



TEST REPORT

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UL 2043

Fire test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces

Pipe Fixings TSM- TSM Non-metallic Tubing Channel
Clip

Project No.
3103068SAT-001Rev. 1

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Prepared for:

ERICO
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ABSTRACT

A pipe clamp system submitted by ERICO and identified as the "Pipe Fixings TSM – TSM Non-metallic Tubing Channel Clip", was tested in accordance with the **UL 2043, Standard for Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces**, with the following results:

ITEM	RESULTS (for a single clip)
Peak Heat Release (HRRc)	1.5 kW
Peak Normalized Optical Density	0.0012
Average Normalized Optical Density (10 min)	0.0004

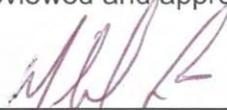
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INTRODUCTION

This report describes the results of the UL 2043, Standard for Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces. This test method is for determining the fire performance response of electrical equipment intended to be installed in air handling spaces, such as above suspended ceilings. These products are subjected to an open flame ignition source and evaluated using a product calorimeter. The purpose of this test is to determine the rate of heat release and the rate of smoke release of the burning product samples as they relate to the requirements for fire-resistant and low-smoke-producing characteristics in accordance with the provisions of the National Electric Code, NFPA 70.

At the client's request, an editorial revision was made to clarify the specific system used during the test.

TEST SPECIMEN

The specimen consisted of a pipe clamp system. The test specimen was described by the client as the "**Pipe Fixings TSM – TSM Non-metallic Tubing Channel Clip.**" The specimen consisted of a molded plastic strut pipe clamp with two mounting clips. The specimen was black in color.

As described in the test procedure below, due to the small specimen size, the units were tested twenty at a time. This borrows from the mounting method prescribed for cable ties in Appendix A of the standard. As installed in the field, the space between units is generally 6 feet or more and thus must be considered an independent device, unlike a cable tie, and its performance evaluated separately.

TEST PROCEDURE

All instrumentation was zeroed, and calibrated prior to testing. The test specimen, after conditioning to 70°F and 50% R.H., was placed on the specified test frame / enclosure. Per Appendix A of the standard, the samples were mounted to two electrical struts. Each strut consisted of ten samples and were spaced 1 ½" from each other. The 12" x 12" x 4" propane test burner was centered under the specimen and the test was started. The test specimen is exposed to a direct flame impingement with a heat release rate of 60 kW (92 cubic feet per hour). The test was conducted for 10 minutes at which time the gas burner is shut off.

ACCEPTANCE CRITERIA

1. The peak rate of heat release (HRR_c) measured during each test shall be 100 kilowatts or less.
2. The peak normalized optical density measured during each test shall be 0.50 or less.



3. The average normalized optical density (10 minute test duration) shall be 0.15 or less.

TEST RESULTS

The specimen was placed in the test enclosure and tested at 8:00 am on August 25, 2006. The ambient temperature was 85.3°F, with a relative humidity of 57%. The data recorded includes: Smoke Release Rate (SRR), Heat Release Rate (HRR). The acceptance criteria data was calculated from these values using the formulas in UL 2043 Section 7.

Results presented in the following table and the abstract are the results for twenty specimens divided by 20 to approximate the performance of a single clip. Data presented in the graphs is for all twenty specimens.

The optical density value as calculated by the standard was multiplied by a constant of 3.47 to account for differences in alternate duct dimensions as allowed by the standard in section 3.4.4.

This data may be found in Appendix B. Photos of the sample before and after the test are included as Appendix C.

Observations during the test were recorded. The observations are as follows:

TIME (min:sec)	OBSERVATION
0:00	The 60 kW propane burner was ignited.
1:01	The specimen began to melt.
2:44	No ignition to the specimen/ minimal smoke emitted by the specimen.
2:46	Most of the first row of clips was completely melted.
3:55	Ignition of melted material inside the electrical strut.
5:34	Melted material began to fall into the burner.
6:30	A floor flame began to burn.
10:00	The propane test burner was turned off. Flames present on the specimen.
19:10	All flames on the specimen ceased/ smoldering present on the specimen.
20:10	All smoldering on the specimen ceased/ test terminated.

