

**CLIENT:** **PLASTICA ALFA S.p.A.**  
Contrada Santa Maria Poggiarelli (Z. Ind.)  
95041 Caltagirone (CT) – ITALY  
P.IVA IT (01826360875)

<b>Test Report No: TJ6815</b>	<b>Date: November 26, 2019</b>
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**SAMPLE ID:** The test samples are identified as “**Plastica Alfa ALFAIDRO NOFIRE System**”.

**SAMPLING DETAIL:** Test samples were submitted to the laboratory directly by the client. No special sampling conditions or sample preparation were observed by QAI.

**DATE OF RECEIPT:** Samples were received at QAI Laboratories on October 14<sup>th</sup>, 2019.

**TESTING PERIOD:** November 21<sup>st</sup> – November 22<sup>nd</sup>, 2019

**AUTHORIZATION:** Proposal 19JG101401R1 approved on October 16<sup>th</sup>, 2019.

**TEST PROCEDURE:** UL 1821; Thermoplastic Sprinkler Pipe and Fittings for Fire Protection Service (Third Edition, 2015). Section 13, Fire Exposure Test.

**TEST RESULTS:** The sample **COMPLIES** with section 13.1.1 of UL 1821. Detailed test results are presented in the subsequent pages of this report.

**Prepared By**

**Signed for and on behalf of  
QAI Laboratories, Inc.**



Hunter Hoffman  
Project Engineer



J. Brian McDonald  
Operations Manager

**TEST SET UP DETAILS:**

**Sample Evaluated:** Plastica Alfa ALFAIDRO NOFIRE System

**Procedure:** The test arrangement was set up, constructed and test conducted per Section 13 of UL 1821. The modifications to the ceiling and detail of the piping arrangement are described below.

**Tubing Detail:** The tested branch configuration included 7.5 feet of 1 ½ inch Plastica Alfa ALFAIDRO NOFIRE System, from supply to the tee and two 7.5 feet long sections of 2 inch Plastica Alfa ALFAIDRO NOFIRE System from both ends of the tee. One hanger was used for each branch line and one at the center tee fitting. See Figure 1 for detail.

**Sprinkler Detail:** Two Victaulic Firelock™ Model V3426 Pendant Sprinkler, K6.9, Quick Response 155°F were used in the tested assembly. Sprinkler One is indicate on the left of the below schematic and Sprinkler Two is indicated on the right.

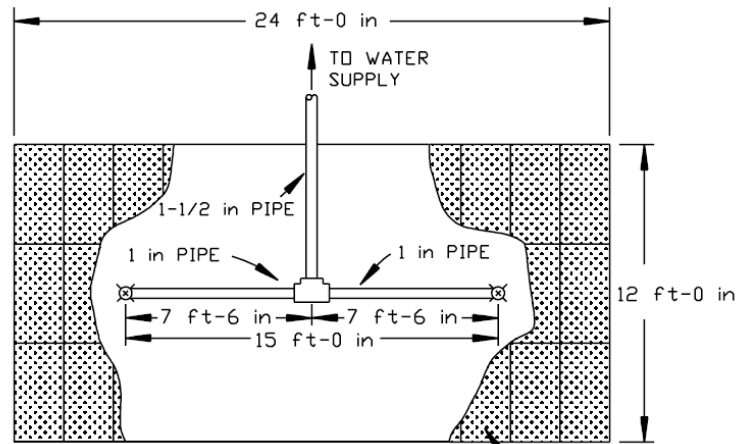


Figure 1. Branch Detail per figure 13.1 of UL 1821

**Ceiling Configuration:**

The ceiling of the assembly was built per Section 13.1.6. The ceiling was constructed using gypsum wallboard meeting the dimensional details of the Standard. Please see Photos section for detail.

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**Data: - TEST ONE – Flow Rate of 45 gpm from both sprinklers combined, test conducted on 11/21/19**

Static Pressure in Piping Configuration:	<b>120 psi</b>
Flow from both sprinklers:	<b>45 gpm</b>
Time of Sprinkler 1 Activation (after heptane ignition):	<b>0:44</b>
Time of Sprinkler 2 Activation (after heptane ignition):	<b>0:51</b>

During Test One, the piping assembly did not burst, separate or leak and maintained the sprinkler in the intended operating position

**Data: - Test Two – 90% of maximum rated pressure of the pipe, test conducted on 11/22/19**

Dynamic Pressure:	<b>161 psi</b>
Flow from both sprinklers:	<b>141 gpm</b>
Time of Sprinkler 1 Activation (after ignition):	<b>1:08</b>
Time of Sprinkler 2 Activation (after ignition):	<b>2:51</b>

During Test Two, the piping assembly did not burst, separate or leak and maintained the sprinkler in the intended operating position.

