

1 Chemical product and company identification

Product name: **Tim-bor Professional**
Grade: Technical
Product use: Termiticide, insecticide, fungicide
Chemical formula: $\text{Na}_2\text{B}_8\text{O}_{13}\cdot 4\text{H}_2\text{O}$
Chemical name/synonyms: Disodium Octaborate Tetrahydrate
Chemical family: Inorganic borates
CAS registry number: 12280-03-4
EPA pesticide Reg. No.: 1624-39
(Refer to Section 15 for TSCA/DSL Chemical inventory listing)

DISTRIBUTED BY:
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EMERGENCY PHONE NUMBERS:
24 Hr. Medical Info. Service (661) 284-5200
Chemtrec (Spills): (800) 424-9300

2 Composition/information on ingredients

This product contains greater than 98 percent (%) disodium octaborate tetrahydrate, $\text{Na}_2\text{B}_8\text{O}_{13}\cdot 4\text{H}_2\text{O}$, which is hazardous under the OSHA Hazard Communication Standard and under the Canadian Controlled Products

Regulations of the Hazardous Products Act (WHMIS), based on animal chronic toxicity studies. Refer to Sections 3 and 11 for details on hazards.

3 Hazard identification

Emergency overview

Tim-bor Professional is a white, odourless, powder substance that is not flammable, combustible, or explosive and has low acute oral and dermal toxicity.

Potential ecological effects

Large amounts of **Tim-bor Professional** can be harmful to plants and other species. Therefore, releases to the environment should be minimized.

Potential health effects

Routes of exposure: Inhalation is the most significant route of exposure in occupational and other settings. Dermal exposure is not usually a concern because **Tim-bor Professional** is poorly absorbed through intact skin.

Inhalation: Occasional mild irritation effects to the nose and throat may occur from inhalation of **Tim-bor Professional** dust at levels greater than 10 mg/m³.

Eye contact: **Tim-bor Professional** is non-irritating to the eyes in normal use.

Skin contact: **Tim-bor Professional** does not cause irritation to intact skin.

Ingestion: Products containing **Tim-bor Professional** are not intended for ingestion. **Tim-bor Professional** has a low

acute toxicity. Small amounts (e.g., a teaspoon) swallowed accidentally are not likely to cause effects; swallowing amounts larger than that may cause gastrointestinal symptoms.

Cancer: **Tim-bor Professional** is not a known carcinogen.

Reproductive/developmental: Animal ingestion studies in several species, at high doses, indicate that borates cause reproductive and developmental effects. A human study of occupational exposure to borate dust showed no adverse effect on reproduction.

Target organs: No target organ has been identified in humans. High dose animal ingestion studies indicate the testes are the target organs in male animals.

Signs and symptoms of exposure: Symptoms of accidental over-exposure to **Tim-bor Professional** might include nausea, vomiting and diarrhoea, with delayed effects of skin redness and peeling. These symptoms have been associated with the accidental over-exposure to the chemically related substance boric acid by ingestion or absorption through large areas of damaged skin.

Refer to Section 11 for details on toxicological data.

4 First aid measures

Inhalation: If symptoms such as nose or throat irritation are observed, remove person to fresh air.

Eye contact: Use eye wash fountain or fresh water to cleanse the eye. If irritation persists for more than 30 minutes, seek medical attention.

Skin contact: No treatment necessary because non-irritating.

Ingestion: Swallowing small quantities (one teaspoon) will cause no harm to healthy adults. If larger amounts are swallowed, give two glasses of water to drink and seek medical attention.

Note to physicians: Observation only is required for adult ingestion in the range of 4-8 grams of **Tim-bor Professional**. For ingestion of larger amounts, maintain adequate kidney function and force fluids. Gastric lavage is recommended for symptomatic patients only. Haemodialysis should be reserved for massive acute ingestion or patients with renal failure. Boron analyses of urine or blood are only useful for documenting exposure and should not be used to evaluate severity of poisoning or to guide treatment. Refer to Section 11 for details.

