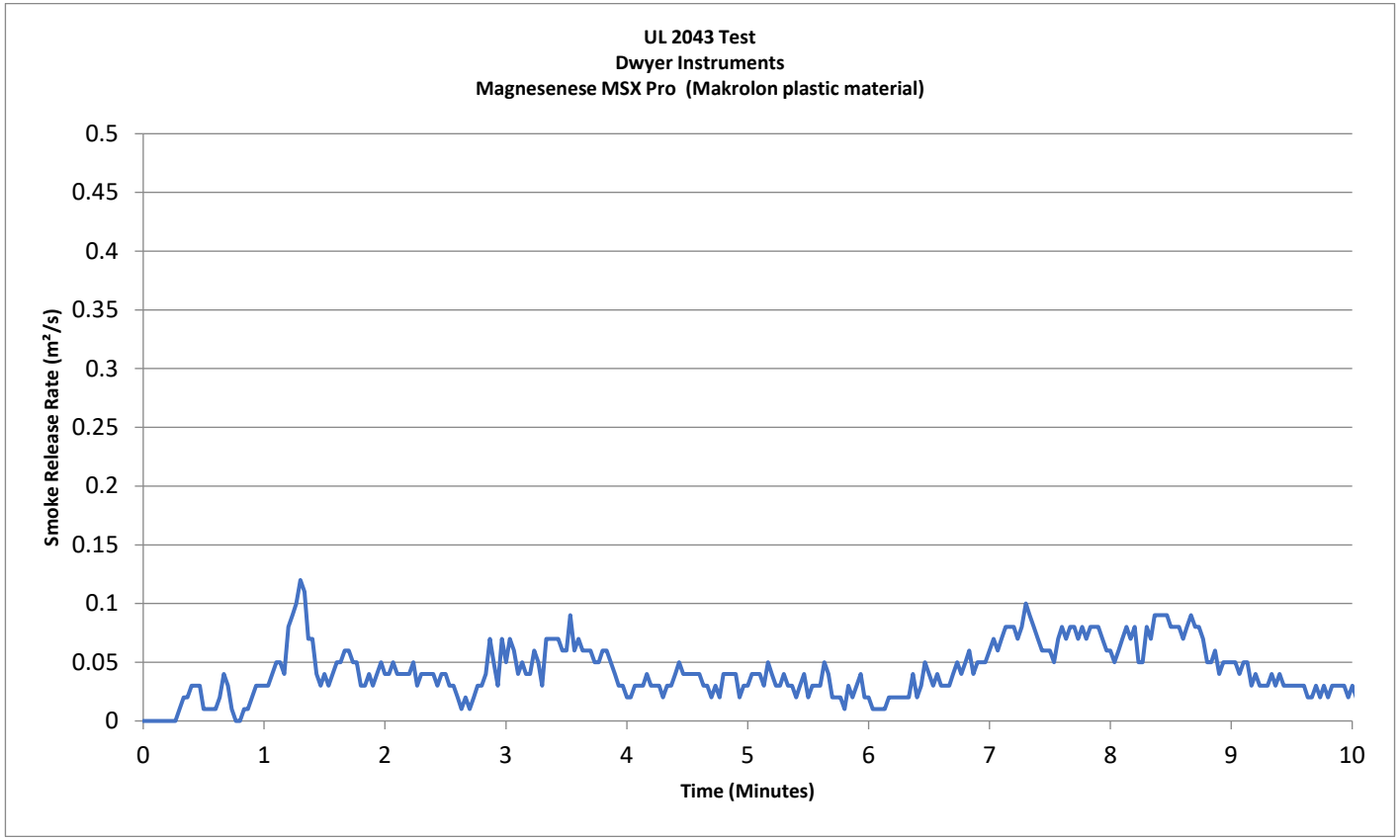
File SV31316, Project 4789583626



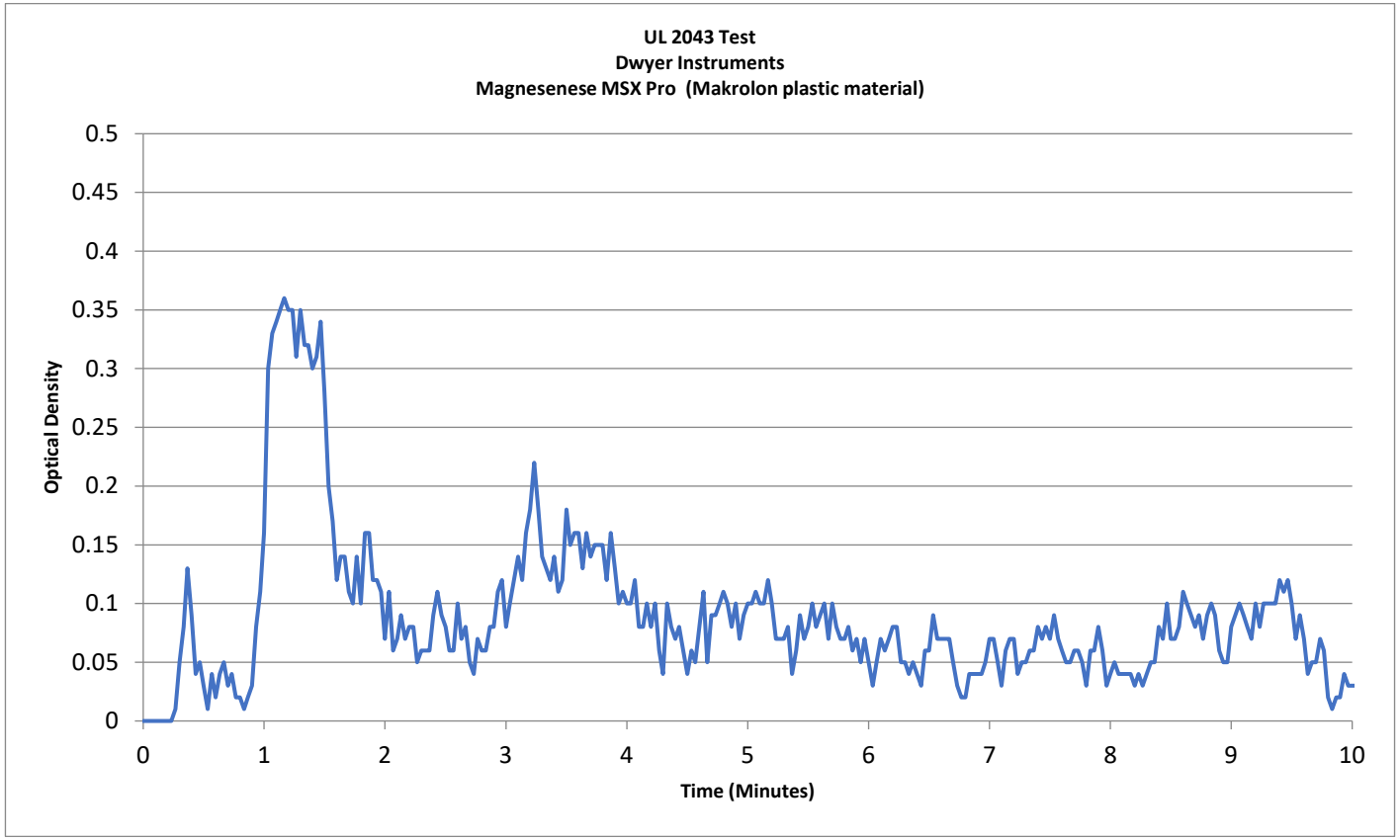
Test Number	Test Code	Description	Peak Normalized Optical Density	Average Normalized Optical Density
A-1	08072004	Magnesenese MSX Pro (Makrolon plastic material)	0.28	0.05



