

# Safety Data Sheet

C-TEC ZB400

MSDS No. 9640.13

Date of Preparation: 7/16/96

Revision: 10/31/22

## Section 1 - Chemical Product and Company Identification

**Product identifier used on the label:** C-TEC ZB400

**Other means of identification:** zinc borate

**Recommend use of the chemical:** Flame retardant in plastics, rubber, and resins.

**Restrictions on use:** Consumer uses above the concentration limit.

**Manufacturer:** Marshall Additive Technologies

Division of the R. J. Marshall Company

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**Date Revised:** 10/31/22

**Prepared By:** Stephanie Nichols

## Section 2 - Hazards Identification

**Classification of the chemical:** Hazardous in accordance with paragraph (d) of 1910.1200.

Reproductive Toxicity: Category 2

**Signal word:** Warning

**Symbol:** 

**Hazard Statements:** Suspected of damaging the unborn child

**Precautionary Statements:**

Wear protective gloves/eye protection.

If exposed or concerned get medical advice.

Store locked up.

Dispose of contents in accordance with local regulations.

**Hazards not otherwise classified:** Very toxic to aquatic life (Acute Toxicity 1) and Toxic to aquatic life with long-lasting effects (Chronic Toxicity 2)

**HMIS**

**H** 0

**F** 0

**R** 0

**PPE**† E

†Sec. 8

## Section 3 - Composition / Information on Ingredients

Ingredient Name	CAS Number	EINECS Number	Percent by Weight
Zinc Borate	138265-88-0	235-804-2	Max 100

Concentration limits: Zinc Borate does not have a specific concentration limit, so if it is used in mixtures and c >= 3% then the final mixture must be classified as Toxic to Reproduction, Cat.2, H361d.

## Section 4 - First Aid Measures

**Description of necessary measures subdivided according to the different routes of exposure:**

**Inhalation:** If symptoms such as nose or throat irritation are observed, remove the person to fresh air. No specific treatment is necessary.

**Eye:** Use eye wash or fresh water to clean the eyes. If irritation persists for more than 30 minutes, seek medical attention.

**Skin:** Poorly absorbed through intact skin. No treatment is necessary because non-irritating. Wash the area with soap and water.

**Ingestion:** The product is not intended for ingestion. Swallowing small quantities (less than 1 tsp will cause no harm to healthy adults. If larger amounts are swallowed, give two glasses of water to drink and seek medical attention.

**Most important symptoms/effects, acute and delayed:**

Symptoms of accidental over-exposure to high doses of inorganic borate salts have been associated with ingestion or absorption through large areas of severely damaged skin. These may include nausea, vomiting, and diarrhea with delayed effects of skin redness and peeling.

**Indication of immediate medical attention and special treatment needed:** Observation only is required for adult ingestion of a few grams. For ingestion of more than a few grams, maintain adequate kidney function and force fluids.

## Section 5 - Fire-Fighting Measures

**Suitable Extinguishing Media:** This material is not combustible. Use extinguishing media appropriate for surrounding fire.  
**Unsuitable Extinguishing Media:** None  
**Specific hazards arising from the chemical:** None known.  
**Hazardous Combustion Products:** None known.  
**Advice for fire-fighters:** Do not release runoff from fire control methods to sewers or waterways. No specific fire-fighting procedures given.

## Section 6 - Accidental Release Measures

**Personal precautions, protective equipment, and emergency procedures:** For normal industrial exposures, PPE is not required. Wear safety glasses, gloves, and an N99 dust mask when exposure is prolonged, and concentration is high in the air.  
**Methods and materials for containment and cleaning up:** Sweep up spillage and place it into a clean container. Avoid the generation and spreading of dust. Flush with plenty of water to clean the spillage area. Avoid release to natural watercourses. Wastewater must be disposed of in accordance with National and Local Regulations.  
**Environmental precautions:** The product is a white powder that is soluble in water and causes damage to the plants or vegetation through absorption by the roots. Avoid contamination of water bodies during cleaning and disposal.

## Section 7 - Handling and Storage

**Precautions for safe handling:** Avoid handling which leads to dust formation. Provide good ventilation. Mechanical ventilation or local exhaust ventilation may be required. Avoid spilling, skin, and eye contact. Read and follow the manufacturer's recommendations. Follow the principles of good occupational hygiene to control personal exposures.  
**Conditions for safe storage:** Store in a cool, dry, well-ventilated area. Keep tightly closed. Avoid high humidity, sunlight exposure, and temperatures under 23°F (-5°C) and over 104°F (40°C).  
**Shelf-Life:** 12 months when stored in dry, well-ventilated areas.