ITEM	RESULTS (for a single clip)
Peak rate of heat release (HRRc)	1.5 kW
Peak rate of smoke release	0.0005 m ² /s
Total smoke released for first 10 minutes	0.11 m ²
Peak normalized optical density	0.001
Average normalized optical density for first 10 minutes	0.0004

POST-TEST SAMPLE OBSERVATIONS

After the test, the samples on the first electrical strut were completely melted away. The samples on the second electrical strut were heavily melted.

CONCLUSIONS

The “**Pipe Fixings TSM – TSM Non-metallic Tubing Channel Clip**” **PASSED** all of the criteria of stated in section 9 of the UL 2043, Standard for Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces.

APPENDIX A

SPECIMEN DESCRIPTION

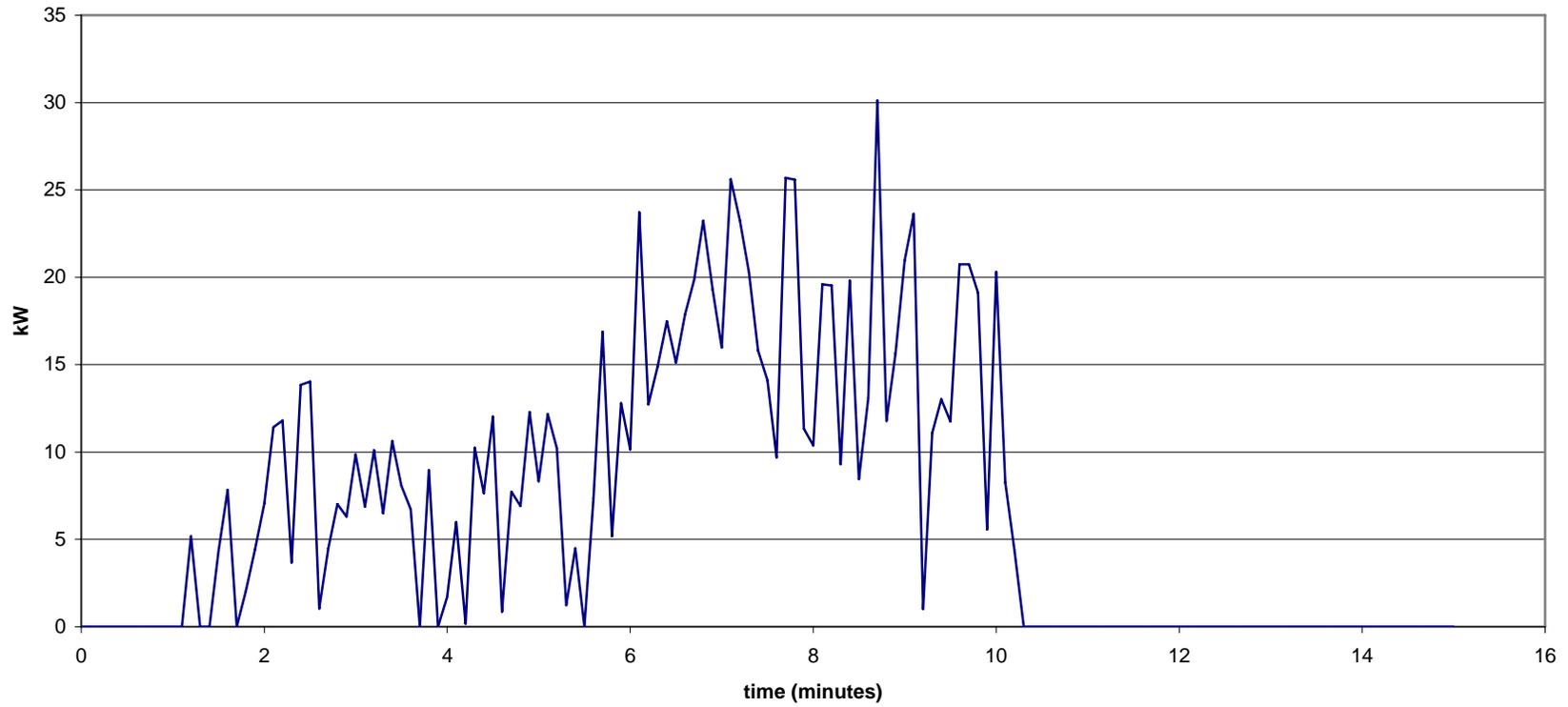
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No Sample Submittal Form was provided by the client.

