



ENTFACT-640

THERMAL DEINFESTATION OF HOUSEHOLD ITEMS

Michael F. Potter, Urban Extension Entomologist

The Entomology Department often receives calls from clientele asking if anything can be done to eliminate insects living within foods, furnishings, and other household items. In many cases, the culprits are wood-boring powderpost beetles, distinguishable by the fine, flour-like powder streaming from their small, round emergence holes. Other cases involve insect infestation of fabrics, crafts, animal trophies, or stored food items.

In some areas of the country, especially further south, professional pest control firms commonly fumigate such infestations using lethal gases. Not so, here in Kentucky, where there simply is not enough demand to justify the cost of maintaining the necessary fumigation equipment, licenses, and insurance. Insecticide sprays typically are of little use, since the insects are often living deep within the infested item where sprays cannot penetrate. Risk of staining and/or contamination further negates the use of insecticides on some fabrics, not to mention, food items. So what can the homeowner do, other than discard the item or tolerate the infestation?

One alternative is to chill or heat the item to a temperature lethal to the pests living within. Insects are unable to tolerate sudden, unanticipated extremes of hot and cold. In fact, most insects, being cold-blooded, have rather narrow temperature ranges within which they can survive. Heating and chilling deinfestation methods have been used by museums, furriers, and the food processing industry for years. By following the steps outlined below, homeowners will be able to salvage that piece of furniture, picture frame, or bamboo basket riddled with powderpost beetle holes, or that delicate wool craft item or animal trophy infested with clothes moths or carpet beetles. The techniques can even be used to kill grain beetles and meal moths in those 50 pound bags of bird seed or pet food some folks cannot bear to throw out.

Cold Treatment

This method is especially useful for deinfesting chairs, dressers, picture frames, and other wood items

infested with powderpost or other wood-boring beetles. It requires the use of a freezer cold enough to maintain the infested item at minus 4 degrees Fahrenheit (minus 20 degrees Centigrade). Many home freezers attain such temperatures. Items too large to fit in a household freezer can be placed in a commercial freezer or "meat locker." (Check the yellow pages under "cold storage," or with your local supermarket.)

Chilling Procedure

1. Wrap the infested item in a cloth bed sheet.
2. Place sheet-covered items in a large polyethylene bag (e.g., trash or dry-cleaning bag), or simply wrap them in polyethylene and tape the seams. Force as much air out of the bag as possible.
3. Place bagged item in freezer (- 4 degrees F / - 20 degrees C) for seven days.
4. After seven days, carefully remove item from freezer.
5. Before removing item from polyethylene bag, allow it to gradually warm up again to room temperature. This may take up to 24 hours for larger items. This step ensures that any condensation forming will occur on the outside of the polyethylene bag, rather than on the item itself.

The above chilling procedure generally is effective in killing all pest life stages, including eggs. Adverse effects seldom occur to furniture or their veneers and finishes. Wood inlays or 'mother-of-pearl', however, may be affected. Infested rugs, woolens, fabrics pet food and animal trophies can also be treated in this manner, again with negligible adverse effects. However, extra care should be taken when handling crafts and other fragile items immediately after freezing and before they have returned to room temperature.

Heat Treatment

This method is especially useful for rapid deinfestation of small wooden objects (e.g., wood carvings, bamboo baskets) infested with powderpost beetles. It can also be used to kill grain beetles and other stored product pests in loose or packaged foods. Heating is not

recommended for fabrics, glued items, or oil paintings. Lethal temperatures can conveniently be attained using a standard household oven, but heated items should be carefully monitored.

Heating Procedure

1. Place infested item directly on center rack inside of oven.
2. Insert a pan (e.g., cookie pan) filled with water on the rack below. The purpose of the water is to maintain high relative humidity and minimize drying of the item during heating.
3. Set oven control to lowest temperature setting (warm). In most ovens this produces a temperature of about 150 - 170 degrees F. A meat thermometer or temperature probe, placed inside the oven, can help ensure that the temperature does not exceed this range. To keep the oven from getting too hot, it may be necessary to prop the oven door open a bit.
4. Forty-five minutes to one hour of heating is sufficient for most infested items. Wooden objects several inches thick may need to be heated a bit longer. Turn off the heating element and allow items to remain inside the heated oven for one additional hour or until cool enough to handle.

Microwaving is not recommended since it is impossible to know how much time is needed to achieve lethal temperatures and poses a greater risk of damage to the item.