5 Firefighting measures

General hazard: None, because *Tim-bor Professional* is not flammable, combustible or explosive. The product is itself a flame retardant.

Extinguishing media: Any fire extinguishing media may be used on nearby fires.

Flammability classification (29 CFR 1910.1200):
Non-flammable solid.

6 Accidental release measures

General: *Tim-bor Professional* is a water-soluble white powder that may, at high concentrations, cause damage to trees or vegetation by root absorption. (Refer to Ecological information, Section 12, for specific information.)

Land spill: Vacuum, shovel or sweep up *Tim-bor Professional* and place in containers for disposal in accordance with applicable local regulations. Avoid contamination of water bodies during cleanup and disposal.

Spillage into water: Where possible, remove any intact containers from the water. Advise local water authority that none of the affected water should be used for irrigation or for the abstraction of potable water until natural dilution returns the boron value to its normal environmental background level. (Refer to Sections 12, 13 and 15 for additional information.) *Tim-bor Professional* is a non-hazardous waste when spilled or disposed of, as defined in the Resource Conservation and Recovery Act (RCRA) regulations (40 CFR 261). (Refer to Regulatory information, Section 15, for additional references.)

7 Handling and storage

General: No special handling precautions are required, but dry, indoor storage is recommended. To maintain package integrity and to minimize caking of the product, bags should be handled on a first-in, first-out basis. Good housekeeping procedures should be followed to minimize dust generation and accumulation.

Storage temperature: Ambient

Storage pressure: Atmospheric

Special sensitivity: Moisture (caking)

8 Exposure controls/personal protection

Engineering controls: Use local exhaust ventilation to keep airborne concentrations of *Tim-bor Professional* dust below permissible exposure levels.

Personal protection: Refer to label for actual regulatory personal protection requirements. Where airborne concentrations are expected to exceed exposure limits (e.g. confined spaces), NIOSH/MSHA certified respirators must be used. Eye protection, protective clothing and waterproof gloves may also be warranted under certain high exposure conditions.

Occupational exposure limits: Disodium octaborate tetrahydrate (*Tim-bor Professional*) is treated by OSHA, Cal OSHA and ACGIH as "Particulate Not Other wise Classified" or "Nuisance Dust".

ACGIH/TLV: 10 mg/m³

Cal OSHA/PEL: 10 mg/m³

OSHA/PEL (total dust): 15 mg/m³

OSHA/PEL (respirable dust): 5 mg/m³

9 Physical and chemical properties

Appearance: White, odourless, powder

Bulk density: 320 to 480 kg/m³

Vapour pressure: Negligible @ 20°C

Solubility in water: 9.7% @ 20°C; 34.3% @ 50°C

Melting point: 815°C

pH @ 20°C: 8.3 (3.0% solution)

7.6 (10.0% solution)

Molecular weight: 412.52

10 Stability and reactivity

General: *Tim-bor Professional* is a stable product.

Incompatible materials and conditions to avoid: Reaction with strong reducing agents, such as metal hydrides or alkali metals, will generate hydrogen gas, which could create an explosive hazard.

Hazardous decomposition: None.

11 Toxicological information

Acute toxicity

Ingestion: Low acute oral toxicity; LD₅₀ in rats is 2,550 mg/kg of body weight.

Skin/dermal: Low acute dermal toxicity; LD₅₀ in rabbits is greater than 2,000 mg/kg of body weight. **Tim-bor Professional** is poorly absorbed through intact skin.

Inhalation: Low acute inhalation toxicity; LC₅₀ in rats is greater than 2.0 mg/L (or g/m³).

Skin irritation: Non-irritant.

Eye irritation: Draize test in rabbits produced mild eye irritation effects. Years of occupational exposure to **Tim-bor Professional** indicates no adverse effects on human eye. Therefore **Tim-bor Professional** is not considered to be a human eye irritant in normal industrial use.

