



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF
ENFORCEMENT AND COMPLIANCE
ASSURANCE

DEC 19 2019

Mr. Robert F. Beck
President
Thelin Hearth Products
63 Laxalt Drive
Carson City, Nevada 89706

Re: Providence Pellet Heater Model Certification Letter Number 232-19

Dear Mr. Beck:

I am pleased to inform Thelin Hearth Products (Thelin) that the above-referenced model has been approved for certification pursuant to the 2015 New Source Performance Standard (NSPS) for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces at 40 CFR Part 60, Subpart AAA (2015 NSPS) by the United States Environmental Protection Agency (EPA). Certification under the 2015 NSPS is valid through December 31, 2024. This letter serves as your pellet heater certification and no separate certification is required. Please refer to the certification number above in all future correspondence.

Based on an October 23, 2019, test report prepared by PFS-TECO and the information provided in your October 24, 2019, application, the above-referenced model is certified as meeting the 2015 NSPS. Under the 2015 NSPS and based on PFS-TECO's October 23, 2019, certification of conformity, the model's emission rate of 1.1 g/hr meets the 2020 NSPS particulate matter emissions limit of 2.0 g/hr. The heat output range and overall heating efficiency for the above-referenced model are 10,461 – 23,746 BTU/hr and 64%, respectively. The carbon monoxide emission rate for this model line is 0.30 g/min.

This certification is valid for the above-referenced model and cannot be transferred to another model line without applying for certification. This certification allows Thelin to manufacture and sell the above-referenced model through December 31, 2024. Thereafter, Thelin may not manufacture, advertise for sale, offer for sale, or sell pellet heaters under this certification without applying for and obtaining another compliance certification.

All pellet heaters manufactured or sold under this certification must comply with EPA labeling requirements found at §60.536. These provisions require each pellet heater to have a permanent label affixed to it that includes the month and year of manufacture, model name or number, serial number, certification test emission value, test method, standard met, and compliance certification statement.

In addition, Thelin must comply with all applicable requirements of the regulation, including:

1. Conducting a third-party certifier-approved quality assurance program which ensures that all units within a model line are similar to the pellet heater submitted for certification testing in all respects that would affect emissions and are in compliance with the applicable emission limit, pursuant to §60.533(m);
2. Applying for recertification whenever any change is made to the above-referenced model that affects or is presumed to affect the particulate matter emission rate for the model line, pursuant to §60.533(k)(1);
3. Providing an owner's manual that includes the information listed in §60.536(g)(1) with each affected pellet heater model offered for sale;
4. Placing a copy of the certification test report and summary on the manufacturer's website. The test report and summary shall be available to the public within 30 days after the EPA issues a certificate of compliance, pursuant to §60.533(b)(12);
5. Submitting a report to the EPA every two years following issuance of a certificate of compliance for each model line. This report must include the sales for each model by state and certify that no changes in the design or manufacture of this model line have been made that require recertification under §60.533(k);
6. Retaining records and submitting reports as required at §60.537; and
7. Submitting pellet heaters for audit testing if selected by the EPA under §60.533(n)(1)(i) and (2)(i).

Failure to comply with these requirements may result in a revocation of this certification and enforcement action, including penalties as specified under the Clean Air Act. To promote transparency in the implementation of the Wood Heater Program, we suggest that manufacturers submit the Uniform Resource Locator (URL) or web address where the test report is posted to WoodHeaterReports@epa.gov within ten (10) days of posting the test report.

Once EPA has verified that the full non-CBI certification test report has been posted on the manufacturer's website, the Agency will add the above-referenced model to the EPA-Certified Wood Heater Database. If you have any questions concerning this letter, please contact Rafael Sanchez of my staff at (202) 564-7028 or via email at sanchez.rafael@epa.gov.