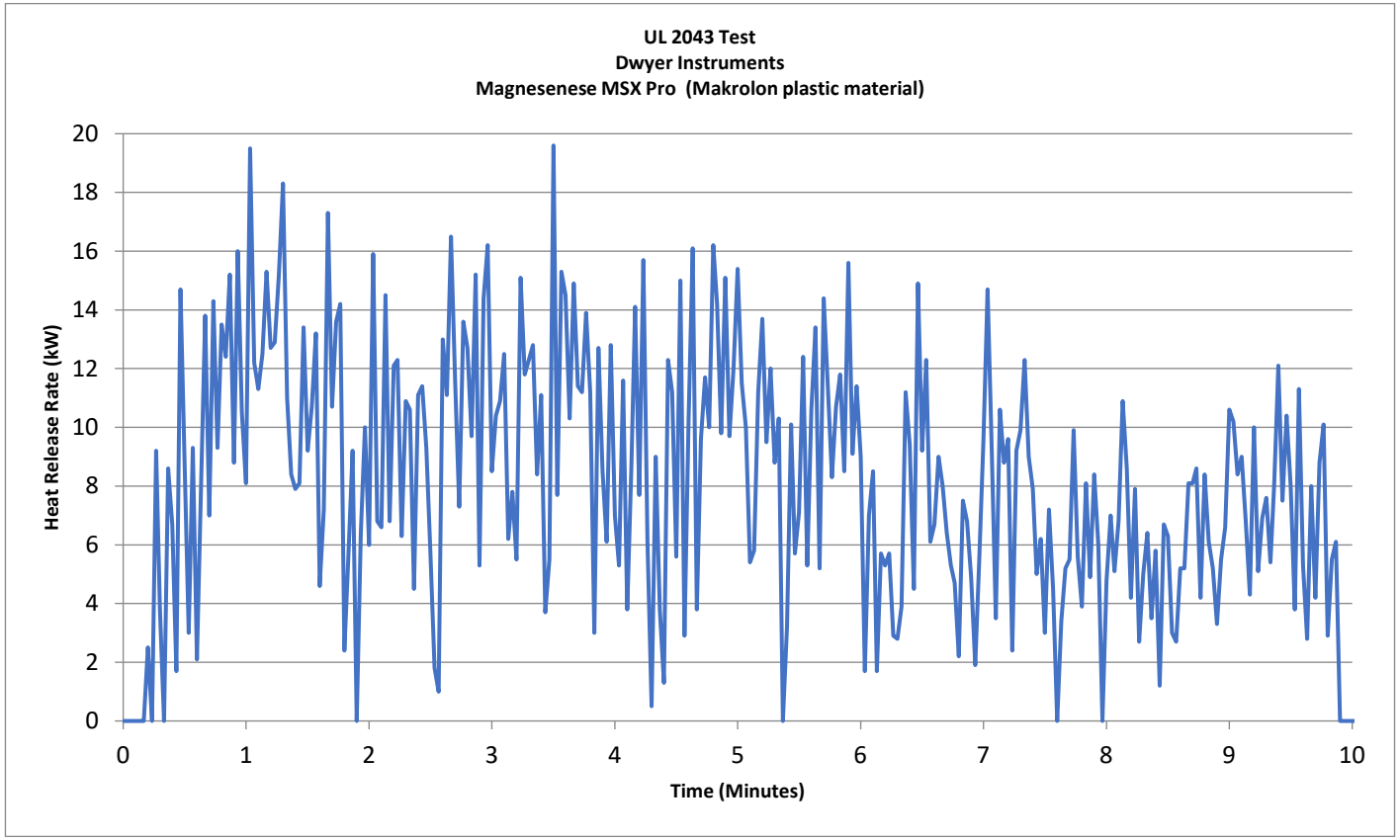
Test Number	Test Code	Description	Peak Heat Release Rate (kW)
A-1	08072004	Magnesenese MSX Pro (Makrolon plastic material)	20



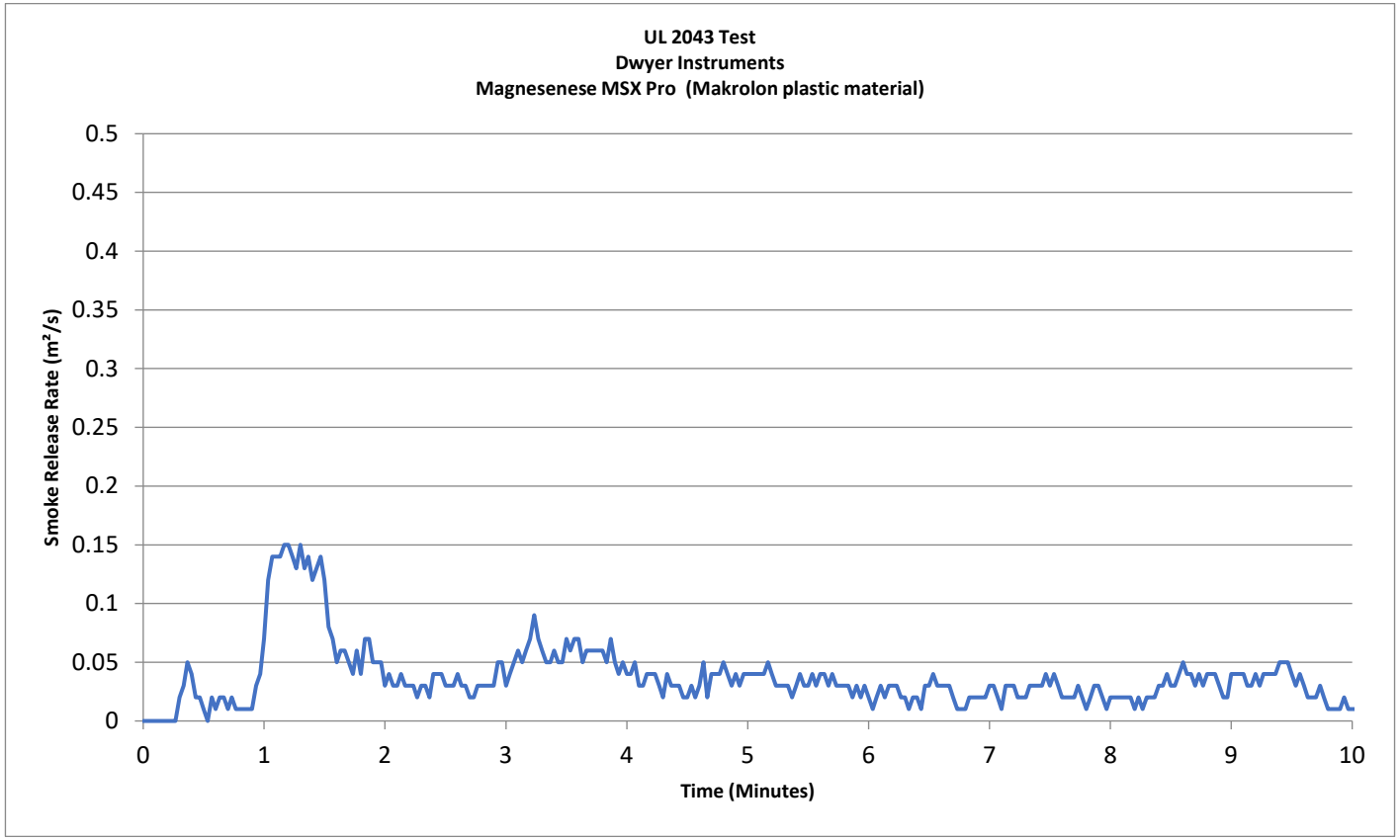
Test Number	Test Code	Description	Peak Smoke Release Rate (m^2/s)	Total Smoke Released (m^2)
A-1	08072004	Magnesenese MSX Pro (Makrolon plastic material)	0.12	25.9