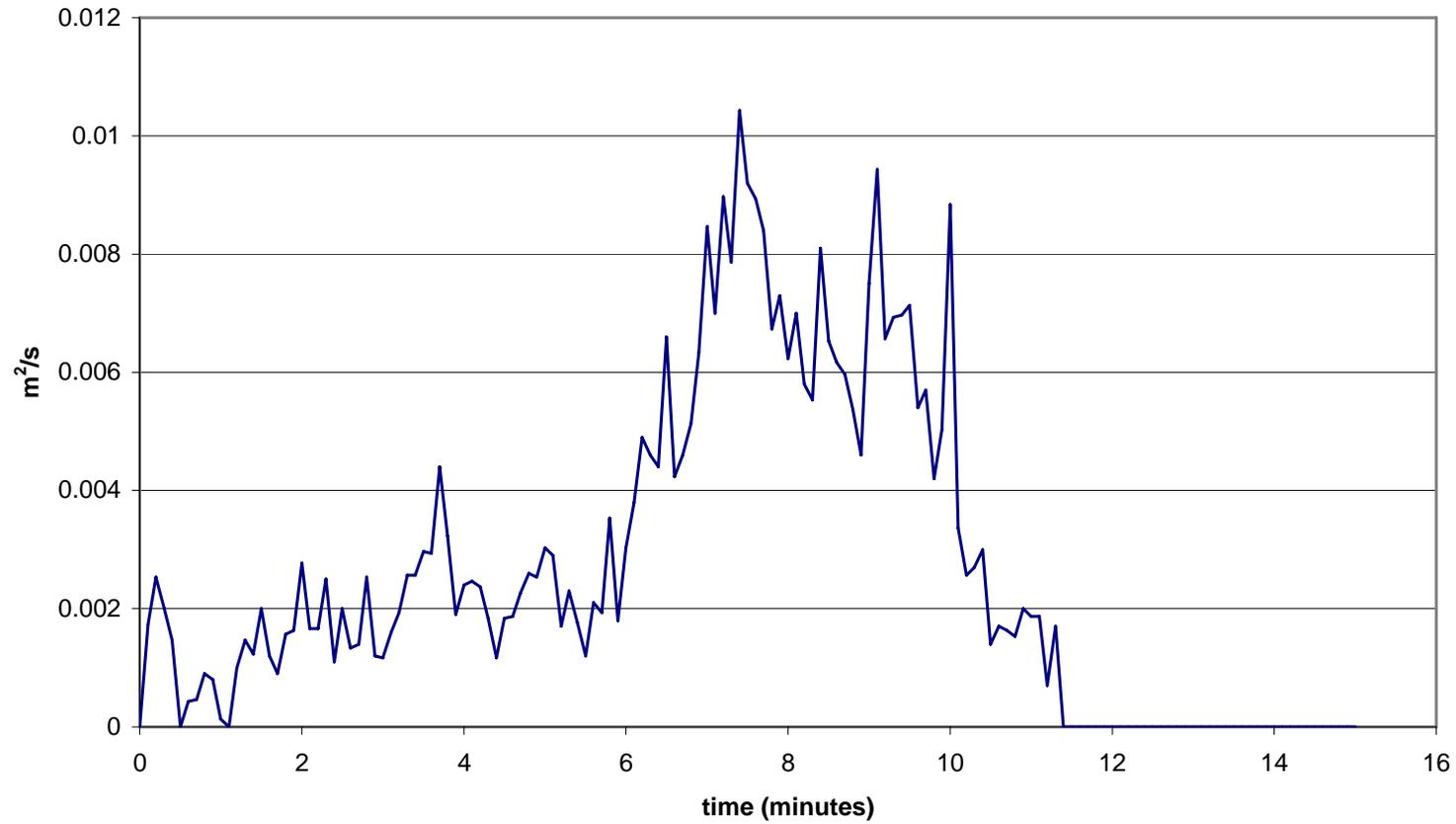
APPENDIX B

TEST DATA

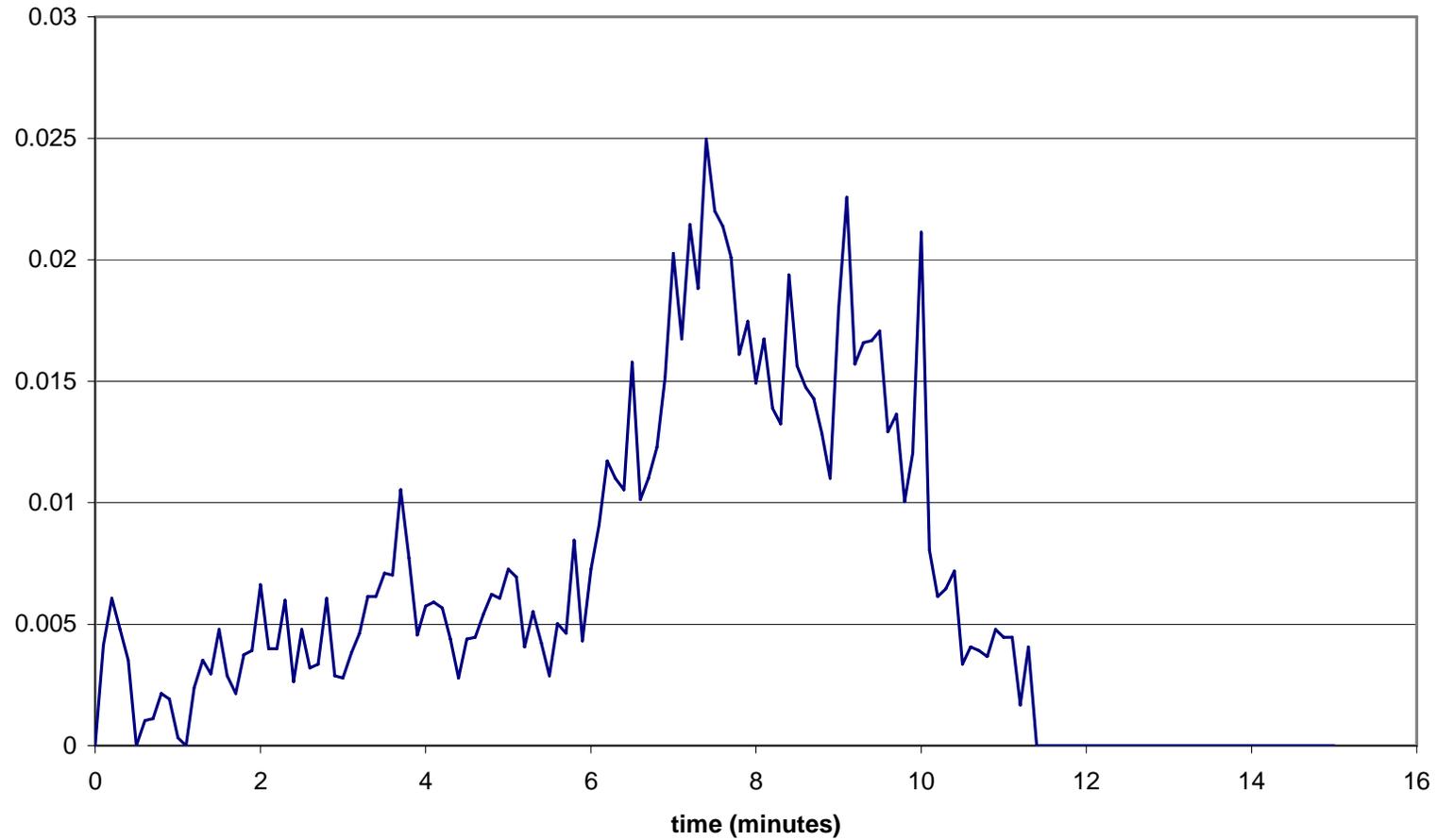
HRRc (kW) Heat Release Rate, Corrected for 60kW Burner



SRRc (m²/s) Smoke Release Rate, Corrected for 60kW Burner



Normalized OD, adjusted to UL. Calculated from SRR



APPENDIX C
PHOTOGRAPHS



Specimen before testing



Specimen during test



Samples on the first row melting



Ignition of the specimen



Specimen after test



Specimen after test

