



IPPC ISPM 15

List of most significant global pests targeted by HT and MB Treatments in accordance with the ISPM 15 Standard

According to the IPPC ISPM 15 Standard, members of the following global pest groups associated with wood packaging material are practically eliminated by HT and MB treatment in accordance with the specifications provided in the Standard:

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Pest Group	Name	Type	Examples		Additional Information
Insects	Anobiidae	Beetles	Death-Watch Beetle, Furniture beetle		The anobiids include 74 species in Canada and Alaska. Larvae of most species bore into dead hardwoods and softwoods; two species of <i>Ernobius</i> attack and destroy pine cones; one species, <i>Anobium punctatum</i> (the furniture beetle), damages woodwork, furniture, bookbindings, and similar products. The beetles often produce a tapping sound in their burrows, which gives rise to ancient superstitions of being a warning of death, hence the vernacular name "deathwatch beetle". Some species feed in the young stems or shoots of growing trees. Two species, <i>Stegobium paniceum</i> (the drugstore beetle) and <i>Lasioderma serricorne</i> (the cigarette beetle) are serious pests of stored products, including drugs, tobacco, seeds, spices, cereal products, leather, and museum specimens.
	Bostrichidae	Beetles	Horned Powderpost Beetle, Auger Beetle, Lyctus Beetle;		The Bostrichidae are a family of beetles with more than 700 described species that can infest living trees as well as finished wooden items such as furniture
	Buprestidae	Beetles	Metallic Wood Boring Beetle, Oak Borer, Hickory Spiral Beetle, Emerald Ash-Borer, Jewell Beetles, Flat-Headed Borers		The family is among the largest of the beetles, with some 15,000 species known. The larvae bore through roots, logs, stems, and leaves of various types of plants, ranging from trees to grasses. The wood boring types generally favor dying or dead branches on otherwise-healthy trees, while a few types attack green wood; some of these are serious pests capable of killing trees and causing major economic damage.
	Cerambycidae	Beetles	Asian Long-Horned Beetle		The family is large, with over 20,000 species described. Several are serious pests, with the larvae boring into wood, where they can cause extensive damage to either living trees or to wood in buildings. Areas under USDA Quarantine include metropolitan New York City and Chicago
	Curculionidae	Beetles, Weevils	Ambrosia Beetle; Bark Beetle		This is the family of the "true" weevils (or snout beetles). With over 60,000 species described worldwide, it is the largest of the beetle families. Adults often play dead when disturbed (by lying motionless on their back)
	Isoptera	Termites	Subterranean, Formosan		Termites become economic pests when their appetite for wood and wood products extends to human homes, building materials, forests, and other commercial products. In the United States alone, annual losses due to termite infestations are estimated at more than 800 million dollars. Sometimes incorrectly called white ants, with some 4,000 varieties worldwide.
	Lyctidae (with some exceptions for HT)	Beetles	Powder-Post Beetles		This group of insects, particularly the Powder-Post Beetles attack hardwoods depositing their eggs. True Powder post beetles breed in dead and dried hardwoods such as the dead branches and limbs of trees. Their presence is overlooked until they are discovered in stored lumber, rafters, joists, finished wood, and furniture products. As a rule, they enter lumber while it is being stored and cured, then later, emerge from the finished product. Old items of furniture and wood antiques are especially vulnerable to attack by the beetles.
	Oedemeridae	Beetles	Wharf Borer		A group of beetles commonly known as false blister beetles, though some recent authors have coined the name pollen-feeding beetles. There are some 100 genera and 1,500 species in the family. The "wharf borer" larvae bore into wood located in the tidal zones so at times are submerged by seawater, and can damage docks, wharves, and pilings.

	Scolytidae	Beetles	Mountain Pine Beetle, Pine-Shoot Beetle		A subfamily of the <i>Curculionidae</i> (see above), a bark beetle is one of approximately 220 genera with 6,000 species of beetles in the subfamily Scolytinae in the weevil family Curculionidae (traditionally the bark beetles were placed in their own family Scolytidae). The best known European species (since they transmit Dutch Elm Disease are in the type genus <i>Scolytus</i> . Under outbreak conditions, the sheer number of beetles can however overwhelm the tree's defenses, and the results can be disastrous for the lumber industry.
	Siricidae	Wasps, Flies	Wood Wasp, Horntail Wasps, Sawflies		Horntail or wood wasp is the common name for any of the 100 non-social species of the family Siricidae. Females land on trees, drill into the wood, and assess the suitability of the tree for ovipositing. If the tree is acceptable, she lays a single egg. She will then drill up to four more holes to deposit the remainder of her eggs. Mucus that is toxic to pine trees is injected during drilling. The mucus causes the foliage to wilt and yellow, creating ideal conditions for the spread of fungus. The last hole is packed with spores of a fungus (<i>Amylostereum areolatum</i> (<i>A. areolatum</i>)). The fungus causes the wood to dry out thereby creating a more favorable environment for egg hatching. After hatching, the <i>S. noctilio</i> larvae feed on the fungus. These effects together may kill the tree. The European Wood Wasp was inadvertently introduced into New Zealand, Australia, Uruguay, Argentina, Brazil, Chile, and South Africa. In these Southern Hemisphere countries, it has attacked pine plantations and has caused up to 80 percent tree mortality. This pest has also been recently found in New York state.
Nematodes	<i>Bursaphelenchus xylophilus</i>	Nematode	Pinewood (Pine-Wilt) Nematode		<p>Nematodes are microscopic and the most numerous multi-cellular animals on earth, many of them parasites of insects, plants or animals.</p> <p>This Pinewood nematode invades the stems and branches of pines causing a sudden wilting and death of the tree irrespective of its age or size. It is vectored from diseased to healthy pines by certain wood boring beetles known as Cerambycids (see more on this beetle group above). These beetles breed in dead and recently killed pines. In diseased trees, developing beetles become contaminated with the pinewood nematode. When the beetles complete development, adults emerge from the wood carrying the nematode and fly to healthy pines where they feed on succulent pine and introduce the nematode into feeding wounds. Following infection, the nemas migrate to resin ducts in the wood and feed on the cells lining the ducts which kills the tree.</p> <p>The pine wilt disease was identified for the first time in the United States in Columbia, Missouri in 1979. Since that first report, it has been found in 36 states, including all the Great Plains states except for North Dakota. In Japan, where the nematode may have been introduced, as many as 20 percent of the trees in some stands have been killed. The widespread distribution of the pinewood nematode suggests that it is native to the United States. In North America, investigators have confirmed the disease on 27 species of pine, one each of balsam and fir, and two each of cedar, larch, and spruce. It is considered to be a potentially serious problem in landscape settings, windbreaks, Christmas tree farms, and recreational plantings.</p>

Note: A minimum core temperature of 56° C for a minimum of 30 min. is chosen in consideration of the wide range of pests for which this combination is documented to be lethal and a commercially feasible treatment. Although it is recognized that some pests are known to have a higher thermal tolerance, quarantine pests in this category are managed by NPPOs on a case by case basis.

Source: IPPC ISPM 15 (International Plant Protection Convention - International Standards for Phytosanitary Measure No. 15



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