MATERIAL SAFETY DATA SHEET

Prepared in accordance with OSHA1910.1200, ANSI Z400.1 and Canadian WHMIS

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Preservabalance (trade name Pac-Bor)

Chemical Name/Synonym(s): Disodium Octaborate Tetrahydrate; Boric acid (H2B8O13), disodium salt, tetrahydrate; Boron sodium oxide, tetrahydrate
EPA Pesticide Reg. No: 74940-1

MANUFACTURER: Preservabalance, Inc.
PO Box 968, 850 W. Chambers Street
Eloy, AZ 85231
Telephone: 520-466-7801 **Fax:** 520-466-9149 **Website:** N/A
EMERGENCY CONTACT: **1-800-222-1222**
MSDS Date of Preparation/Revision: 19-Dec-05

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Concentration %
Disodium Octaborate, Tetrahydrate	12280-03-4	99

(See Section 8 for Exposure Limits)

3. HAZARDS IDENTIFICATION

Pac-Bor is a white, odorless powder.

EMERGENCY OVERVIEW: This product is not flammable, combustible or explosive. It presents no unusual hazard if involved in a fire. May cause mild eye irritation. Inhalation of high concentrations in air may result in respiratory irritation. Chronic overexposure may result in weight loss, diarrhea, skin rash, loss of hair and anemia. May be harmful to boron sensitive plants if released in large amounts. (Refer to Section 11 for detailed health hazard information)

4. FIRST AID

INGESTION: Swallowing less than one teaspoon will not harm healthy adults. If larger amounts are swallowed, rinse mouth with water, then give two-eight ounce glasses of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get immediate medical attention. Never give anything by mouth to an unconscious or drowsy person.

SKIN CONTACT: If contact with damaged skin or open wounds occurs, remove contaminated clothing and wash off with soap and water. Seek medical attention.

EYE CONTACT: Rinse immediately with plenty of water while holding eyelids open. Seek medical attention if irritation persists.

INHALATION: If irritation develops, remove affected person from source of exposure. Seek immediate medical attention if irritation persists or other symptoms of exposure develop.

NOTES TO PHYSICIAN: Borates are well absorbed through the gastrointestinal tract, open wounds and serous cavities. Severe and fatal poisonings have rarely been reported following acute ingestion but are more common following repeated dermal application to abraded or burned skin and chronic ingestion. Severe toxicity is more common in children and may be delayed 1 to 7 days from symptom onset. Principal toxic effects include nausea, vomiting, diarrhea, and dermal effects (erythema, desquamation). Other toxic effects may include renal toxicity and

cardiovascular shock secondary to the primary effects. The dermatologic manifestations may take 3 to 5 days to fully develop. Treatment is primarily supportive and includes monitoring for the development of hypotension, fluid and electrolyte imbalance, seizures, renal failure, cardiac arrhythmias and shock. Severe dehydration can occur and contribute to adverse renal and cardiovascular effects.

5. FIRE AND EXPLOSION DATA

FLASH POINT: None
AUTOIGNITION TEMPERATURE: None
FLAMMABILITY LIMITS IN AIR (% BY VOL.): Not applicable

BASIC FIREFIGHTING PROCEDURES: Use any extinguishing media and procedures appropriate for the surrounding fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None. Disodium octaborate, tetrahydrate is not flammable, combustible or explosive. This product has flame retardant properties. Extreme heat may result in decomposition generating oxides of carbon and nitrogen.

6. ACCIDENTAL RELEASE MEASURES

SPILL OR RELEASE TO THE ENVIRONMENT: Disodium octaborate, tetrahydrate is a water soluble material that may damage trees and other vegetation through root absorption. (See Section 12 for additional information).

Spill or Leak Procedure: Stop leak if you can do it without risk. Wear appropriate protective clothing and equipment (See Section 8). Vacuum, sweep or shovel dry material and place into appropriate containers for reuse or disposal. Avoid contamination of watercourses and do not discharge to sewer. Releases to water may result in adverse effect on plants, fish and other aquatic organisms. When possible, remove intact containers from water. Advise local authorities that water should not be used for irrigation or as potable water until boron levels return to normal background levels.