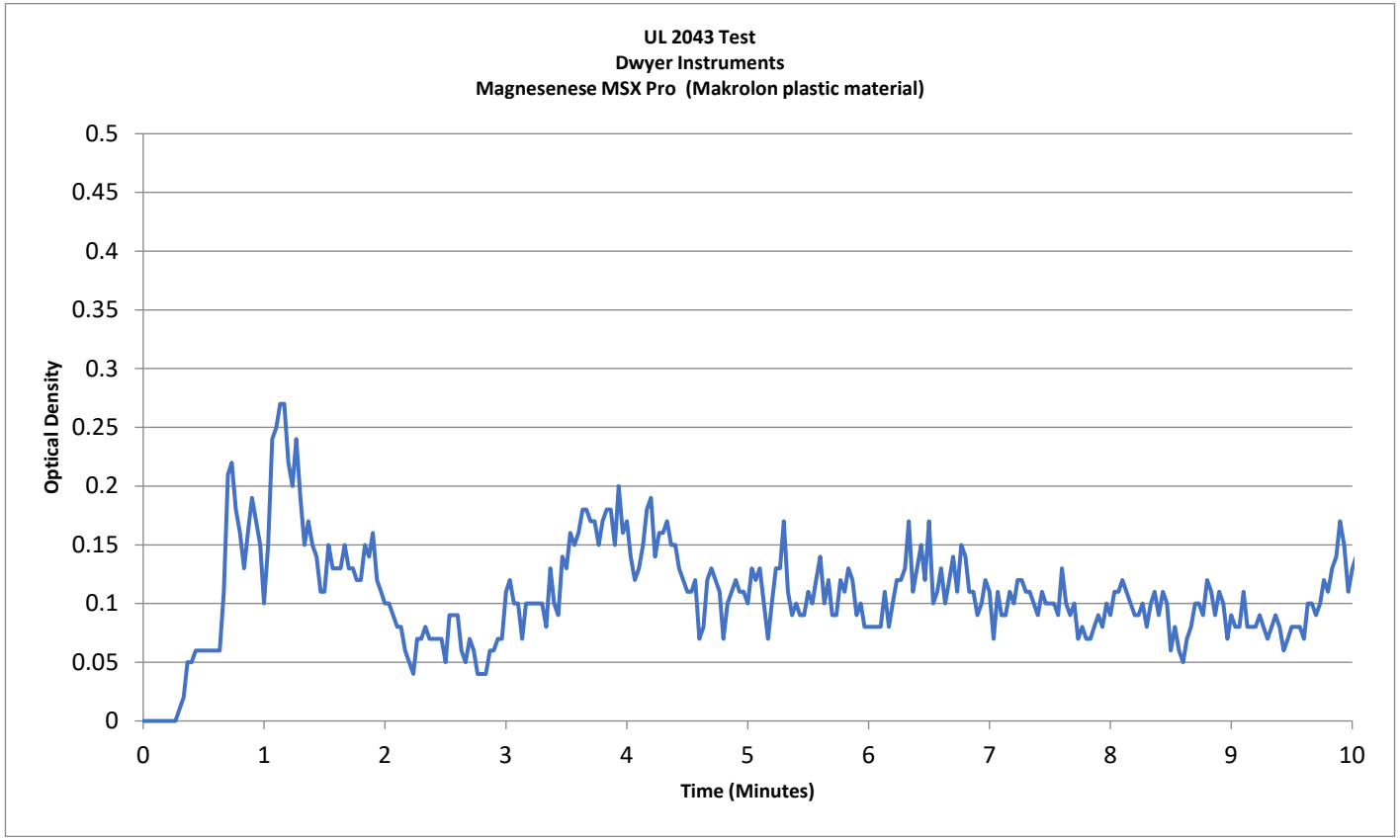
Test Number	Test Code	Description	Peak Normalized Optical Density	Average Normalized Optical Density
A-2	08072005	Magnesenese MSX Pro (Makrolon plastic material)	0.36	0.04



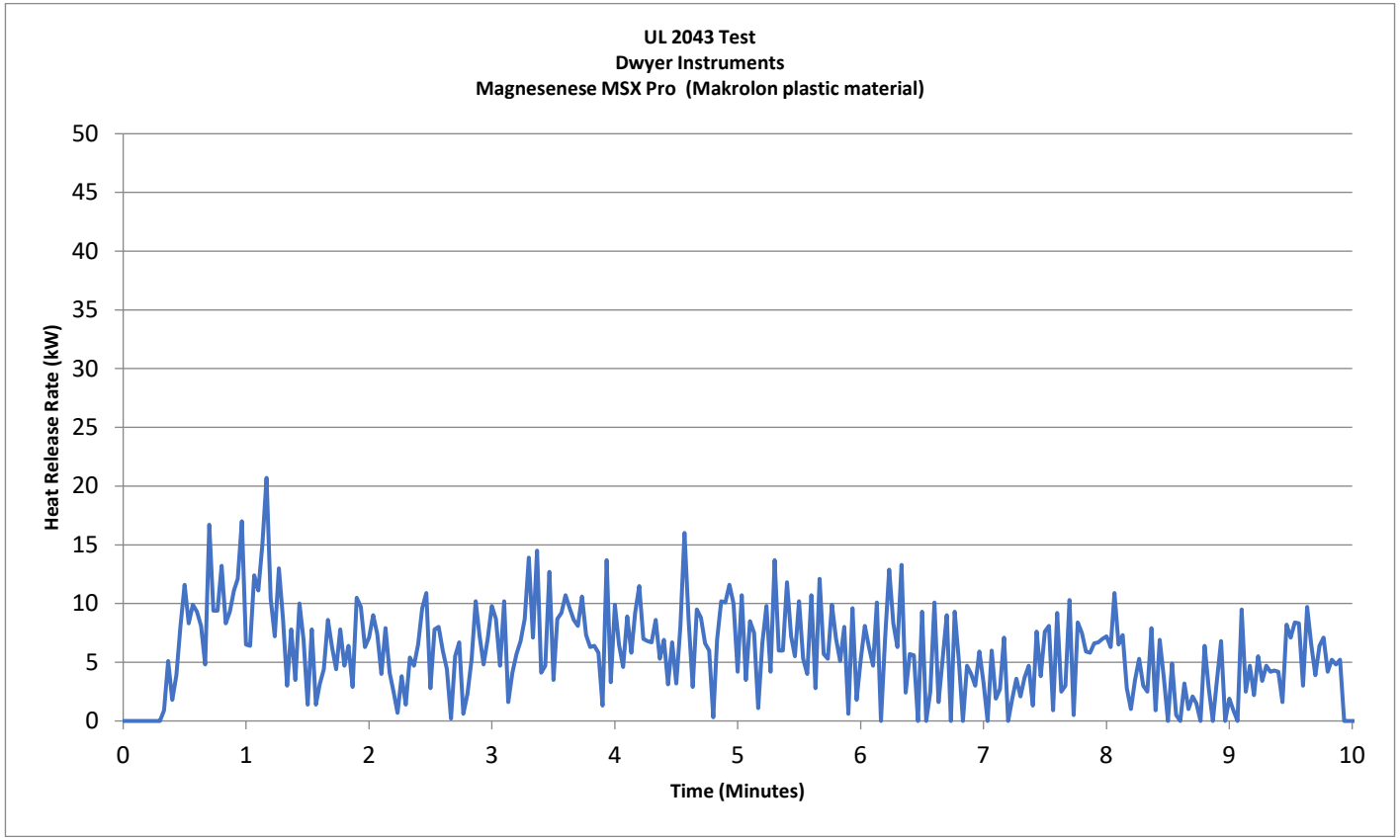
Test Number	Test Code	Description	Peak Heat Release Rate (kW)
A-2	08072005	Magnesenese MSX Pro (Makrolon plastic material)	20



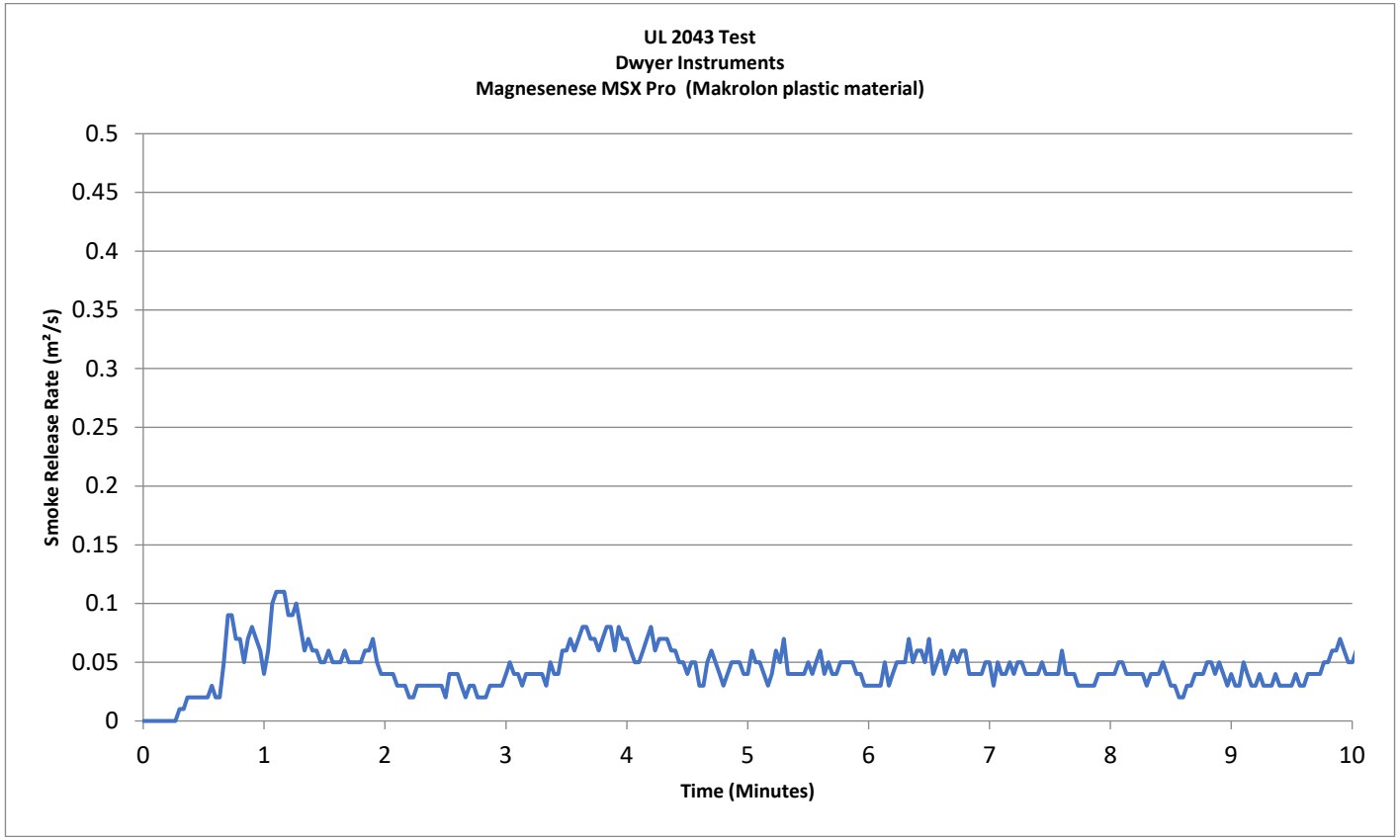
Test Number	Test Code	Description	Peak Smoke Release Rate (m^2/s)	Total Smoke Released (m^2)
A-2	08072005	Magnesenese MSX Pro (Makrolon plastic material)	0.15	22.5



