Borogard® ZB

Biocide and Corrosion Inhibitor

[Zinc Borate] and [Wood Preservative]

For use only as a biocide, (fungicide/ preservative) additive in the manufacture of wood- and wood-plastic composites, coatings and plastic products

Active ingredient

Zinc Borate ($2ZnO \cdot 3B_2O_3 \cdot 3.5H_2O$) 100%

EPA Reg. No. 1624-120 **EPA Est. 1624-CA-1**

KEEP OUT OF REACH OF CHILDREN

CAUTION

NOT FOR FOOD OR DRUG USE

FIRST AID

In case of emergency: Call the 24 hour medical emergency number (see below), a Poison Control Center or doctor for treatment advice. Have the product container or label with you when calling or going for treatment.

If in eyes: Hold the eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.

If swallowed: Call the emergency number listed below or a Poison Control Center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a Poison Control Center or doctor. Do not give anything by mouth to an unconscious person.

If on skin or clothing: Take off contaminated clothing. Rinse the skin immediately with plenty of water for 15-20 minutes.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION. Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

ENVIRONMENTAL HAZARDS

Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Read *Borogard* ZB Product Profile for formulation details.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Pesticide Storage: Store in a dry place. Do not store where children or animals may gain access.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Handling: Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment. Then offer for recycling, if available, or dispose of empty bag in a sanitary landfill or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Notice: Neither manufacturer nor seller shall be liable in respect to any injury or damages suffered by reason of the use of this product for a purpose not indicated by the label, or when used contrary to the directions or instructions hereon, nor with respect to breach of any warranty not expressly specified herein. Buyer accepts this material subject to these terms, and assumes full risk of usage and handling except when used or handled in accordance with this label.

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STATE OF HAWAII
Department of Agriculture
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NET CONTENTS 55.1 lb (25 kg net)

Manufactured by
U.S. Borax Inc.
14486 Borax Road
Boron, CA 93516-2000, USA
☎ (1) 760 762 7000

Manufactured under management systems compliant with ISO 9001 and ISO 14001

Supplied by
U.S. Borax Inc.
☎ (1) 303 713 5000
Rio Tinto Minerals Asia Pte Ltd
☎ (65) 6464 6000
Borax Europe Limited
☎ (44) 207 781 2000

Emergency Phone Number
U.S. toll-free (24 Hr)
☎ (1) 866 786 3439
Non toll-free (24 Hr)
☎ (1) 303 713 5050

EPA10K.2

Product Profile

Borogard® ZB

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

GENERAL USE INSTRUCTIONS

Borogard® ZB is a free flowing, readily dispersible, bright white powder, which does not detract from bright colors or pure whites. Its optimum performance as a corrosion inhibitor and biocide (*in-can* preservative and fungicide) is obtained when *Borogard* ZB is uniformly dispersed in wood, wood plastic composites, coating systems (in-can preservative and dry film fungicide), plastic, and rubber products. Therefore, it must be incorporated during the pigment dispersion cycle in the coating preparation process.

CORROSION INHIBITOR APPLICATIONS

Borogard ZB is a unique form of zinc borate which can be used as a corrosion inhibitor in both organic solvent-based and water-borne coatings. *Borogard* ZB allows the formation of economical, high performance coatings effectively without the use of chromium, lead, or barium-based pigments. It may be used effectively as an equal weight replacement for zinc chromate in many formulations.

Synergistic enhancement of performance has also been noted for combinations of zinc borate with common corrosion inhibitive pigments such as zinc phosphate and barium metaborate. The formal water of hydration of *Borogard* ZB is bound in a nonreactive form and is retained at temperatures above 500°F, thereby allowing this product to be used in high temperature baking systems. A good formulation range is 0.25 - 2.5 lb/gal of *Borogard* ZB.