**Hydrostatic Pressure Test:**

Once test two was completed, the sprinklers were removed and the fittings were capped. A pressure of 183 psi, which was noted to be the maximum rated pressure of the test sample, was held for 5 minutes. No leaks, separations, or ruptures in the assembly were noted. The hydrostatic pressure requirement of the test was met.

**Test Criteria:**

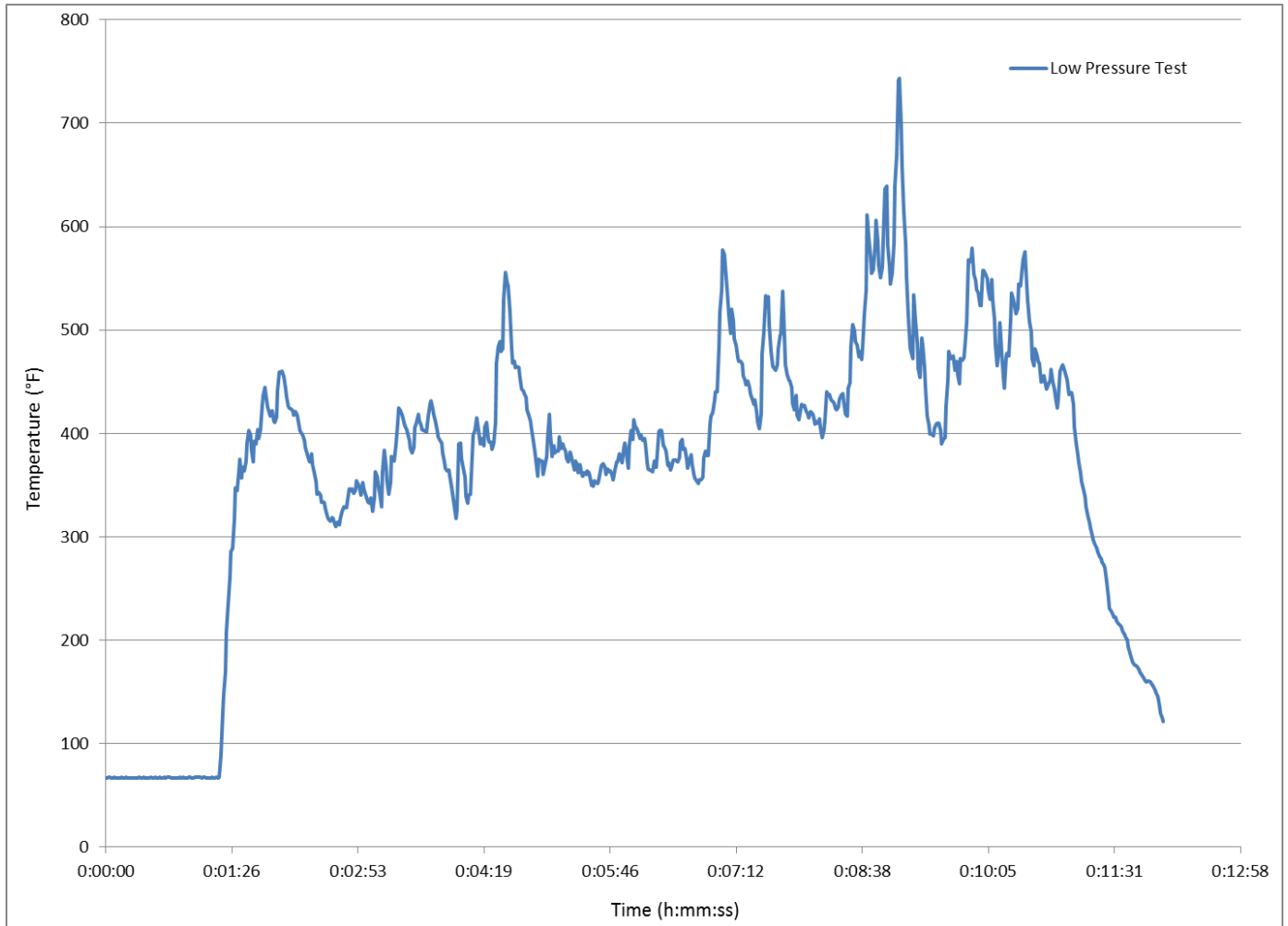
Per 13.1.1, When tested as specified in 13.1.2 – 13.3.1, pipe and fitting assemblies:

- a) Shall not burst, separate, or leak; and
- b) Shall maintain the sprinkler in the intended operating position.
- c) Following the fire exposure, the pipe and fitting assemblies shall withstand an internal hydrostatic pressure equal to the maximum rated pressure for 5 minutes without rupture or leaks.