Sensitization: **Tim-bor Professional is not a skin sensitizer.**

Other

Reproductive/developmental toxicity: Animal feeding studies in rat, mouse and dog, at high doses, have

demonstrated effects on fertility and testes. Studies with the chemically related boric acid in the rat, mouse and rabbit, at high doses, demonstrate developmental effects on the foetus, including foetal weight loss and minor skeletal variations. The doses administered were many times in excess of those to which humans would normally be exposed.

Carcinogenicity/mutagenicity: No evidence of carcinogenicity in mice. No mutagenic activity was observed for boric acid in a battery of short-term mutagenicity assays.

Human data: Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to boric acid dust and sodium borate dust. A recent epidemiology study under the conditions of normal occupational exposure to borate dusts indicated no effect on fertility.

12 Ecological information

Ecotoxicity data

General: Boron (B) is the element in disodium octaborate tetrahydrate (*Tim-bor Professional*) which is used by convention to report borate product ecological effects. It occurs naturally in seawater at an average concentration of 5 mg B/L and generally occurs in freshwater at concentrations up to 1 mg B/L. In dilute aqueous solutions the predominant boron species present is undissociated boric acid. To convert disodium octaborate tetrahydrate into the equivalent boron (B) content, multiply by 0.2096.

Phytotoxicity: Boron is an essential micronutrient for healthy growth of plants; however, it can be harmful to boron sensitive plants (e.g. grass and ornamentals) in high quantities. Care should be taken to minimize the amount of *Tim-bor Professional* accidentally spilled and released to the environment.

Algal toxicity:

Green algae, *Scenedesmus subspicatus*

96-hr EC₁₀ = 24 mg B/L[†]

Invertebrate toxicity:

Daphnids, *Daphnia magna straus*

24-hr EC₅₀ = 242 mg B/L

Test substance: Sodium tetraborate

Fish toxicity:

Seawater:

Dab, *Limanda limanda*

96-hr LC₅₀ = 74 mg B/L

Freshwater:

Rainbow trout, *S. gairdneri* (embryo-larval stage)

24-day LC₅₀ = 88 mg B/L

32-day LC₅₀ = 54 mg B/L

Goldfish, *Carassius auratus* (embryo-larval stage)

7-day LC₅₀ = 65 mg B/L

3-day LC₅₀ = 71 mg B/L

Environmental fate data

Persistence/degradation: Boron is naturally occurring and ubiquitous in the environment. *Tim-bor Professional* decomposes in the environment to natural borate.

Octanol/water partition coefficient: No value. In aqueous solution disodium octaborate tetrahydrate is converted substantially into undissociated boric acid.

Soil mobility: *Tim-bor Professional* is soluble in water and is leachable through normal soil.

13 Disposal considerations

Disposal guidance: Small quantities of *Tim-bor Professional* can usually be disposed of at landfill sites. No special disposal treatment is required, but local authorities should be consulted about any specific local requirements. Tonnage quantities of product should, if possible, be used for an appropriate application.

RCRA (40 CFR 261): *Tim-bor Professional* is not listed under any sections of the Federal Resource Conservation and Recovery Act (RCRA).

NPRI (Canada): *Tim-bor Professional* is not listed on the Canadian National Pollutant Release Inventory. Refer to Section 15 for additional regulatory information.

14 Transport information

DOT hazardous classification: Disodium octaborate tetrahydrate (*Tim-bor Professional*) is not regulated by the U.S. Department of Transportation (DOT) and is therefore not considered a hazardous material/substance.

TDG Canadian transportation: Disodium octaborate tetrahydrate (*Tim-bor Professional*) is not regulated under Transportation of Dangerous Goods (TDG).

International transportation: Disodium octaborate tetrahydrate (*Tim-bor Professional*) has no UN Number, and is not regulated under international rail, road, water or air transport regulations.

OSHA/Cal OSHA: This MSDS document meets the requirements of both OSHA (29 CFR 1910.1200) and Cal OSHA (Title 8 CCR 5194 (g)) hazard communication standards. Refer to Section 8 for regulatory exposure limits.

WHMIS classification: Disodium octaborate tetrahydrate (*Tim-bor Professional*) is classified as Class D- Division 2A under Canadian WHMIS guidelines.