## Section 8 - Exposure Controls / Personal Protection

### Exposure Limits:

Ingredient	Industry recommended TWA
Zinc Borate	2 mg/m <sup>3</sup>

Note: To report for Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40CFR372.0 maximum percent by weight Zinc content is 30.3.

### Appropriate Engineering Controls:

**Ventilation:** Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

### Individual protection measures, such as personal protective equipment:

**Respiratory Protection:** Wear N99 protective masks for long exposures and where concentrations are high in the air.

**Eye protection:** Wear safety glasses for long exposures and high concentration levels.

**Skin protection:** Wear conventional working clothes.

**Hand protection:** The use of gloves is suggested.

**Contaminated Equipment:** Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

**Comments:** Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

### Environmental exposure controls:

Limiting releases from the site: Where appropriate, the material should be recovered and recycled through the process. Spillages of powder or granulated borates should be swept or vacuumed up immediately and placed in containers for disposal to prevent unintentional releases into the environment. Waste containing borates should be handled as hazardous waste and removed by a licensed operator to an offsite location where it can be incinerated or disposed to a hazardous landfill.

## Section 9 - Physical and Chemical Properties

**Appearance and Odor:** white powder

**Odor:** odorless

**Odor Threshold:** not applicable

**pH:** 7

**Freezing/Melting Point:** >300°C

**Boiling Point:** not applicable

**Flash Point:** not applicable

**Flash Point Method:** not applicable

**Evaporation Rate:** not applicable

**Flammability:** Non-flammable, not combustible.

**Upper/lower flammability or explosive limits:** not applicable

**Vapor Pressure:** negligible at 68°F (20°C)

**Vapor Density (Air=1):** not applicable

**Relative density:** 2.8

**Water Solubility:** <0.1% at 68°F (20°C)

**Other Solubilities:** soluble in acetone, ethylene glycol, glycerine, alcohols

**Partition coefficient:** n-octanol/water; <0.2, based on zinc

**Auto-ignition Temperature:** Not applicable.

**Decomposition temperature:** not applicable

**Viscosity:** not applicable

**Molecular weight:** 434.7

## Section 10 - Stability and Reactivity

**Reactivity:** Reacts as a weak acid which may cause corrosion of base metals. Reaction with strong reducing agents such as metal hydrides or alkali metals will generate hydrogen gas which could create an explosive hazard.

**Chemical Stability:** This product is stable at room temperature in closed containers under normal storage and handling conditions.

**Possibility of hazardous reactions:** Reaction with strong reducing agents such as metal hydrides or alkali metals will generate hydrogen gas which could create an explosive hazard.

**Conditions to avoid:** Avoid contact with strong reducing agents.

**Incompatible materials:** Strong reducing agents such as metal hydrides or alkali metals will generate hydrogen gas, which could create an explosive hazard.

**Hazardous Decomposition Products:** None

## Section 11- Toxicological Information

**Information on the likely routes of exposure:**

Ingestion, inhalation, and through broken skin

**Symptoms related to the physical, chemical, and toxicological characteristics:**

**Ingestion:** This may cause abdominal pains with sting, nausea, and vomiting.

**Inhalation:** Inhalation of vapors irritates the inferior and advanced respiratory system with cough and respiratory difficulty. At elevated concentrations, may also cause pulmonary edema.

**Eye irritation:** Non-irritant.

**Skin irritation:** Non-irritant

**Delayed and immediate effects and also chronic effects from short- and long-term exposure:** None known.

**Numerical measures of toxicity:**

**Ingestion:** LD<sub>50</sub> rat >5000 mg/kg

**Inhalation:** LC<sub>50</sub> rat > 4.95 mg/L air

**Eye:** No data

**Skin:** LD<sub>50</sub> rat >5000 mg/kg bw

**Carcinogenicity:** This product is not considered carcinogenic by OSHA, IARC, NTP, or ACGIH.

**Mutagenicity:** No evidence found.

**Sensitizing properties:** No evidence found.

**Chronic toxicity:** Extremely rare chronic poisonings can cause gastrointestinal symptoms.

**Reproductive toxicity:** Oral administration of zinc borate 2335 to animals for a minimum of 90 consecutive days:

**NOAEL (male):** 100 mg/kg/day    **NOAEL (female):** 375 mg/kg/day

**NOAEL (parental females):** 150 mg/kg/day

**NOAEL (developmental toxicity):** 100 mg/kg bw

## Section 12 - Ecological Information

**Ecotoxicity:** Boron is an essential micronutrient for the healthy growth of plants; however, it can be harmful to boron-sensitive plants in higher quantities. Care should be taken to minimize the amount of borate product released into the environment.