Test Number	Test Code	Description	Peak Normalized Optical Density	Average Normalized Optical Density
A-3	08072006	Magnesenese MSX Pro (Makrolon plastic material)	0.27	0.05



Test Number	Test Code	Description	Peak Heat Release Rate (kW)
A-3	08072006	Magnesenese MSX Pro (Makrolon plastic material)	21



Test Number	Test Code	Description	Peak Smoke Release Rate (m^2/s)	Total Smoke Released (m^2)
A-3	08072006	Magnesenese MSX Pro (Makrolon plastic material)	0.11	27.3

June 17, 2021

DWYER INSTRUMENTS INC
102 Indiana Highway 212
Michigan City IN 46360

Our Reference: File TBD / Project 4789954913

Subject: UL Standard 2043, Fourth Edition, dated October 2, 2013, including revisions through July 13, 2018 - Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces.

Dear Bob Hanna:

This Report summarizes the data developed on the samples you provided which were subjected to the flame test described in UL Standard 2043, Fourth Edition, dated October 2, 2013, including revisions through July 13, 2018. Testing was conducted at UL LLC (UL) on June 07, 2021 at our Northbrook testing facility.

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The Classification Marking or Listing Mark of UL on the product is the only method provided by UL to identify products that have been produced under its Classification or Listing and Follow-Up Service.

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T E S T R E C O R D

SAMPLES:

The product evaluated are described in Table 1. UL 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

Sample Reference	Description
A	M6600SX with Chi Mei PC

METHOD:

The tests were conducted in accordance with the test procedure described in UL Standard 2043, Fourth Edition, dated October 2, 2013, including revisions through July 13, 2018 - Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces. 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.

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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, video records can be provided upon request.

Table 2 - Test Results

Sample - Test Ref.	Peak Heat Release Rate (kW)	Peak Normalized Optical Density	Average Normalized Optical Density	Peak Smoke Release Rate (m^2/s)	Total Smoke Released (m^2)
A-1	20	0.46	0.03	0.19	15.5
A-2	18	0.18	0.03	0.08	14.9
A-3	19	0.20	0.02	0.08	7.6

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.

CONCLUSION:

The product, identified by the test sponsor as shown in Table 1 - Sample Description, in the form it was submitted to UL LLC, was evaluated in accordance with UL2043 standard and it was found compliant with standard's requirements.

COMPLETION OF INVESTIGATION

Since this completes the anticipated work, we have instructed our Accounting Department to terminate the investigation and invoice you for the charges incurred to date.

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

Very truly yours

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Reviewed by:

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Building Materials & Systems
Anish.Chacko@ul.com

A P P E N D I X A

TEST NOTES:

File TBD, Project 4789954913

TEST A-1

06072105

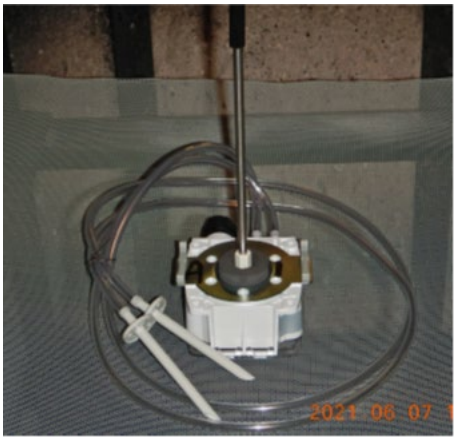
Sample Description: M6600SX with Chi Mei PC

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

Post Test Observations: The sample was still burning with light smoke at the conclusion of the test.

Photos:

Pre-Test



Post-Test

TEST A-2

06072106

Sample Description: M6600SX with Chi Mei PC

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

Post Test Observations: The sample was still burning with light smoke at the conclusion of the test.

Photos:

Pre-Test

Post-Test

TEST A-3

06072107

Sample Description: M6600SX with Chi Mei PC

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

Post Test Observations: The sample was still burning with light smoke at the conclusion of the test.

Photos:

