

Borogard[®] ZB

Preservative for wood composites



Zinc Borate

CAS Number 138265-88-0

TSCA Number 1332-07-6

EPA Reg. Number 1624-120



Attributes and uses

Borogard[®] ZB wood preservative provides protection from wood destroying organisms for wood composite materials used in protected above-ground applications. *Borogard* ZB can be used as an additive in the manufacturing of wood composite materials in order to control the growth of white and brown rot decay fungi. *Borogard* ZB wood preservative also helps protect composite materials from damage caused by wood destroying insects, including subterranean termites such as *Coptotermes formosanus* (Formosan subterranean termites).

The ability of a wood composite to resist wood destroying organisms is dependent on wood species, resin type, resin and wax content, method of production, exposure hazard, and the presence of wood preservatives. In independent tests performed in Hawaii on aspen flake composites, *Borogard* ZB wood preservative at a retention of 0.75% (w/w) provided protection against decay fungi and Formosan subterranean termites. The data presented above is intended to serve only as a guideline and the wood composite manufacturer should determine the *Borogard* ZB loadings for their treated product and its end-use application. *Borogard* ZB loadings should not exceed 8% (w/w) and for loadings in excess of 1.5% (w/w) it may be necessary to use additional adhesive binder to compensate for possible effects on strength.

Wood composites treated with *Borogard* ZB are used for a variety of end uses. Typical applications include decay resistant siding, roofing and millwork, termite resistant sheathing and subflooring as well as commodities for export to high decay hazard regions. Composites treated with *Borogard* ZB are not suitable for ground contact and must be protected with a water repellent coating when used in exterior applications (eg joinery and siding). *Borogard* ZB has been used in North America for several years with a broad spectrum of efficacy and low acute mammalian toxicity. Independent laboratory and field studies carried out by universities and government testing facilities indicate efficacy against wood decay fungi and termites under the conditions tested.

Borogard ZB is only sparingly soluble in water at room temperature (<0.28% w/w) and is therefore leach resistant. It does not contain any organic components and since it is applied as a dry powder does not require the use of organic solvents. By adding *Borogard* ZB prior to or during the blending process, it is possible to achieve a thorough and uniform distribution of the chemical throughout the composite material. When this method is used, efficient distribution of the preservative in the manufactured board can be confirmed by chemical assay. Specific details on how to analyze for both micro- and macro-distribution can be supplied on request from U.S. Borax Inc.

Borogard® ZB

Borogard ZB is chemically stable to 290°C and will not be altered during normal wood composite manufacturing processes. Composites treated with appropriate levels of *Borogard ZB* generally retain their natural appearance and strength. Ferrous metals, plastics, rubber, putties, bituminous solutions, other sealants, primer and finish paints will not be adversely affected by wood composites treated with *Borogard ZB*.

Chemical and physical properties

Formula weight	434.67
Appearance	White, odorless, powder
Median particle size	7 microns (Sedigraph)
Solubility	Less than 0.28% in water at room temperature.
Stability	Thermally stable up to 290°C. Can be hydrolyzed by strong acids and bases.
Crystal density	4.22 g/cc

Theoretical chemical composition

Boric oxide, B ₂ O ₃	48.2%
Zinc oxide, ZnO	38.2%
Water of crystallization, H ₂ O	13.6%

Containers

Multi-wall paper bags with a polyethylene moisture-resistant film barrier, 50 pounds (22.7 kg) net; 55 pounds (25 kg) net; or superbags with polyethylene liner, 2500 pounds (1134 kg) net.

Stability

When stored under normal conditions of temperature and humidity, *Borogard ZB* is chemically stable and shows no tendency to cake.

Warnings

Avoid prolonged inhalation or prolonged skin contact. Not for food or drug use. Read all instructions relating to the product before use.

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