

6

Treatment Manual

Certifying Facilities

Certifying Facilities for the Heat Treatment of Firewood

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Introduction

Agrilus planipennis Fairmaire (Coleoptera: Buprestidae), commonly known as the Emerald Ash Borer (EAB,) is a wood-boring insect that infests firewood. This destructive beetle attacks all North American species of Ash trees and has been detected in Illinois, Indiana, Ohio, Pennsylvania, Maryland, Michigan, and Windsor, Ontario, Canada.

The European Gypsy moth (*Lymantria dispar* L.) feeds on over 500 species of trees and shrubs. Quarantined areas include the District of Columbia, the entire States of Connecticut, Delaware, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. Additionally these states, portions of the following states are quarantined: Indiana, Illinois, Maine, North Carolina, Ohio, Virginia, West Virginia, and Wisconsin.

Heat treatment is an approved treatment for these two common wood pests. The treatment must occur in a certified heat treatment facility. The purpose of this chapter is to provide guidelines for the certification of a heat treatment facility.

Heat treatment facilities must be certified by a qualified PPQ official. For brevity, “certification” and “re-certification” will both be referred to as “certification” in this chapter.

Certification tests must be carried out prior to treatment to allow movement of wood from the current quarantine areas, or whenever a malfunction or alteration in the system warrants a certification test.

Certification will be granted on the basis of the ability of the chamber to meet treatment requirements, extent and condition of phytosanitary safeguards, and safety conditions.

Facilities should be aware that certification may **not** be the only condition under which firewood for shipment can be moved from quarantine areas. In addition to certification, there are other requirements that must be satisfied prior to treatment:

- ◆ An operational workplan
- ◆ A compliance agreement
- ◆ Appropriate federal, state or local permits

Treatment facility managers should contact their local PPQ office and/or local state departments of agriculture for state-specific requirements.

Plan and Process Approval

Prior to the start of the certification process for a new or existing facility, a detailed plan of the facility's physical characteristics and a written, step by step, description of all the processes related to treatment must be approved by USDA-APHIS. Plans and process descriptions must be submitted through the local PPQ office.

At a minimum, plans must include a description of all processes related to the heat treatment of firewood. These descriptions should reference diagrams with numbers where appropriate. Submit the following information as diagrams and/or written descriptions:

- ◆ Areas designated for:
 - ❖ Arrival and storage of untreated firewood
 - ❖ Loading of untreated and treated firewood
 - ❖ Storage of untreated and treated firewood
- ◆ Crates, bins, racks etc. used to hold firewood during treatment, including total volume and projected capacity
- ◆ Physical location of facility
- ◆ Post-treatment cooling system
- ◆ Post-treatment packaging
- ◆ Pre-treatment sorting and grading areas
- ◆ Systems to ensure phytosanitary security of the treated wood
- ◆ Treatment chamber including heating system, arrangement within the chamber, and air flow

The process of reviewing the plans and process descriptions may take as long as sixty days and subsequent requests for additional information may further extend this time. Facilities should take this time constraint into account when developing a project timeline. Facilities will receive a letter granting plan approval or describing plan deficiencies. Plan approvals expire one year from the approval date if the facility has **not** been certified.

Official Certification Testing

Following plan approval, facilities seeking certification must be tested to ensure they can meet all treatment requirements. If deviations from the plans are necessary, PPQ must approve these changes prior to testing (changes should be submitted in a manner similar to that described in “Plan and Process Approval”).

The official certification test has three main components: (i) calibrating the temperature sensors, (ii) thermal mapping (cold spot mapping), and (iii) conducting an actual test treatment. These steps are discussed below in detail. A certification test must be completed for each chamber load configuration.

Calibrating the Temperature Sensors



Only temperature sensors approved by USDA-APHIS may be used. Contact the PPQ personnel listed in “[Contact Information](#)” on [page-6-9-6](#).