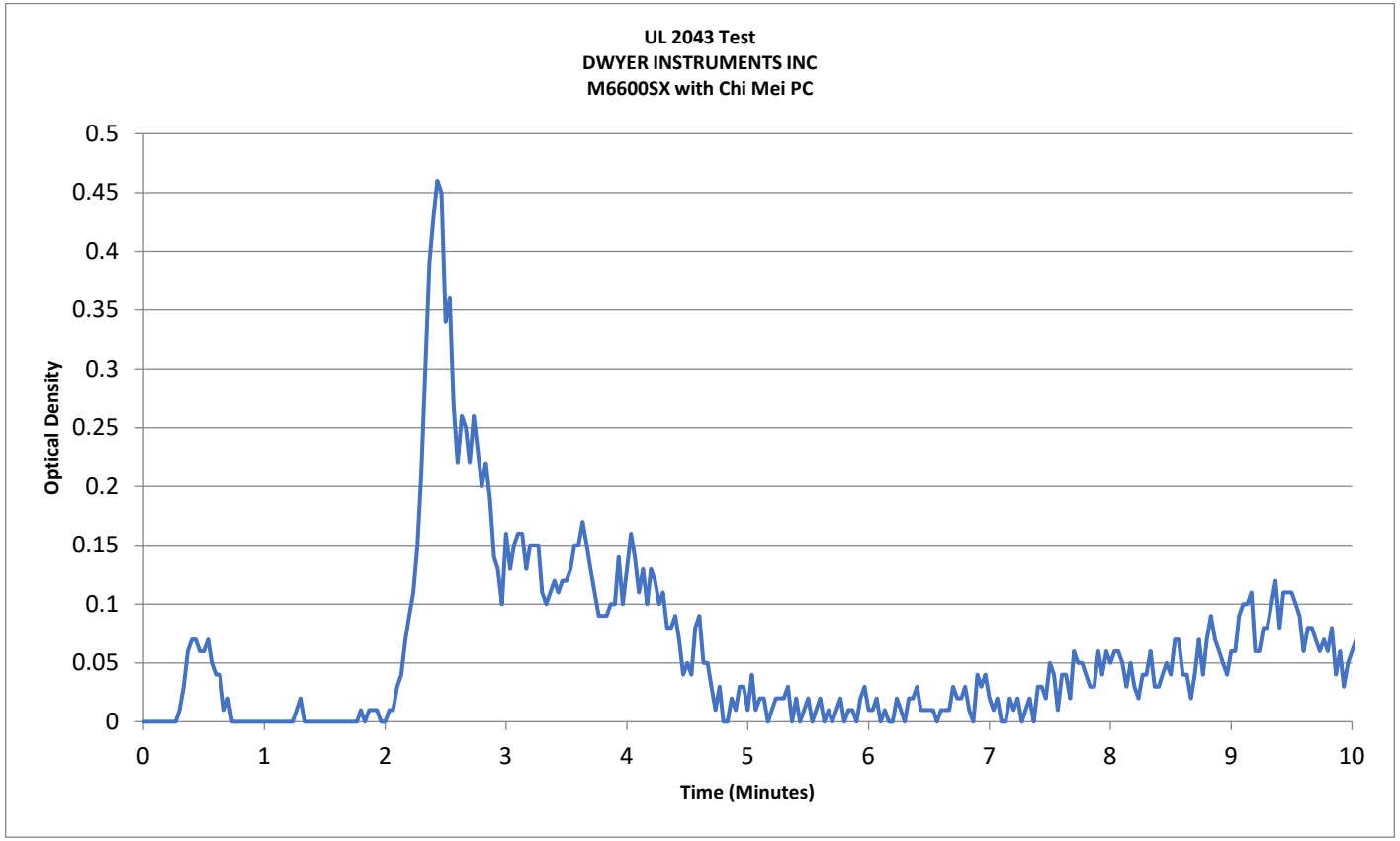
Pre-Test

Post-Test

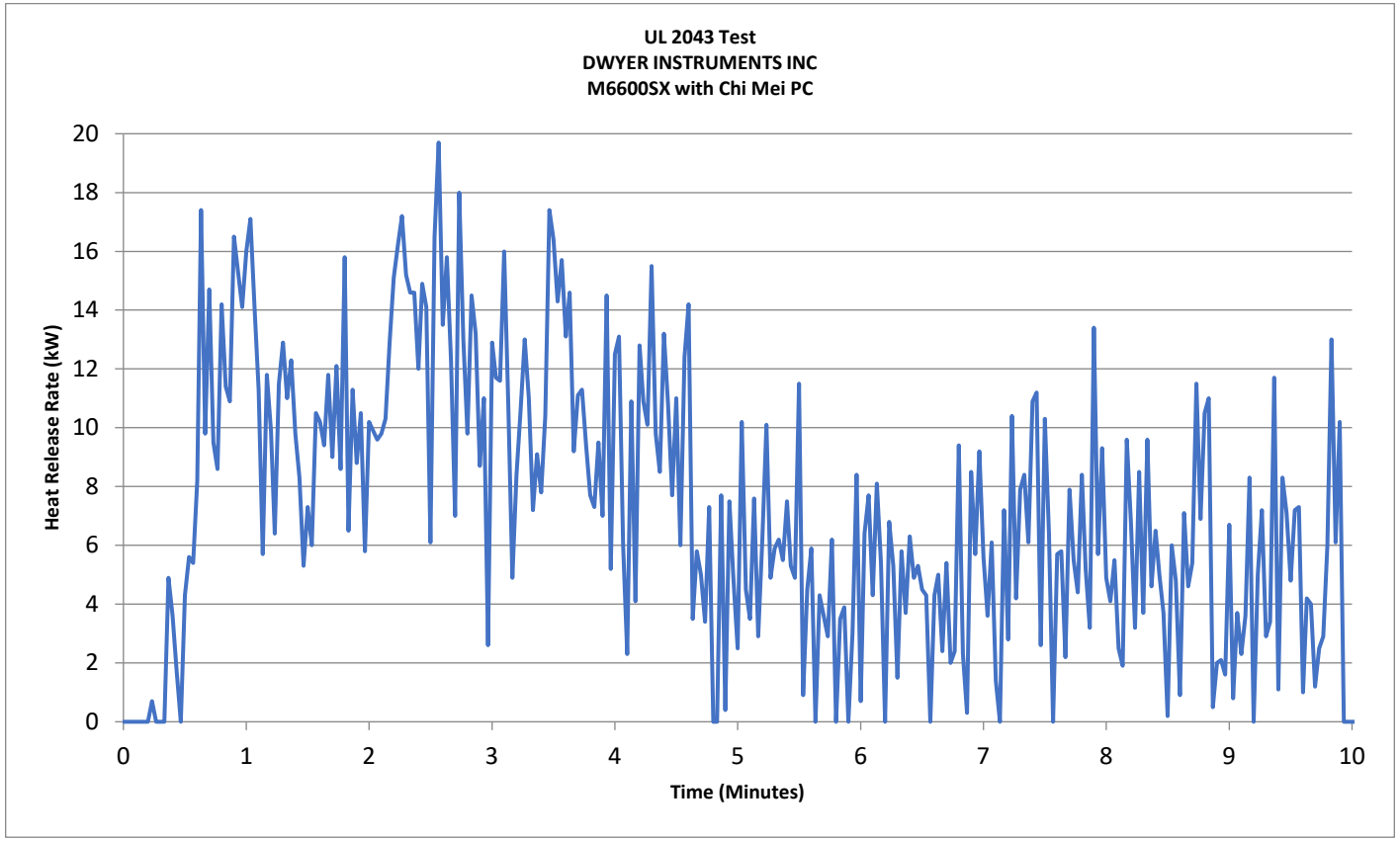
A P P E N D I X B

GRAPHICAL DATA

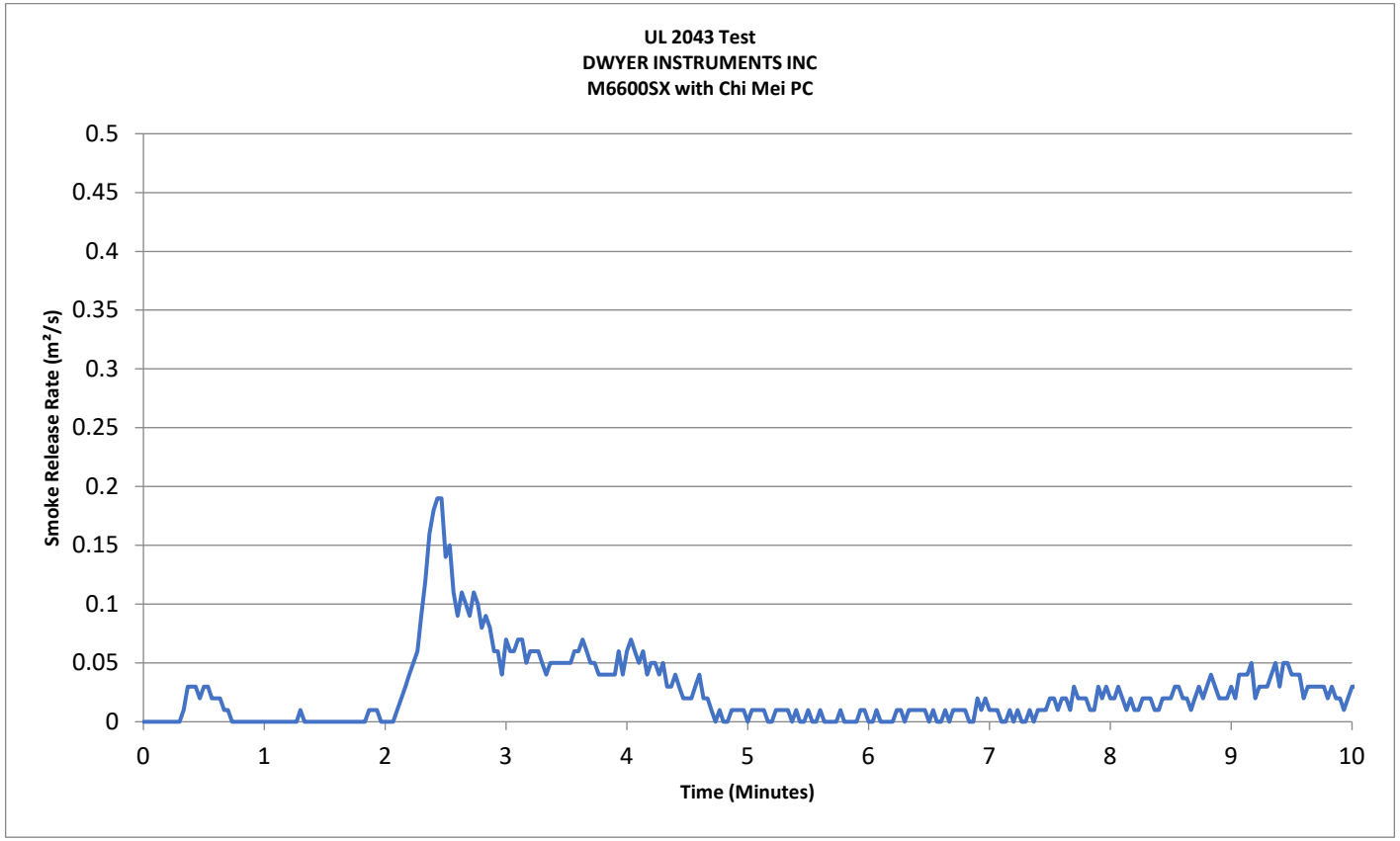
File TBD, Project 4789954913



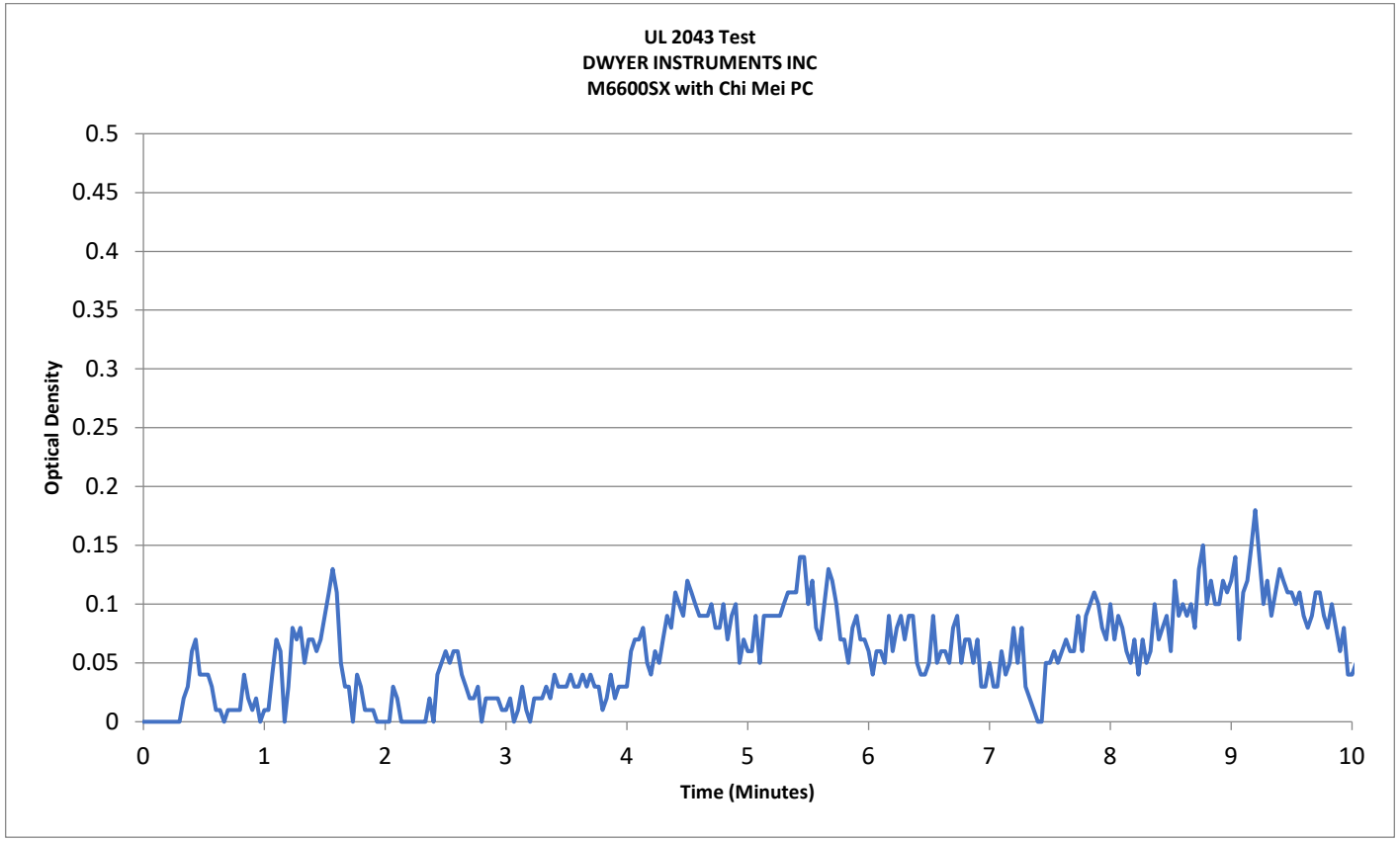