Notification: Notify local, state and national authorities of releases in accordance with applicable regulations.

Refer to Sections 13 and 15 for additional information.

7. HANDLING AND STORAGE

HANDLING: Avoid contact with eyes. Avoid prolonged contact with skin. Avoid breathing large amounts of dust. Accidental ingestion of this material should be avoided. Wash with soap and water after handling. Use with adequate ventilation. Good housekeeping procedures should be followed to minimize the accumulation of dust and the generation of airborne dust.

STORAGE: No special storage required, however, dry, indoor storage is recommended to avoid caking of product.

EMPTY CONTAINERS: Empty containers may contain product residue. Do not reuse without adequate precautions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION INFORMATION

EXPOSURE LIMITS

Disodium Octaborate, Tetrahydrate: 15 mg/m^3 (total dust) 5 mg/m^3 (respirable dust) OSHA PEL-TWA
10 mg/m^3 (inhalable dust) 3 g/m^3 (respirable dust) ACGIH TLV-TWA
as Particulates Not Otherwise Specified

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls as needed to control airborne levels below recommended limits.

EYE PROTECTION: Safety goggles can be used where needed to avoid eye contact and for dusty environments.

SKIN PROTECTION: Gloves and other skin protection are not normally required but can be used where needed to avoid prolonged contact or contact with open wounds or damaged skin.

RESPIRATORY PROTECTION: If exposure limits are exceeded or if irritation is experienced, NIOSH approved respiratory protection should be worn. Ventilation and other forms of engineering controls are the preferred means for controlling chemical exposures. Respiratory protection may be needed for non-routine or emergency situations.

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: Not applicable
BULK DENSITY: 320 – 480 kg/m^3
MELTING POINT: 815°C
% VOLATILE: Negligible
VAPOR PRESSURE: Negligible
FLASH POINT: None
% SOLUBILITY IN WATER: 9.7% @ 20°C, 34.3% @ 50°C
OCTANOL/WATER PARTITION COEFFICIENT: Not available
pH: 8.3 (3% solution), 7.6 (10% solution)
APPEARANCE/ODOR: White odorless powder.

10. STABILITY AND REACTIVITY DATA

STABILITY/INCOMPATIBILITY: Stable. Avoid zirconium, strong acids, strong reducing agents and metallic salts.
HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS: Reaction with strong reducing agents such as metal hydrides or alkali metals will generate flammable hydrogen gas. Thermal decomposition, which can occur at extremely high temperatures, produces oxides of carbon and nitrogen.

11. TOXICOLOGICAL INFORMATION

PRODUCT HEALTH HAZARD INFORMATION

INGESTION: Swallowing small amounts (less than 1 teaspoon) will not harm healthy adults. Swallowing large amounts will cause severe gastrointestinal irritation with nausea, vomiting and diarrhea. Delayed skin rash and rash on the mucous membranes may occur. Kidney injury may also occur.

SKIN: Not expected to cause skin irritation. Disodium octaborate, tetrahydrate is not absorbed through the intact skin but can be absorbed in harmful amounts through open wounds and damaged skin.

EYE: May cause mild irritation. Corneal injury is not expected.

INHALATION: Inhalation of dust may cause respiratory irritation with coughing, nasal irritation, nose bleeds or difficulty breathing.

CHRONIC EFFECTS: Disodium Octaborate, Tetrahydrate is converted to Boric Acid in biological systems. Information on the chronic effects of exposure to this product is based on studies with Boric Acid and other borates. Chronic absorption of borates may result in weight loss, mild diarrhea, skin rash, loss of hair and anemia. Human epidemiological studies do not show any increase in respiratory disease in workers exposed to borates.

CARCINOGENICITY: Disodium Octaborate, tetrahydrate is not listed as a carcinogen by IARC, NTP or OSHA. A Technical Report on Boric Acid issued by the National Toxicology Program reported no evidence of carcinogenicity. No mutagenic activity was reported in a battery of four mutagenic assays.

