



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

AUG 19 2019

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Mr. Sylvain Bilodeau
President
L.S. Bilodeau Inc.
Steel Products Manufacturing
281 Route 108 Est
Saint-Ephrem QC
Canada, GOM 1R0

Dear Mr. Bilodeau,

I am writing in response to your correspondence, dated July 9, 2019, regarding certification testing of your AirBilo PLUS brand wood-fired forced-air furnace. You are planning to use the cordwood option to obtain 2020 certification under 40 CFR 60, Subpart QQQQ - Standards of Performance for New Residential Hydronic Heaters and Forced Air Furnaces (Subpart QQQQ), Section 60.5476(e). You are requesting an alternative certification procedure to use the Canadian Standards Association (CSA) B415.1-10 test method, "Performance testing of solid-fuel-burning heating appliances," including thermostatically controlled warm air furnaces using cordwood as stated in section 7.2 of the CSA standard in lieu of the Method 28 WHH (40 CFR 60, Appendix A) procedures required by Subpart QQQQ.

In your correspondence, you are requesting the alternative certification testing procedure for your furnace because it is thermostatically-controlled and there is the potential for extreme BTU delivery to cause longer ramp down to the lowest BTU delivered. You also note, that when operating at the lowest rate preset by factory with normal operating mode for the blower, the furnace will produce more delivered BTU output than allowed for the Category 1 burn in EPA Method 28 WHH. In addition, you state that the furnace can not maintain combustion under the required Method 28 test procedure and it will force the fire to go out.

To address these issues, you are requesting to use the burn rate categories of CSA Method B415.1-10 in Section 7.2.1.2 in lieu of those in Method 28 WHH with the following modifications:

- Category IV - Operate at maximum capacity with forced combustion inducer engaged during the entire test.
- Category III - Operate with the switch for inducer "on" and "off" to meet specific output range.
- Category II - Operate with the switch for inducer "on" and "off" to meet specific output range.

- Category I - Operate at the lowest heat output below 35% of the maximum output of the furnace.

With the caveats set forth below, we are approving your alternative method request for certification testing of the AirBilo PLUS brand thermostatically-controlled forced air furnace. As required in Subpart QQQQ, Section 60.5476(c)(6), the manufacturer or approved test lab must also measure the first hour of particulate matter emissions for each test run using a separate filter in one of the two parallel sampling trains. These results must be reported separately and also included in the total particulate matter emissions per run. Also, as required in Subpart QQQQ, Section 60.5476(a), the manufacturer must have the approved test laboratory measure the efficiency, heat output, and carbon monoxide emissions of the tested wood heater using CSA Method B415.1-10. For particulate matter emission concentrations, ASTM E2515-11 "Standard Test Method for Determination of Particulate Matter Emissions Collected by a Dilution Tunnel" must be used; four inch filters are acceptable. Disregard Sections 8.3.1 and 8.4 in CSA Method B415.1-10 regarding the use of Douglas fir lumber in a crib wood configuration for EPA testing. However, for cordwood, you may use Douglas fir as well as any of the other species of wood listed in CSA Method B415.1-10.

The AirBilo PLUS brand forced-air furnace design incorporates a low setting on its controller which is the lowest heat output (Btu/hr) setting available to the user and corresponds to the lowest burn rate to be evaluated during certification testing; this is consistent with 40 CFR part 60, Subpart QQQQ, section 60.5476, which states "*The burn rate for the low burn category must be no greater than the rate that an operator can achieve in home use and no greater than is advertised by the manufacturer or retailer.*"

It is reasonable that this alternative test method approval be broadly applicable to certification testing of forced air furnaces subject to the requirements of 40 CFR part 60, Subpart QQQQ. For this reason, we will post this letter as ALT-134 on our website at <http://www3.epa.gov/ttn/emc/approalt.html> for use by other interested parties. A copy of this letter must be included in each certification test report. The emission limit in the rule remains intact and time weighted averaging is not allowed. This alternative method approval is valid until such time that Subpart QQQQ is revised or replaced to require a different certification method for these units, and at such time, this alternative will be reconsidered and possibly withdrawn.

When doing the certification testing of the AirBilo PLUS, the burn rate requirements in Section 7.2.1.2 of CSA Method B415.1-10 must be followed:

1. Category 1: Operate at the lowest delivered output that the unit is able to operate at (idle mode with no heat demand from the home/thermostat), and be below 35% of the Maximum of the heat output of the furnace.
2. Category 2: Heat output shall be between 35 and 53% of the maximum heat output of furnace.
3. Category 3: Heat output shall be between 53 and 76% of the maximum heat output of furnace.

4. Category 4: Heat output shall be the maximum heat output of the furnace.

The procedures in Section 7.2.2.2 of CSA Method B415.1-10 must be followed completely regarding Category 1 through 3 heat output using the remote control switch in the on position at the beginning of the test and leaving it on until the heat output for these categories are met, at which point the on switch can be turned off, and turned back on when the average heat demand drops below the determined target percentage of maximum heat output, at this point the switch can be in the on position to meet the heat output category being tested. Allow the heat output to fall below the target rate, then switch on the heat demand, and switch that off once target is reached. This cycle should be repeated for the entire test.

The following changes to ASTM E2515-11 must be followed for the certification testing:

1. Filters must be weighed in pairs to reduce weighing error propagation. See ASTM E2515-11, section 10.2.1, Analytical Procedure.
2. Sample filters must be Pall TX-40 or equivalent Teflon-coated glass fiber filters, and 47 mm, 90 mm, 100 mm, or 110 mm in diameter.
3. Only one point is allowed outside the +/- 10 percent proportionality range per test run.

If you have additional questions regarding this approval, please contact Michael Toney of my staff at 919-541-5247 or toney.mike@epa.gov.

Sincerely,



Steffan M. Johnson, Group Leader
Measurement Technology Group

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