Test Number	Test Code	Description	Peak Normalized Optical Density	Average Normalized Optical Density
A-1	06072105	M6600SX with Chi Mei PC	0.46	0.03



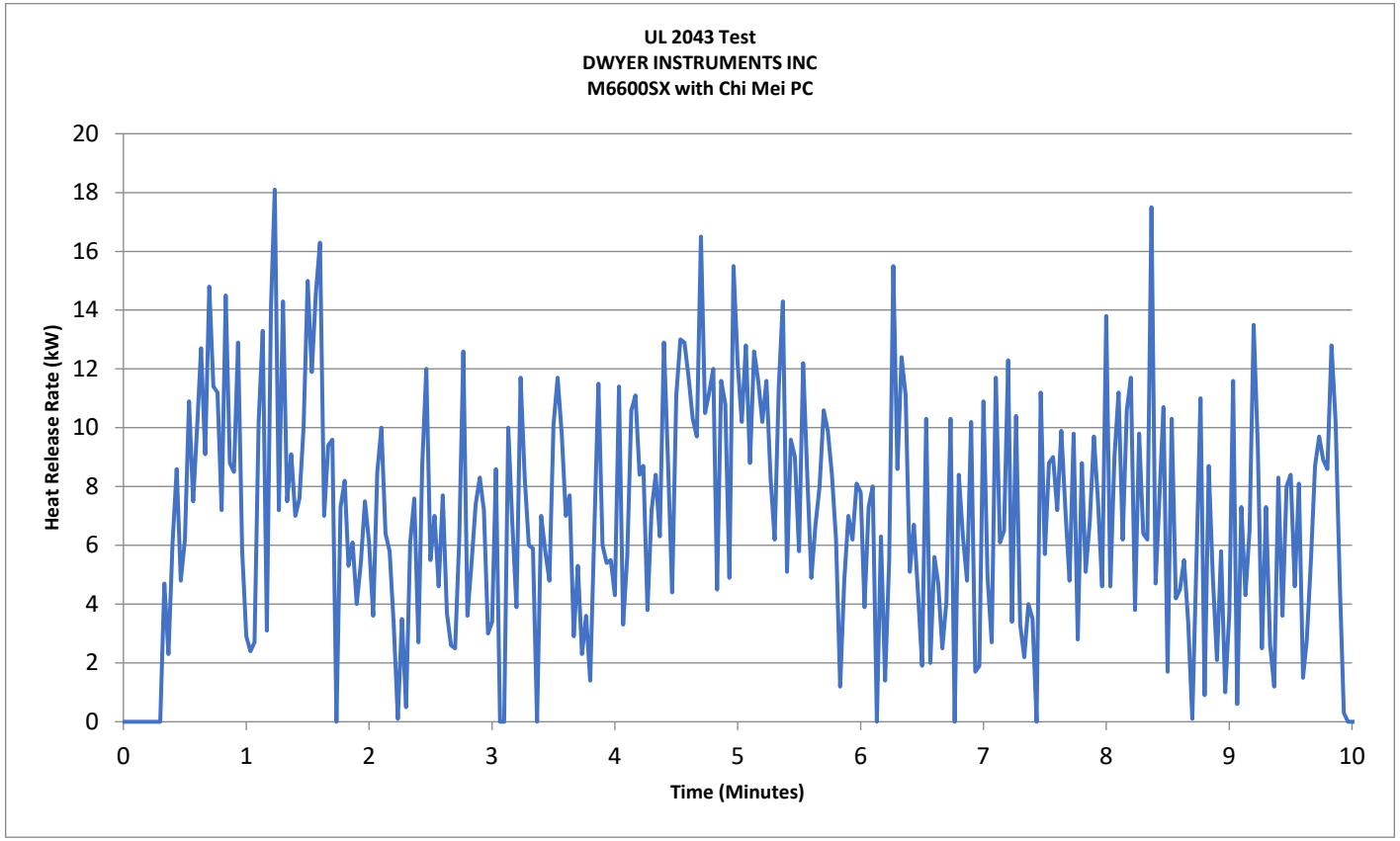
Test Number	Test Code	Description	Peak Heat Release Rate (kW)
A-1	06072105	M6600SX with Chi Mei PC	20