Sincerely,



Martha Segall

Acting Director

Monitoring, Assistance, and Media Programs Division
Office of Compliance

Thelin Hearth Products

Project # 19-501

Model: Providence

Type: Pellet-Fired Fireplace Insert

October 23, 2019

**ASTM E2779 Standard Test Method for
Determining Particulate Matter Emissions
from Pellet Heaters**

Contact: Mr. Robert Beck
Thelin Hearth Products
63 Laxalt Dr.
Carson City, NV 89706
775-241-2586 x105

Prepared by: Aaron Kravitz



**11785 SE Highway 212 – Suite 305
Clackamas, OR 97015-9050
(503) 650-0088
WWW.PFSTECO.COM**

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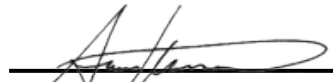
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Affidavit

PFS-TECO was contracted by Thelin Hearth Products to provide testing services for the Providence Pellet-Fired Fireplace Insert per ASTM E2779, *Determining PM Emissions from Pellet Heaters*. All testing and associated procedures were conducted at PFS-TECO's Portland Laboratory on 9/10/2019. PFS-TECO's Portland Laboratory is located at 11785 SE Highway 212 – Suite 305, Clackamas, Oregon 97015. Testing procedures followed ASTM E2779. Particulate sampling was performed per ASTM E2515, *Standard Test Method for Determination of Particulate Matter Emissions Collected by a Dilution Tunnel*.

PFS-TECO is accredited by the U.S. Environmental Protection Agency for the certification and auditing of wood heaters pursuant to subpart AAA of 40 CFR Part 60, New Source Performance Standards for Residential Wood Heaters and subpart QQQQ of 40 CFR Part 60, Standards of Performance for New Hydronic Heaters and Forced Air Furnaces, Methods 28R, 28WHH, 28 WHH-PTS, and all methods listed in Sections 60.534 and 60.5476. PFS-TECO holds EPA Accreditation Certificate Numbers 4 and 4M (mobile). PFS-TECO is accredited by IAS to ISO 17020:2012 "Criteria for Bodies Performing Inspections", and ISO 17025:2005 "Requirements for Testing Laboratories." PFS-TECO is also accredited by Standards Council of Canada to ISO 17065:2012 "Requirements for Bodies Operating Product Certification Systems."

The following people were associated with the testing, analysis and report writing associated with this project.



Aaron Kravitz, Testing Supervisor

Introduction

Theelin Hearth Products of Carson City, NV, contracted with PFS-TECO to perform EPA certification testing on the Providence Pellet-Fired Room Heater. All testing was performed at PFS-TECO's Portland Laboratory. Testing was performed by Mr. Aaron Kravitz.

Notes

- Prior to start of testing, 50 hours of conditioning was performed per ASTM E2779
- Prior to start of testing, the dilution tunnel was cleaned with a steel brush.
- Front filters were changed on sample train A at one hour after the test began.
- A single, integrated test run, in accordance with ASTM E2779 was performed:
 - 1 Hour at Maximum Burn Setting
 - 2 Hours at Medium Burn Setting (Defined as <50% of Maximum Burn Rate)
 - 3 Hours at Minimum Burn Setting

Pellet Heater Identification and Testing

- Appliance Tested: **Providence**
- Serial Number: **N/A – Prototype Unit; PFS Tracking Number 0038**
- Manufacturer: **Thelin Hearth Products**
- Catalyst: **No**
- Heat exchange blower: **Integral**
- Type: **Pellet Stove**
- Style: **Insert**
- Date Received: **Monday, September 09, 2019**
- Testing Period – Start: **Tuesday, September 10, 2019** Finish: **Tuesday, September 10, 2019**
- Test Location: **PFS-TECO Portland Laboratory, 11785 SE HWY 212 - Suite 305, Clackamas, OR 97015**
- Elevation: **≈131 Feet above sea level**
- Test Technician(s): **Aaron Kravitz**
- Observers: **Robert Beck**

Test Procedures and Equipment

All Sampling and analytical procedures were performed by Aaron Kravitz. All procedures used are directly from ASTM E2779 and ASTM E2515. See the list below for equipment used. See Appendix C submitted with this report for calibration data.