**Fish:** Seawater: Dab, Limanda limanda 96 hr LC<sub>50</sub> = 74 mg B/L

Freshwater: Rainbow trout 96 hr LC<sub>50</sub> = 2.4 mg Bzn/L

**Invertebrate:** Daphnids, Daphnia magna Straus 48 hr LC<sub>50</sub> = 76 mg B/L

Based on the above acute and chronic ecotoxicity and solubility data, zinc borate should be classified as hazardous to the environment: Acute 1, Chronic 2 because:

After 7 days at a loading of 10 mg zinc borate/L (pH 6 and 8), the amount of Zn ions in the solution is higher than the L(E)C<sub>50</sub> values for Zn (after correcting for molecular weight). L(E)C<sub>50</sub> = 0.452 mg/l.

After 28 days at a loading of 1 mg zinc borate/L (pH 6 and 8), the amount of Zn ions in the solution is higher than the NOEC values for Zn (after correcting for molecular weight). M factor = 1.

**Persistence and degradability:** Boron is naturally occurring and ubiquitous in the environment. It will undergo hydrolysis in water to form boric acid and zinc hydroxide. Neither of these substances will biomagnify through the food chain.

**Bioaccumulative potential:** There is no bioaccumulation.

**Mobility in soil:** Nutrient for vegetables. The product is soluble in water and is leachable through normal soil.

**PBT evaluation results:** Not persistent and not bioaccumulable. The criteria do not apply to inorganic substances.

**Water hazard class:** WGK 2.

## Section 13 - Disposal Considerations

**Disposal:** Dispose of in accordance with local regulations. Do not disperse to the city drain or water course. Small quantities of zinc borate can usually be disposed of at landfill sites. No special disposal treatment is required. Tonnage quantities of product are not recommended to be sent to landfills.

## Section 14 - Transport Information

**DOT Transportation Data (49 CFR 172.101):** US DOT Hazardous substance. RQ=1000 pounds. When transported in packages less than the reportable quantity (RQ), zinc borate is not a DOT Hazardous material.

**UN No.:** 3077

**UN proper shipping name:** Environmentally hazardous substance, Solid N.O.S. (Zinc Borate)

**Transport hazard classes:**

Hazard Class (ADR): Class 9: Miscellaneous dangerous substances and articles.

ADR Class No.: 9

ADR Item No.: III

Hazards No. (ADR): 90

ADR Label No.: 9

**Packing group:** III

**Environmental hazards:** Very toxic to aquatic life. Toxic to aquatic life with long-lasting effects. Marine pollutant: yes

**Special precautions:** Not regulated

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:** not regulated

Basic Description: UN3077, environmentally hazardous substance, solid, n.o.s. (zinc borate), 9, III, Marine pollutant



Tariff/Commodity Code: 2840.20

## Section 15 - Regulatory Information

### EPA Regulations:

RCRA Hazardous Waste Number (40 CFR 261.33): Not listed

RCRA Hazardous Waste Classification: Not classified

CERCLA Hazardous Substance (40 CFR 302.4): Listed, RQ-1000#

SARA Toxic Chemical (40 CFR 372.65): Section 313-Listed as 313c under CAS# 1332-07-6

SARA EHS (Extremely Hazardous Substance) (40 CFR 355): Not listed

Clean Water Act: Listed, RQ-1000#

Zinc or Zinc Compounds are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372.0.

**Risk Phrases:** R50: Very toxic to aquatic organisms.

**Safety Phrases:** S29: Do not empty into drains.

S60: This material and its container must be disposed of as hazardous waste.

S61: Avoid release to the environment.

### OSHA Regulations:

Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): Not listed

### TSCA

This substance is on the Chemical Substances Inventory of the Toxic Substance Control Act (TSCA Inventory [USA]). Please note that this product is not subject to any legal reporting requirements under these acts. CAS#12767-90-7 anhydrous.

**Clean Air Act (Montreal Protocol):** This substance is not manufactured with and does not contain any Group I or Group II ozone-depleting substances.

**INTERNATIONAL REGULATIONS**

Canada: Listed on the DSL. (CAS#12767-90-7 anhydrous)  
Canada WHMIS: Uncontrolled product.  
Europe: Listed on EIENCS #235-804-2  
Europe: Listed on EC Directive 67/548/EC as Dangerous for the Environment.  
Europe: EC Directive 689/2008 Export and Import of Dangerous Chemicals: Not listed  
Australia: Listed on AICS.  
China: Listed on IECSC.  
Korea: Listed on KECI #KE-03516.  
Philippines: Listed on PICCS.  
Japan: Listed on ENCS.  
Taiwan: Listed on NECL.  
New Zealand: Listed on NZIoC

**Section 16 - Other Information**

**Prepared By:** Stephanie Nichols

**Revision Notes:**

**Product Grades Available from the R. J. Marshall Company** (this list may be incomplete):

CTZB400

**Note: This includes all EXP ZB blends.**

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