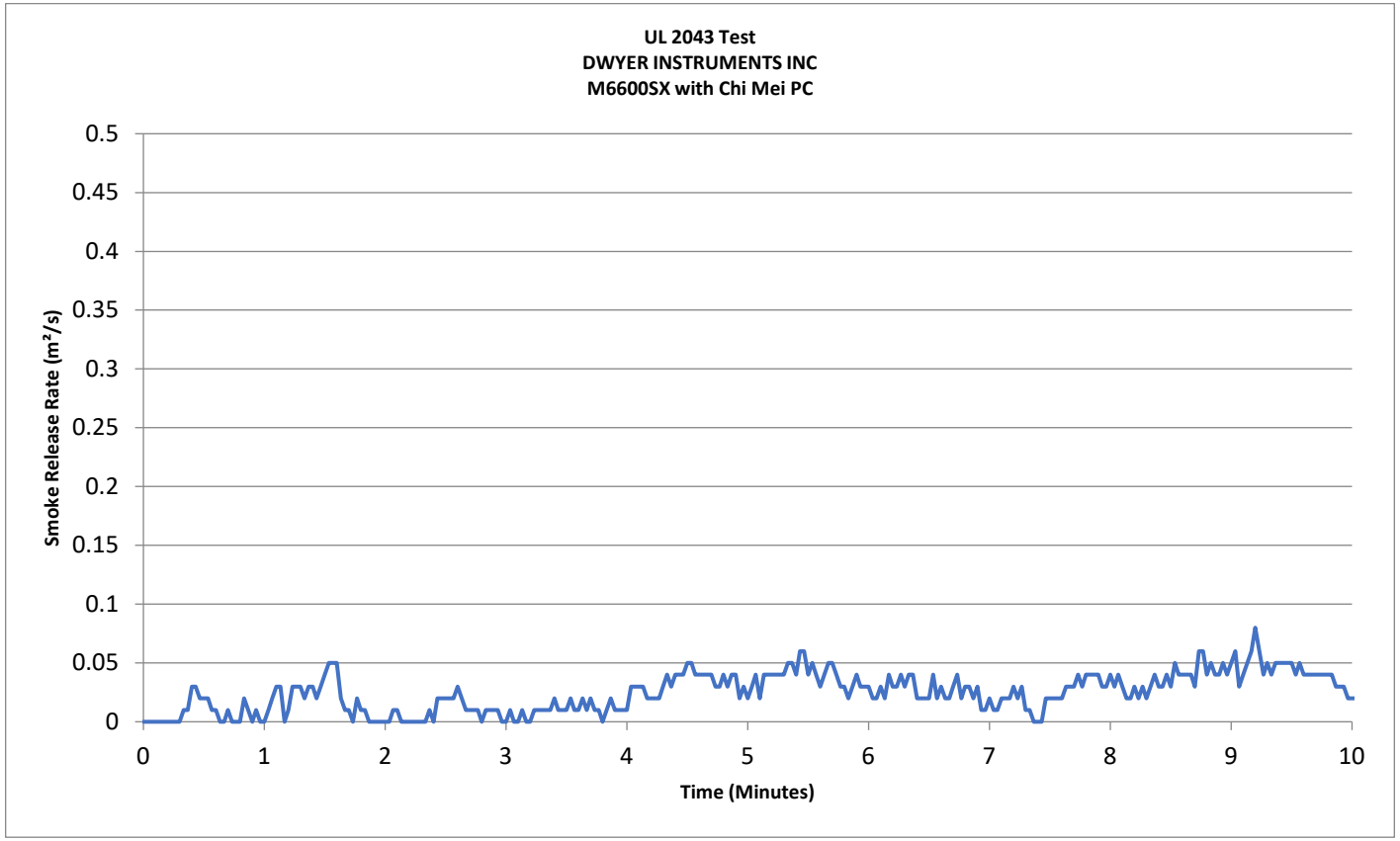
Test Number	Test Code	Description	Peak Smoke Release Rate (m^2/s)	Total Smoke Released (m^2)
A-1	06072105	M6600SX with Chi Mei PC	0.19	15.5



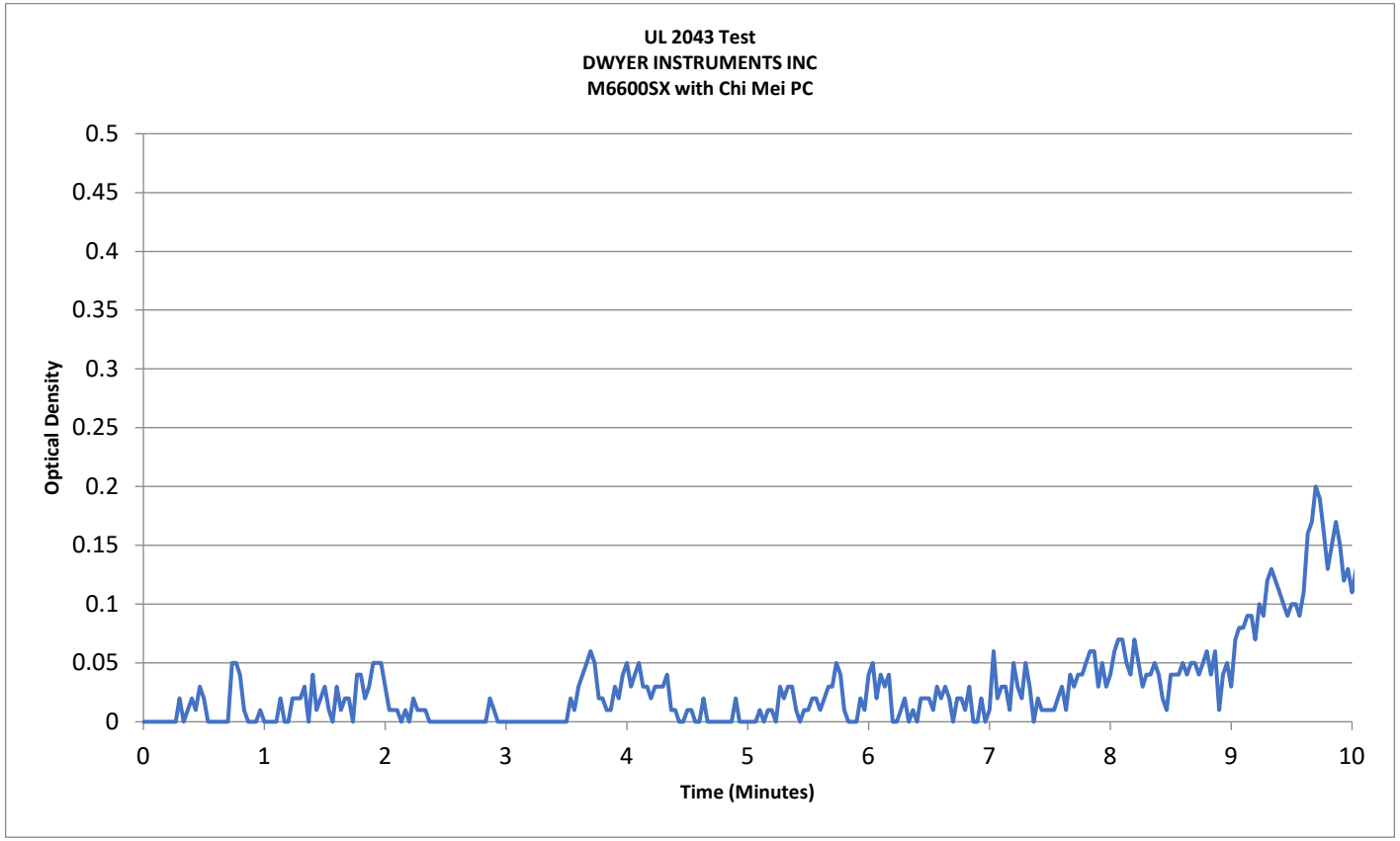
Test Number	Test Code	Description	Peak Normalized Optical Density	Average Normalized Optical Density
A-2	06072106	M6600SX with Chi Mei PC	0.18	0.03