REPRODUCTIVE/DEVELOPMENTAL EFFECTS: There is insufficient information on the potential for reproductive effects of borates in humans. Adverse testicular effects and infertility have been reported in laboratory animals. There have been limited animal studies which suggest decreased ovulation, fetotoxicity and developmental effects may occur at very high doses. Maternal toxicity was present in some studies.

ACUTE TOXICITY DATA
Eye Irritation Rabbits – Mildly Irritating
Skin Irritation Rabbits - Slightly Irritating
Acute Dermal Toxicity Rats - LD_{50} > 5000 mg/kg (No signs of gross toxicity, adverse pharmacologic effects or abnormal behavior. All animals survived and appeared active and healthy.)
Acute Oral Toxicity Rats - LD_{50} = 2752 mg/kg (Toxic signs noted included ano-genital staining, diarrhea, reduced fecal volume and hypoactive and/or hunched posture. Effects were noted on the lungs, intestines and/or liver at the 5,000 mg/kg dose.)
Acute Inhalation Toxicity Rats - LC_{50} >5.06 mg/L/4 hour
Dermal Sensitization Guinea Pigs – Not a Sensitizer

12. ECOLOGICAL INFORMATION

Boron is naturally occurring in the environment. Disodium octaborate tetrahydrate is soluble in water and leachable through soil. Disodium octaborate tetrahydrate decomposes in the environment to natural borate. High concentrations of boron can be harmful to boron sensitive plants. Plants and trees can be exposed by root absorption to toxic levels of boron if water soluble borates contaminate water and soil. Care should be taken to avoid environmental contamination with this product. The following are acute ecotoxicity values for disodium octaborate tetrahydrate:

Rainbow trout 24-day LC50 = 88 mg Boron/L; 36-day LC50 = 54 mg Boron/L
Goldfish 3-day LC50 = 71 mg Boron/L; 7-day LC50 = 65 mg Boron/L
Daphnia magna 24-hour EC50 = 242 mg Boron/L

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: This substance, when discarded or disposed of, is not listed as a hazardous waste in Federal regulations. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. The disposal of this waste material must be conducted in compliance with all applicable Federal, state, and local regulations.

14. TRANSPORTATION REQUIREMENTS

Disodium octaborate tetrahydrate is not regulated as a hazardous material for transportation by the US Department of Transportation, the Canadian Transportation of Dangerous Goods Regulations or international regulations.

15. REGULATORY INFORMATION

SARA TITLE III INFORMATION:
Section 311/312 (40 CFR 370):
Listed below are the hazard categories for the SUPERFUND Amendments and Reauthorization Act (SARA)

Immediate Hazard: _ Delayed Hazard: X Fire Hazard: _ Pressure Hazard: _ Reactivity Hazard: _

Section 313 (40 CFR 372): This product does not contain toxic chemicals that are subject to the annual toxic chemical release reporting requirements of the SUPERFUND Amendments and Reauthorization Act (SARA).

Section 302 (40 CFR 355): This product contains no chemicals listed as extremely hazardous chemicals under SUPERFUND Amendments and Reauthorization Act (SARA).

EPA TSCA: All components of this product are listed on the TSCA inventory. Disodium octaborate tetrahydrate is listed under the CAS number 12008-41-2, which is the anhydrous form.

California: This product contains no ingredients known to the State of California to cause cancer, birth defects or other reproductive harm.

CANADIAN REGULATIONS

Canadian WHMIS: The following Canadian Workplace Hazardous Materials Information System (WHMIS) categories apply to this product: Class D-2-B (Toxic Material causing other Chronic Effects)

Canadian Environmental Protection Act: All of the components of this product are listed on the Canadian Domestic Substances list (DSL). Disodium octaborate tetrahydrate is listed under the CAS number 12008-41-2, which is the anhydrous form.

This MSDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the MSDS contains all of the information required by the CPR.

16. OTHER INFORMATION

National Fire Protection Association (NFPA) Ratings:
Health: 1 **Flammability: 0** **Reactivity: 0**

Hazardous Materials Identification System (HMIS) Ratings:
Health: 1* **Flammability: 0** **Reactivity: 0**

NOTICE: The information presented herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.