WOOD AND WOOD-PLASTIC COMPOSITES

Borogard ZB wood preservative provides protection from wood destroying organisms for wood composite materials used in protected above-ground applications (UC1, UC2 and UC3A) and for wood-plastic composites in unprotected, above-ground applications (UC3B). 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. *Borogard* ZB can be used as an additive in the manufacturing of wood- and wood-plastic composites in order to control the growth of white (*e.g. Trametes versicolor*) and brown (*e.g. Gloeophyllum trabeum*) rot decay fungi. *Borogard* ZB also helps protect composite materials from damage caused by wood destroying insects.

The ability of a wood- and wood-plastic 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 wood-composites, *Borogard* ZB wood preservative at a retention of

0.75% (w/w) provided protection against decay fungi. The data presented above is intended to serve only as a guideline and the wood- and wood-plastic composite manufacturer must determine the *Borogard* ZB loadings for their treated product and its end-use application. *Borogard* ZB loadings must not exceed 8% (w/w) and for wood-composite loadings in excess of 1.5% (w/w) it may be necessary to use additional adhesive binder to compensate for possible effects on strength.

COATING SYSTEMS

In-Can Preservative: *Borogard* ZB (EPA Registration No. 1624-120) functions as an in-can preservative. The in-can preservative formulation rate is 0.25 - 2.5 lb/gal of *Borogard* ZB.

Dry Film Fungicide: *Borogard* ZB (EPA Registration No. 1624-120) can also function as a dry film fungicide. It controls mixed fungi such as *Aspergillus niger, Penicillium funiculosum, Chaetomium globosum, Trichoderma (Gliocladium) virens* and *Aureobasidium pullulans*. The dry film coating fungicide formulation rate is 0.25 - 2.5 lb/gal of *Borogard* ZB.

PLASTIC AND RUBBER COATINGS PRESERVATIVE

Borogard ZB controls mixed fungi such as *Aspergillius niger, Penicillium funiculosum, Chaetomium globosum, Trichoderma (Gliocladium) virens* and Aureobasidium *pullulans*. The effective level is dependent on fungal susceptibility of the product, as well as the ultimate conditions for the use of the product. For interior applications, such as, PVC carpet-backing, wall coverings, auto upholstery, shower curtains, and urethane mattresses, apply 3 – 20 phr of *Borogard* ZB. For exterior applications such as polyolefin wire and cables, PVC tenting and awnings, acrylics roof coating apply 3 – 30 phr of *Borogard* ZB. No plastic formulation can exceed 100 phr of *Borogard* ZB additive.

Formula: $2ZnO \cdot 3B_2O_3 \cdot 3.5H_2O$

Typical	
ZnO	38.2%
B_2O_3	48.2%
H_2O	13.6%
CAS No	138265-88-0 (12447-61-9)
EPA Reg. No	1624-120
TSCA No	1332-07-6
Formula weight	434.66
Color	White
Refractive index	1.58
Particle size	Median particle size is typically 9 microns (laser diffraction)
Crystal density	174.7 lb/ft^3
Bulking value	0.043 U.S. gal/lb
Solubility	Less than 0.28 wt. % in water at room temperature Can be hydrolyzed by strong acids and bases
Oil absorption	35g oil/100g (ASTM 281-84, Typical)

Containers: Multiwall paper bags with a polyethylene moisture-resistant film barrier,
50 pounds (22.68 kg) net; or superbags with polyethylene liner, 2500 pounds (1133.79 kg) net

Notice: There are no warranties, express or implied including any warranty of fitness for a particular purpose, which extend beyond the described uses in this bulletin.

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If possible uses of these products have been mentioned herein, it is not intended that the above products be used to practice any applicable patent, whether mentioned in this Product Profile or not, without procurement of a license, if necessary, from the owner following investigation by the user. Nor is it intended or recommended that the products be used for any such described purposes without verification of their safety and efficacy for such purposes. Suggested application rates for use of this product are based upon data believed to be reliable. The use of this product being beyond the control of the manufacturer, no guarantee, expressed or implied, is made as the effects of such or the result to be obtained if not used in accordance with directions or established safe practice. The buyer must assume all responsibility, including injury or damage, resulting from its misuse as such, or in combination with other materials.

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