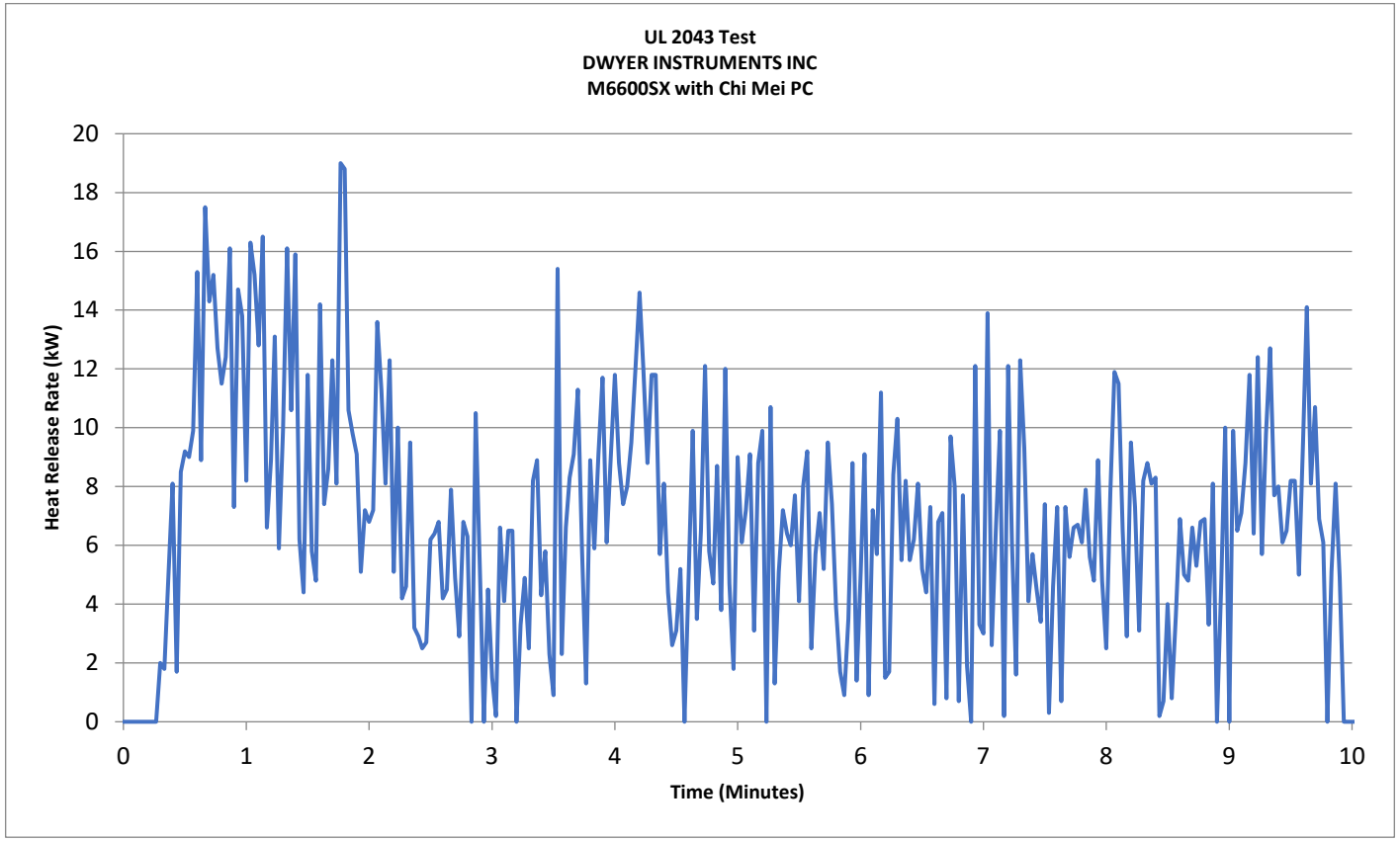
Test Number	Test Code	Description	Peak Heat Release Rate (kW)
A-2	06072106	M6600SX with Chi Mei PC	18



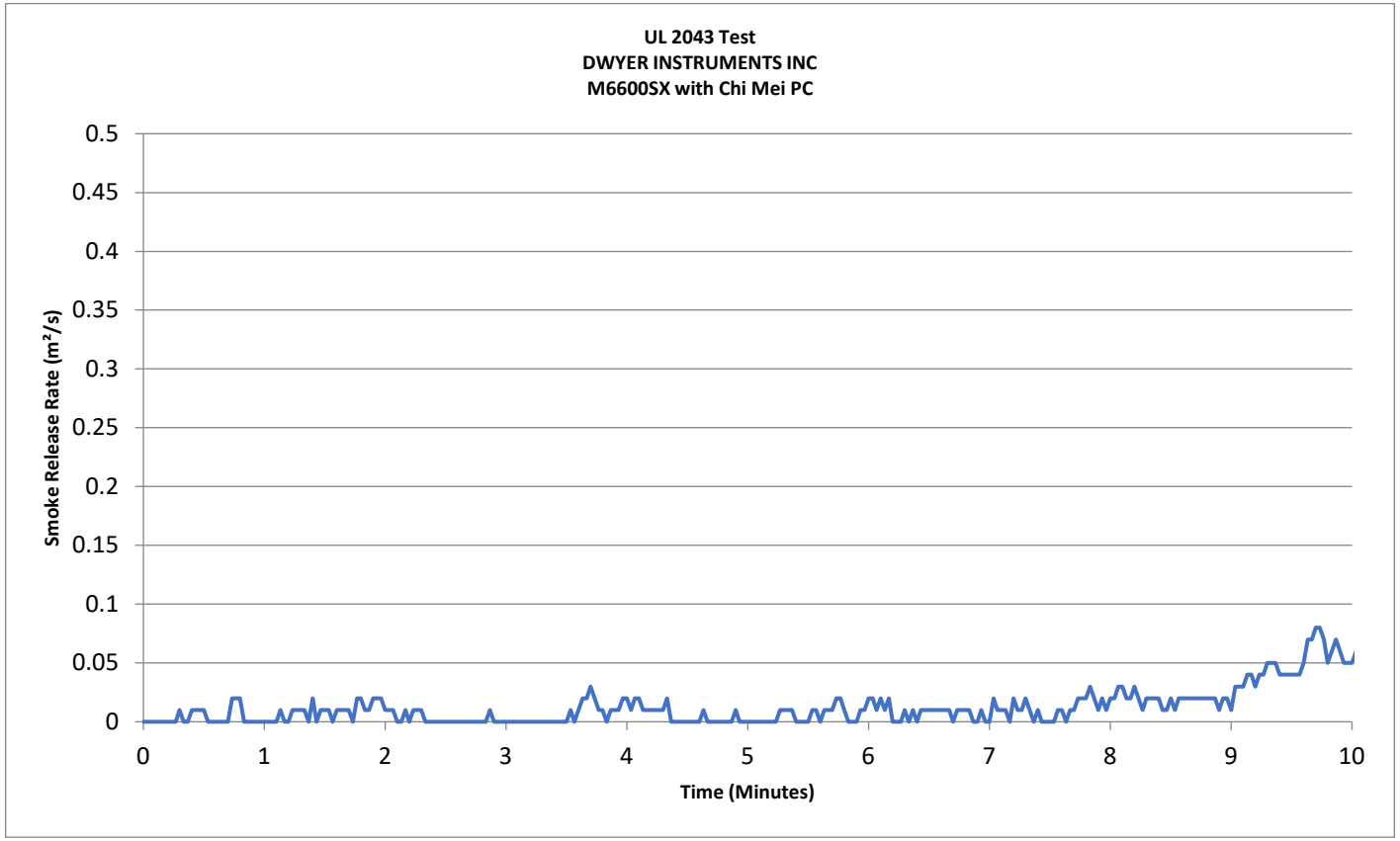
Test Number	Test Code	Description	Peak Smoke Release Rate (m^2/s)	Total Smoke Released (m^2)
A-2	06072106	M6600SX with Chi Mei PC	0.08	14.9



Test Number	Test Code	Description	Peak Normalized Optical Density	Average Normalized Optical Density
A-3	06072107	M6600SX with Chi Mei PC	0.20	0.02



Test Number	Test Code	Description	Peak Heat Release Rate (kW)
A-3	06072107	M6600SX with Chi Mei PC	19



Test Number	Test Code	Description	Peak Smoke Release Rate (m^2/s)	Total Smoke Released (m^2)
A-3	06072107	M6600SX with Chi Mei PC	0.08	7.6