Calibrate all temperature sensors prior to facility certification tests and a minimum of once annually thereafter. In addition, if a permanent temperature recording system is used, the system must be recalibrated when any part or portion of the system is repaired or replaced. Calibrations must be performed by the temperature sensor manufacturer or by manufacturer trained technicians. All temperature sensors must read within ± 0.5 °C (0.9 °F) of the treatment temperature.

Thermal Mapping

Thermal mapping determines the placement of permanent temperature sensors in the chamber. Because the permanent temperature sensors will be placed in the coldest areas of the chamber, this process is also referred to as cold spot mapping or cold spot testing. The process of thermal mapping is relatively simple; portable temperature sensors are placed throughout the chamber and the treatment is conducted. The sensors that took the longest time to record treatment temperature represent colder areas of the chamber.



Each facility may require a different number of portable sensors depending on factors such as the chamber size, chamber dimensions, and air flow patterns. A facility that is less than or equal to 10,000 ft³ will require about 20 sensors for thorough temperature mapping. Contact the PPQ personnel listed at the end of this chapter for help in determining the number of sensors required for a facility larger than 10,000 ft³.

The thermal mapping procedure is as follows:

1. Drill holes a minimum of 4 inches deep into the ends of the largest pieces of wood. The diameter of the hole should be equivalent to the outer diameter of the sensor.
2. Place the sensors in the wood and in various locations throughout the entire chamber.
3. Create a diagram of the chamber that shows the relative horizontal and vertical location of each temperature sensor.
4. Conduct the treatment.
5. Remove the temperature sensors and analyze the temperature data.
6. Determine the amount of time each temperature sensor took to reach the treatment temperature. The temperature sensors that required the longest time to reach treatment temperatures indicate cold spots.
7. Create a map of the cold spots based on the map created in step #3.
8. Repeat this process for each load and volume configuration to ensure that correct and consistent cold spots are found.
9. Based on the thermal maps created in step #7, create a map to indicate where temperature sensors should be placed for each load and volume configuration during daily operational treatments.

Conducting a Test Treatment

A test treatment must be performed to verify that the chamber is capable of meeting treatment requirements. Test treatments are only required for the maximum load/volume configuration that the facility will be certified for and may be done in conjunction with the thermal mapping described above. The procedure for conducting a test treatment is as follows:

1. Place permanent temperature sensors in areas of the load that are thought to be cold spots (based on thermal mapping data).
2. Conduct the treatment.
3. After treatment is completed, review the temperature data from the temperature sensors. All temperature sensors must have reached the treatment temperature.

These trials should test the ability of the treatment chambers to heat a full (maximum) load of wood according to the treatment guidelines. Any problems or deficiencies found in the facility or with the treatment must be corrected and the tests run again until all treatment requirements are met. After the facility representative is satisfied the treatment system is running properly and can fully meet treatment requirements, test results must be submitted to USDA-APHIS for review.

The process of reviewing results from preliminary performance tests may take as long as 30 days. After USDA-APHIS-PPQ reviews the results from the preliminary performance test, a letter will be issued either approving or rejecting the results. Once the facility is approved, treatment and shipment may begin.

Frequency of Certification and Temperature Sensor Calibration

A certification test is required once a year, and/or whenever the system has a malfunction, breakdown, or other failure that requires modifications that alter the manner in which the system functions. This excludes the replacement of a faulty temperature sensor.

All temperature sensors must be calibrated at the discretion of the PPQ official, annually, or whenever any part of the temperature recording system fails or is replaced. Use the process described in the “Calibrating the Permanent Temperature Sensors” section of this chapter.

Documentation

All tests performed during certification must be documented by the PPQ official. A copy of the signed APHIS Form 482, copies of all thermal maps, description of load size limitations, description of any other special limitations placed on the treatment, and any other pertinent addenda or appendices, must be sent to USDA-APHIS-PPQ for final approval.

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