PRODUCT DATA SHEET

Borogard® ZB

$2ZnO\ 3B_2O_3 \cdot 3.5H_2O$
Zinc Borate

Grades: *Borogard* ZB and Fine
CAS Number 138265-88-0
TSCA Number 1332-07-6 EPA
Reg Number 1624-120

20 MULE TEAM BORAX™
RioTinto

Protect wood investments and meet demands

Borogard® ZB wood preservative provides protection from wood destroying organisms for wood composite materials used in weather-protected, above-ground applications.

Applications

Borogard ZB can be used as an additive in the manufacturing of wood-based composite materials in order to control the growth of white and brown rot decay fungi. *Borogard* ZB also helps protect composite materials from damage caused by wood destroying insects, including subterranean termites such as *Coptotermes formosanus* (Formosan subterranean termites).

End uses

Typical applications include:

- Decay resistant siding, roofing and millwork
- Termite resistant sheathing and subflooring
- Commodities for export to high-decay hazard regions

Wood-based composites treated with appropriate levels of *Borogard* ZB generally retain their natural appearance and strength. Ferrous metals, plastics, rubber, putties, bituminous solutions, other sealants, and primer and finish paints will not be adversely affected by wood composites treated with *Borogard* ZB.

Borogard ZB-treated wood-based composites 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 many years with a broad spectrum of efficacy and low acute mammalian toxicity.

Research*

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. 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. *Borogard* ZB loadings should not exceed 8% (w/w). 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.

**This data is intended to serve only as a guideline. Wood composite manufacturers should determine the* Borogard *ZB loadings for their treated product and its end-use application.*

Characteristics

Borogard ZB does not contain any organic components. Since it is applied as a dry powder, it 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.

Solubility

Borogard ZB is only sparingly soluble in water at room temperature (<0.28% w/w) and is more resistant to depletion than sodium borates.

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Stability
Borogard ZB is chemically stable to 290°C and will not be altered during normal wood composite manufacturing processes. When stored under normal conditions of temperature and humidity, it is chemically stable and shows no tendency to cake.

Registration
Borogard ZB is registered with the U.S. EPA and the PMRA in Canada. For registration status in other countries, please contact us.

Containers
- 22.7 kg (50 lbs) and 25 kg (55 lbs) multi-wallpaper bags with a polyethylene moisture-resistant film barrier
- 1,134 kg (2,500 lbs) IBCs with polyethylene liner

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

Chemical and physical properties	
Formula weight	434.67
Apperance	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 basses.
Specific gravity	2.8 g/cc
Bulk density	42-60 lbs/ft^3

Theoretical chemical composition	
Boric oxide, B_2O_3	48.05%
Zinc oxide, ZnO	37.45%
Water of crystilization, H_2O	14.5%

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About U.S. Borax

U.S. Borax, part of Rio Tinto, is a global leader in the supply and science of borates—naturally-occurring minerals containing boron and other elements. We are 1,000 people serving 650 customers with more than 1,800 delivery locations globally. We supply around 30% of the world's need for refined borates from our world-class mine in Boron, California, about 100 miles northeast of Los Angeles.

About 20 Mule Team products

U.S. Borax produces the *20 Mule Team*® borates family of products from naturally occurring minerals and have an excellent reputation for purid sety when used as directed. Borates are key ingredients in a number of industrial applications including fiberglass, glass, ceramics, batteries and capacitors, wood preservatives, and flame retardants.

High quality, high reliability, high performance borate products. It's what we're known for.