**Data:**

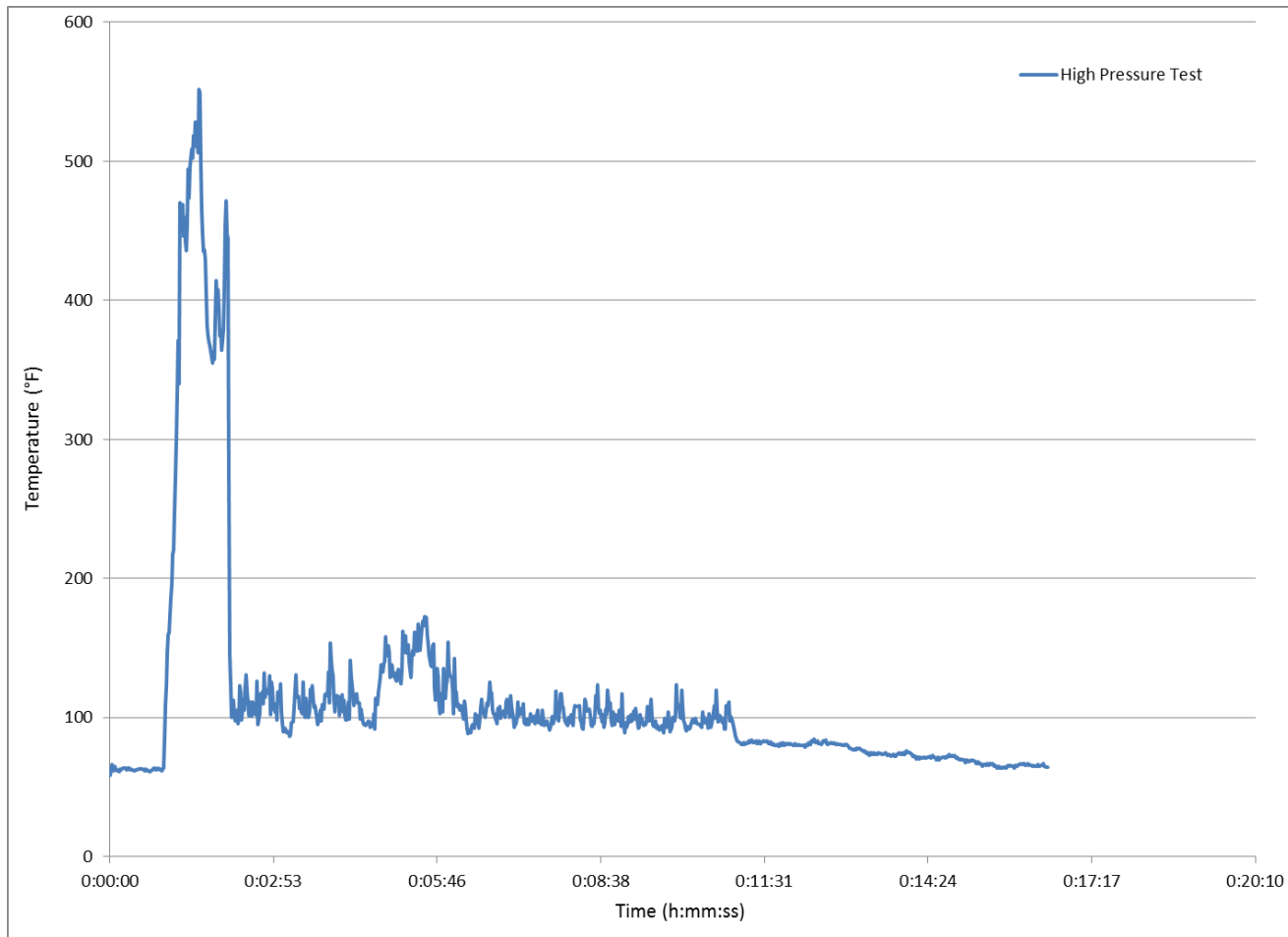
**Thermocouple Data:**

One single thermocouple was placed directly over the heptane pan in the centerline of the test configuration. The data generated is displayed below.



**Figure 2. Temperature Profile for Test One**

**Data:**



**Figure 3. Temperature Profile for Test Two**

**PHOTOS: Test Configuration – BEFORE TEST:**



**Configuration of Test One**



**Configuration of Test Two**

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**PHOTOS: Test Configuration One– AFTER TEST:**



**Test Configuration One**

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**PHOTOS: Test Configuration Two– AFTER TEST:**



**Test Configuration Two**

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**PHOTOS: Sprinkler and Hanger Detail**



Sprinkler Used



Hanger Used

**\*\*\*\*End of Report\*\*\*\***

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