Equipment List:

Equipment ID#	Equipment Description
041	Rice Lake 3'x3' floor scale w/digital weight indicator
053	APEX XC-60 Digital Emissions Sampling Box A
054	APEX XC-60 Digital Emissions Sampling Box B
055	APEX Ambient sampling box
057	California Analytical ZRE CO2/CO/O2 IR ANALYZER
064	Digital Barometer
109A/B	Troemner 100mg/200mg Audit Weights
107	Sartorius Analytical Balance
051	10 lb audit weight
095	Anemometer
111	Microtector
CC700832	Gas Analyzer Calibration Span Gas
CC170624	Gas Analyzer Calibration Mid Gas

Results

The integrated test run emission rate for test Run 1 was measured to be **1.08 g/hr** with a Higher Heating Values efficiency of **64.0%** and a CO emission rate of **0.30 g/min.** The calculated first hour particulate emission rate was **1.22 g/hr.** The Thelin Hearth Products Model Providence Pellet-Fired Room Heater meets the 2020 PM emission standard of ≤ 2.0 g/hr per CFR 40 part 60, §60.532 (b).

Detailed individual run data can be found in Appendix A submitted with this report.

Summary Table

EPA Application Table											
Run Number	Date	Segments		Run Time (min)	Heat Output (BTU/hr)	1st Hr Emissions (g/hr)	Integrated Total (g/hr)	CO Emissions (g/min)	Overall CO Emissions (g/min)	Heating Efficiency (%HHV)	Overall Heating Efficiency (%HHV)
		Setting	BR								
1	9/10/2019	H	1.86	60	23746	1.22	1.08	0.22	0.30	66.2%	64.0%
		M	0.88	120	10999			0.27		64.4%	
		L	0.88	180	10461			0.36		61.2%	
		OA	1.05	360	12394			0.30		64.0%	

Test Run Narrative

Run 1

Run 1 was performed on 9/10/2019 as an attempted integrated test run per ASTM E2779. The overall test duration was 360 minutes. The particulate emissions rate for the integrated test run was 1.08 g/hr. The run had an overall HHV efficiency of 64.0%. The train A front filter was changed at 1 hr. All test results were appropriate and valid and the burn rate requirement for the integrated test run were achieved. There were no anomalies and all criteria were met.

Test Conditions Summary

Testing conditions for all runs fell within allowable specifications of ASTM E2779 and ASTM E2515. A summary of facility conditions, fuel burned, and run times is listed below.

Runs	Ambient (°F)		Relative Humidity (%)		Average Barometric Pressure (In. Hg.)	Preburn Fuel Weight (lbs)	Test Fuel Weight (lbs)	Test Fuel Moisture (%DB)	Test Run Time (Min)
	Pre	Post	Pre	Post					
1	75	72	34	42	29.91	4.2	14.7	2.54	360

Appliance Operation and Test Settings

The appliance was operated according to procedures as described in the Operations Manual, found in Appendix B submitted with this report. Detailed run information can be found in Appendix A submitted with this report.

Settings & Run Notes

	Pre-Burn	Test Run
Run 1	"Hi," Feed trim Max	High Segment: "Hi," Feed trim Max Medium Segment: "Lo," Feed trim 7V Low Segment: "Lo," Feed trim 7V

Appliance Description

Model(s): Providence

Additional Models Discussion: None

Appliance Type: Pellet-Fired Fireplace Insert

Air Introduction System: Air enters the burn chamber by being pulled through the firepot, via the exhaust blower, see air flow diagram in Appendix D.

Combustion Control: Feed rate is electronically controlled via user-selectable controls.

Baffles: N/A

Flue Outlet: 3-inch exhaust outlet located on the bottom/rear of the appliance.