FIFRA: *Tim-bor Professional* is registered with the EPA (EPA Reg. No. 1624-39), in accordance with Section 3 of the Federal Professional, Fungicide and Rodenticide Act (FIFRA), as a pesticide product. Refer to EPA approved product label for additional product hazard and precautionary information.

Canadian PCP: *Tim-bor Professional* is registered with Health Canada's Pest Management Regulatory Agency (PMRA) under the Pest Control Products Act (PCP) (PCP Reg. No. 24091).

Chemical inventory listing: Disodium octaborate tetrahydrate (*Tim-bor Professional*), 12280-03-4, appears on several chemical inventory lists (including the EPA TSCA inventory, Canadian DSL, European EINECS and Korean lists) under the CAS No. representing the anhydrous form of this inorganic salt.

U.S. EPA TSCA Inventory	12008-41-2
Canadian DSL	12008-41-2
EINECS	234-541-0
South Korea	9312-3213

RCRA: Disodium octaborate tetrahydrate is not listed as a hazardous waste under any sections of the Resource Conservation and Recovery Act (RCRA) or regulations (40 CFR 261 et seq).

California Proposition 65: Disodium octaborate tetrahydrate (*Tim-bor Professional*) is not listed on the Proposition 65 list of carcinogens or reproductive toxicants.

Superfund: CERCLA/SARA. Disodium octaborate tetrahydrate is not listed under CERCLA or its 1986 amendments, SARA, including substances listed under

Section 313 of SARA, Toxic Chemicals, 42 USC 11023, 40 CFR 372.65, Section 302 of SARA, Extremely Hazardous Substances, 42 USC 11002, 40 CFR 355, or the CERCLA Hazardous Substances list, 42 USC 9604, 40 CFR 302.

Safe Drinking Water Act (SDWA): Disodium octaborate tetrahydrate is not regulated under the SDWA, 42 USC 300g-1, 40 CFR 141 et seq. Consult state and local regulations for possible water quality advisories regarding boron compounds.

Clean Water Act (CWA) (Federal Water Pollution Control Act): 33 USC 1251 et seq.

- Disodium octaborate tetrahydrate (*Tim-bor Professional*) is not itself a discharge covered by any water quality criteria of Section 304 of the CWA, 33 USC 1314.
- It is not on the Section 307 List of Priority Pollutants, 33 USC 1317, 40 CFR 129.
- It is not on the Section 311 List of Hazardous Substances, 33 USC 1321, 40 CFR 116.

Canadian drinking water guideline: An "Interim Maximum Acceptable Concentration" (IMAC) for boron is currently set at 5 mg B/L.

IARC: The International Agency for Research on Cancer (IARC) (a unit of the World Health Organization) does not list or categorize disodium octaborate tetrahydrate as a carcinogen.

NTP Biennial Report on Carcinogens: Disodium octaborate tetrahydrate is not listed.

OSHA carcinogen: Disodium octaborate tetrahydrate is not listed.

Clean Air Act (Montreal Protocol): *Tim-bor Professional* was not manufactured with and does not contain any Class I or Class II ozone depleting substances.

References

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- Weir R J, Fisher R S, *Toxicol. Appl. Pharmacol.* **23:** 351-364 (1972).
- Fail et al., *Fund. Appl. Toxicol.* **17:** 225-239 (1991).
- Price et al., *J. Am. Coll. Toxicol.* **14:** (2), 173 (Abst. P-17) (1995).
- Murray F J, *Regul. Toxicol. Pharmacol.* (Dec. 1995).
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- Butterwick L, de Oude N, Raymond K, *Ecotoxicol. Environ. Safety* **17:** 339-371 (1989).

For general information on the toxicology of inorganic borates, see Patty's Industrial Hygiene and Toxicology, 4th Ed. Vol. II, (1994), Chap. 42, Boron; ECETOC Tech. Report No. 63 (1995).

Product label text hazard information:

Refer to EPA (United States) or PMRA (Canada) approved product specimen label for additional product hazard and precautionary information.



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