

**Order
Number**
**Customer
Number**
1. Identification of the substance/preparation and of the company/undertaking

Product name : Tetrodotoxin, *Fugu* sp. **Catalog #** : 554412
Supplier : Manufactured by EMD Biosciences, Inc.
 10394 Pacific Center Court
 San Diego, CA 92121
 (858)450-5558/(800)854-3417
 FAX: (858)453-3552
Chemical formula : C₁₁H₁₇N₃O₈
Synonym : TTx

Emergency telephone number : **Call Chemtrec®**
 (800)424-9300 (within U.S.A.)
 (703)527-3887 (outside U.S.A.)

2. Composition / information on ingredients

Substance/Preparation : Substance

Chemical name*	CAS No.	EC Number	Symbol	R-Phrases
1) Tetrodotoxin, <i>Fugu</i> sp.	4368-28-9	Not available.	T+	R26/27/28

3. Hazards identification

Physical/chemical hazards : Not applicable.
Human health hazards : DANGER!
 MAY BE FATAL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED.
 MAY CAUSE DAMAGE TO THE FOLLOWING ORGANS: LUNGS,
 GASTROINTESTINAL TRACT, CARDIOVASCULAR SYSTEM, RESPIRATORY
 TRACT, SKIN, ARMS, LEGS, MUSCLE TISSUE.

4. First-aid measures
First-Aid measures

- Inhalation** : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Ingestion : If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
Skin Contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Eye Contact : Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

Effects and symptoms

- Inhalation** : Extremely hazardous in case of inhalation. May be fatal if inhaled.
Ingestion : Extremely hazardous in case of ingestion. May be fatal if swallowed.
Skin Contact : Extremely hazardous in case of skin contact (permeator). Severe over-exposure can result in death.

Aggravating conditions : Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

5. Fire-fighting measures

- Flammability of the Product** : May be combustible at high temperature.
- Extinguishing Media**
- Suitable** : SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
- Hazardous thermal (de)composition products** : These products are carbon oxides (CO, CO₂), nitrogen oxides (NO, NO₂...).
- Special fire-fighting procedures** : Fire fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.
- Protection of fire-fighters** : Be sure to use an approved/certified respirator or equivalent.

6. Accidental release measures

- Personal precautions** : Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
- Small Spill and Leak** : Use appropriate tools to put the spilled solid in a convenient waste disposal container.
- Large Spill and Leak** : Poisonous solid.
Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal.

7. Handling and storage

- Handling** : Keep locked up. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Avoid contact with skin. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label.
- Storage** : Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store below 4°C (39.2°F).
- Packaging materials**
- Recommended use** : Use original container.

8. Exposure controls/personal protection

- Engineering measures** : Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
- Hygiene measures** : Wash hands, forearms, and face thoroughly after handling compounds and before eating, smoking, using lavatory, and at the end of day.

<u>Ingredient Name</u>	<u>Occupational Exposure Limits</u>
1) Tetrodotoxin, <i>Fugu</i> sp.	Not available.

Personal protective equipment

- Respiratory system** : Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.
- Skin and body** : Lab coat.
- Hands** : Gloves.
- Eyes** : Safety glasses.
- Protective Clothing (Pictograms)** :



9. Physical and chemical properties

- Physical state** : Solid. (Crystalline solid. Lyophilized from citric acid-sodium citrate buffer, pH 4.8-4.9.)
- Color** : Not available.
- Molecular Weight** : 319.3 g/mole
- Melting Point** : Decomposition temperature: 220°C (428°F)
- Solubility** : Easily soluble in cold water.
- Flash point** : Not available.
- Explosive properties** : Risks of explosion of the product in presence of mechanical impact: Not available.
Risks of explosion of the product in presence of static discharge: Not available.

10. Stability and reactivity

- Stability** : The product is stable.
- Conditions to avoid** : Not available.
- Hazardous Decomposition Products** : These products are carbon oxides (CO, CO₂), nitrogen oxides (NO, NO₂...).

11. Toxicological information

- RTECS #** : **IO1450000**
- Local effects**
- Skin irritation** : Not available.
- Acute toxicity** : LD50: Not available.
LC50: Not available.
- Chronic toxicity** : Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
- Other Toxic Effects on Humans** : Toxic for humans or animal life.
Extremely hazardous in case of skin contact (permeator), of ingestion, of inhalation.
- Not available.
- Exposure can cause nausea, headache and vomiting. Can cause rapid suffocation. May be fatal.
- Carcinogenic effects** : Not available.
- Mutagenic effects** : Not available.
- Reproduction toxicity** : Not available.
- Teratogenic effects** : Not available.

12. Ecological information

- Ecotoxicity** : Not available.
- Toxicity of the Products of Biodegradation** : The products of degradation are less toxic than the product itself.

13. Disposal considerations

- Methods of disposal; Waste of residues; Contaminated packaging** : Waste must be disposed of in accordance with federal, state and local environmental control regulations.

14. Transport information

International transport regulations

- UN number** : UN2811
- Land - Road/Railway**
- Proper shipping name** : Toxic solid, organic, n.o.s.*
- ADR/RID Class** : CLASS 6.1: Toxic substance.
- Packing Group** : I
- ADR/RID label** :



Sea

- Proper shipping name** : Toxic solid, organic, n.o.s.*
- IMDG Class** : CLASS 6.1: Toxic substance.
- Packing Group** : I
- IMDG label** :



Air

- Proper shipping name** : Toxic solid, organic, n.o.s.*

UN/ID Number : UN2811
 IATA-DGR Class : CLASS 6.1: Toxic substance.
 IATA label :



Special Provisions for Transport : Not available.

15. Regulatory information

EU Regulations

Hazard symbol(s) :



Classification :

Very toxic

Risk Phrases :

R26/27/28- Very toxic by inhalation, in contact with skin and if swallowed.

Safety Phrases :

S22- Do not breathe dust.
 S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.
 S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Contains :

- Tetrodotoxin, *Fugu* sp.

U.S. Federal Regulations

TSCA: No products were found.
 SARA 302/304/311/312 extremely hazardous substances: No products were found.
 SARA 302/304 emergency planning and notification: No products were found.
 SARA 302/304/311/312 hazardous chemicals: No products were found.
 SARA 311/312 MSDS distribution - chemical inventory - hazard identification: No products were found.
 SARA 313 toxic chemical notification and release reporting: No products were found.
 Clean Water Act (CWA) 307: No products were found.
 Clean Water Act (CWA) 311: No products were found.
 Clean air act (CAA) 112 accidental release prevention: No products were found.
 Clean air act (CAA) 112 regulated flammable substances: No products were found.
 Clean air act (CAA) 112 regulated toxic substances: No products were found.

HCS Classification :

CLASS: Highly toxic.
 CLASS: Target organ effects.

State Regulations :

WHMIS (Canada)

CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
 CLASS D-2A: Material causing other toxic effects (VERY TOXIC).
 No products were found.

16. Other information

Hazardous Material Information System (U.S.A.)

Health	*	4
Fire Hazard		1
Reactivity		0
Personal Protection		E

National Fire Protection Association (U.S.A.)



Notice to Reader

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Date of issue

Catalog # 554412

3/6/2003.

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