Appliance Dimensions

Providence Dimensions

Height	Width	Depth	Firebox Volume	Weight
28.4"	32"	26.4"	N/A – Pellet Stove	280 lbs

Appliance design drawings can be found in Appendix D submitted with the CBI copy of this report.

Appliance Front



Appliance Left



Appliance Right



Appliance Rear



Test Fuel Properties



Test fuel used was Bear Mountain Wood Pellet Fuel, a PFI Certified Premium Pellet Brand. A sample of pellets was sent to Twin Ports Testing for analysis, see report below.

Pellet Fuel Analysis



Twin Ports Testing, Inc.
 1301 North 3rd Street
 Superior, WI 54880
 p: 715-392-7114
 p: 800-373-2562
 f: 715-392-7163
 www.twinportstesting.com

Report No: USR:W219-0755-01
Issue No: 1

Analytical Test Report

Client: PFS-TECO
 4335 NE 81st Ave.
 Portland, OR 97218
Attention: Sebastian Button
PO No: A-Kravitz

Signed: *Stephen Sundeen*
 Stephen Sundeen
 Chemistry Laboratory Manager
Date of Issue: 9/20/2019
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

Sample Details			
Sample Log No:	W219-0755-01	Sample Date:	8/30/2019
Sample Designation:	Pellet Fuel Analysis - USSC	Sample Time:	10:30 AM
Sample Recognized As:	Wood Pellets	Arrival Date:	9/12/2019

Test Results				
	METHOD	UNITS	MOISTURE FREE	AS RECEIVED
Moisture Total	ASTM E871	wt. %		2.48
Ash	ASTM D1102	wt. %	0.24	0.24
Volatile Matter	ASTM D3175	wt. %	80.80	78.79
Fixed Carbon by Difference	ASTM D3172	wt. %	18.96	18.49
Sulfur	ASTM D4239	wt. %	0.034	0.034
SO ₂	Calculated	lb/mmbtu		0.079
Net Cal. Value at Const. Pressure	ISO 1928	GJ/tonne	19.02	18.49
Gross Cal. Value at Const. Vol.	ASTM E711	Btu/lb	8752	8535
Carbon	ASTM D5373	wt. %	49.35	48.12
Hydrogen*	ASTM D5373	wt. %	6.14	5.99
Nitrogen	ASTM D5373	wt. %	< 0.20	< 0.20
Oxygen*	ASTM D3176	wt. %	> 44.03	> 42.94
<small>*Note: As received values do not include hydrogen and oxygen in the total moisture.</small>				
Chlorine	ASTM D6721	mg/kg		
Fluorine	ASTM D3761	mg/kg		
Mercury	ASTM D6722	mg/kg		
Bulk Density	ASTM E873	lbs/ft ³		
Fines (Less than 1/8")	TPT CH-P-06	wt. %		
Durability Index	Kansas State	PDI		
Sample Above 1.50"	TPT CH-P-06	wt. %		
Maximum Length (Single Pellet)	TPT CH-P-06	inch		
Diameter, Range	TPT CH-P-05	inch		to
Diameter, Average	TPT CH-P-05	inch		
Stated Bag Weight	TPT CH-P-01	lbs		
Actual Bag Weight	TPT CH-P-01	lbs		

Comments:

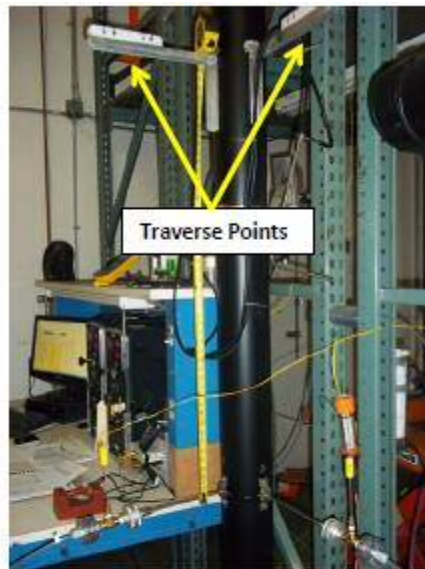
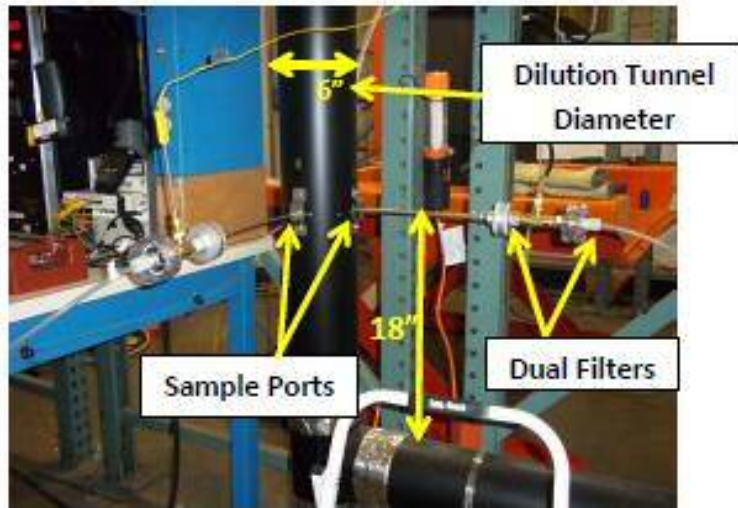


Results issued on this report only reflect the analysis of the sample submitted. Our reports and letters are for the exclusive and confidential use of our clients and may not be reproduced, except in their entirety, without the written approval of Twin Ports Testing. Twin Ports Testing Laboratory is accredited to the ISO/IEC 17025:2017 standard by PJLA.

Sampling Locations and Descriptions

Sample ports are located 16.5 feet downstream from any disturbances and 1 foot upstream from any disturbances. Flow rate traverse data was collected 12 feet downstream from any disturbances and 5.5 feet upstream from any disturbances. (See below).

Sample Points



Sampling Methods

ASTM E2515 was used in collecting particulate samples. The dilution tunnel is 6 inches in diameter. All sampling conditions per ASTM E2515 were followed. No alternate procedures were used.

Analytical Methods Description

All sample recovery and analysis procedures followed ASTM E2515 procedures. At the end of each test run, filters, O-Rings and probes were removed from their housings, dessicated for a minimum of 24 hours, and then weighed at 6 hour intervals to a constant weight per ASTM E2515-11 Section 10.

Calibration, Quality Control and Assurances

Calibration procedures and results were conducted per EPA Method 28R, ASTM E2515-11 and ASTM E2780-10. Test method quality control procedures (leak checks, volume meter checks, stratification checks, proportionality results) followed the procedures outlined.

Appliance Sealing and Storage

Upon completion of testing, the appliance was secured with metal strapping and the seal below was applied, the appliance was then returned to the manufacturer's location at: 63 Lexalt Drive, Carson City, NV 89706 for archival.

Sealing Label

ATTENTION:

THIS SEAL IS NOT TO BE BROKEN WITHOUT PRIOR AUTHORIZATION FROM THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.

THIS APPLIANCE HAS BEEN SEALED IN ACCORDANCE WITH REQUIREMENTS OF 40CFR PART 60 SUBPART AAA §60.535 (a)(2)(vii)

REPORT # _____

DATE SEALED _____

MANUFACTURER _____

MODEL # _____

Sealed Unit



List of Appendices

The following appendices have been submitted electronically in conjunction with this report:

Appendix A – Test Run Data, Technician Notes, and Sample Analysis

Appendix B – Labels and Manuals

Appendix C – Equipment Calibration Records

Appendix D – Design Drawings (CBI Report Only)

Appendix E – Manufacturer QAP (CBI Report Only)