

## SAFETY DATA SHEET

### 1. SUBSTANCE AND SOURCE IDENTIFICATION

#### Product Identifier

**RM Number:** 8642a  
**RM Name:** FDA Saxitoxin Dihydrochloride Solution  
**Other Means of Identification:** Not applicable.

#### Recommended Use of This Material and Restrictions of Use

This Reference Material (RM) is intended primarily for use in evaluating chemical methods of analysis and in the calibration of instrumental methods for analysis used in AOAC International Official Method 959.08 Paralytic Shellfish Poison and for other similar uses. A unit of RM 8642a consists of five, amber borosilicate ampoules, each containing approximately 1.2 mL of a 20 % ethanol/water solution containing 5 mmol/L hydrochloric acid and 100 µg/g saxitoxin HCl.

#### Company Information

National Institute of Standards and Technology  
 Standard Reference Materials Program  
 100 Bureau Drive, Stop 2300  
 Gaithersburg, Maryland 20899-2300

Telephone: 301-975-2200  
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 1-800-424-9300 (North America)  
 +1-703-527-3887 (International)

### 2. HAZARDS IDENTIFICATION

#### Classification

**Physical Hazard:** Not classified.  
**Health Hazard:** Acute Oral Toxicity, Category 1

#### Label Elements

##### Symbol



##### Signal Word

DANGER

##### Hazard Statement(s)

H300 Fatal if swallowed.

##### Precautionary Statement(s)

P264 Wash hands thoroughly after handling.  
 P270 Do not eat, drink or smoke when using this product.  
 P301+P310 If swallowed, immediately call a doctor.  
 P330 Rinse mouth.  
 P405 Store locked up.  
 P501 Dispose of contents and containers in accordance with local regulations.

**Hazards Not Otherwise Classified:** None.

**Ingredients(s) with Unknown Acute Toxicity:** None.

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### 3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

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**Substance:** 20 % Ethanol in water solution with small amounts HCl and saxitoxin.

**Other Designations:** not applicable.

Hazardous Component(s)	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Ethanol	64-17-5	200-578-6	20
Hydrochloric acid	7647-01-0	231-595-7	0.02
Saxitoxin HCl	35554-08-6	n/a	0.01
Non-Hazardous Component(s)			
Water	7732-18-5	231-791-2	80

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### 4. FIRST AID MEASURES

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#### Description of First Aid Measures

**Inhalation:** If adverse effects occur, remove to well-ventilated (uncontaminated) area. If breathing is difficult, qualified personnel may administer oxygen. If not breathing, qualified personnel should give artificial respiration. Seek immediate medical attention.

**Skin Contact:** Rinse affected skin with water for at least 15 minutes, and then wash thoroughly with soap or mild detergent and water. If skin irritation persists, seek medical aid and bring the container or label.

**Eye Contact:** Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Seek immediate medical attention.

**Ingestion:** If swallowed, seek immediate medical attention.

**Most Important Symptoms/Effects, Acute and Delayed:** Saxitoxin is a potent neurotoxin. Ethanol may cause respiratory tract irritation, skin irritation, eye irritation, liver damage, and central nervous system depression.

**Indication of any immediate medical attention and special treatment needed, if necessary:** If any of the above symptoms are present, seek immediate medical attention.

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### 5. FIRE FIGHTING MEASURES

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**Fire and Explosion Hazards:** Slight fire hazard. Vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Vapor air mixtures are explosive above flash point. See Section 9, "Physical and Chemical Properties" for flammability properties.

#### Extinguishing Media

Suitable: Alcohol resistant foam, carbon dioxide, regular dry chemical, or flood with fine water spray.

Unsuitable: Do not use a heavy water stream. Use of heavy stream of water may spread fire.

**Specific Hazards Arising from the Chemical:** Not applicable.

**Special Protective Equipment and Precautions for Fire-Fighters:** Move container from fire area if it can be done without personal risk. Avoid inhalation of material or combustion by-products. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

**NFPA Ratings** (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health = 4                  Fire = 1                  Reactivity = 0

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### 6. ACCIDENTAL RELEASE MEASURES

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**Personal Precautions, Protective Equipment and Emergency Procedures:** Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection".

**Methods and Materials for Containment and Clean up:** Collect in appropriate container for disposal.

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### 7. HANDLING AND STORAGE

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**Safe Handling Precautions:** Use suitable personal protection equipment (PPE). See Section 8, "Exposure Controls and Personal Protection".

**Storage and Incompatible Materials:** Store in a well-ventilated area. Samples should be used immediately after opening the ampoule.

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits			
Components	OSHA (PEL)	ACGIH (TLV)	NIOSH (REL)
Ethanol	TWA: 1900 mg/m <sup>3</sup> (1000 ppm)	STEL: 1900 mg/m <sup>3</sup> (1000 ppm)	TWA: 1900 mg/m <sup>3</sup> (1000 ppm) IDLH: 3300 ppm (10 % LEL)

**Engineering Controls:** Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

**Personal Protection Measures:** In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate PPE to minimize exposure to this material.

**Respiratory Protection:** If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

**Eye Protection:** Splash resistant safety goggles and emergency eyewash are recommended.

**Skin and Body Protection:** Chemical resistant clothing and gloves are recommended.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Note: The physical properties of this RM are established. The information below is for pure ethanol, the largest hazardous component of the solution. The properties of the actual mixture may vary from what is described below.

Descriptive Properties	Ethanol
Molar Mass (g/mol)	46.07
Molecular Formula	C <sub>2</sub> H <sub>5</sub> OH
Appearance (physical state, color, etc.)	clear, colorless liquid
Odor	fruity odor
Odor threshold	5 ppm to 10 ppm
pH	acidic
Evaporation rate	1.4 (carbon tetrachloride=1)
Melting point/freezing point	117 °C (-178.6 °F)
Relative Density as Specific Gravity (water = 1)	0.7893
Vapor Pressure	40 mmHg at 19 °C
Vapor Density (air = 1)	1.6
Viscosity	1.22 cP to 1.41 cP 20 °C
Solubilities	soluble in water
Partition coefficient (n-octanol/water)	not available
<b>Thermal Stability Properties</b>	
Autoignition Temperature	363 °C (685 °F)
Thermal Decomposition	not available
Initial boiling point and boiling range	78.3 °C to 78.5 °C (173 °F)
Explosive Limits, LEL (Volume %)	3.3
Explosive Limits, UEL (Volume %)	19
Flash Point	13 °C (TCC)
Flammability (solid, gas)	not applicable

## 10. STABILITY AND REACTIVITY

**Reactivity:** Stable at normal temperatures and pressure.

**Stability:**  Stable  Unstable

**Possible Hazardous Reactions:** Not applicable.

**Conditions to Avoid:** Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers.

**Incompatible Materials:** Halocarbons, metals, metal salts, oxidizing materials, halogens, peroxides, bases, combustible materials.

**Hazardous Decomposition:** Ethanol: oxides of carbon; Saxitoxin is heated to decomposition, it emits very toxic fumes of nitroxides and hydrogen chloride.

**Hazardous Polymerization:** \_\_\_\_\_ Will Occur        X   Will Not Occur

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## 11. TOXICOLOGICAL INFORMATION

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**Route of Exposure:**      X   Inhalation        X   Skin        X   Ingestion

**Symptoms Related to the Physical, Chemical and Toxicological Characteristics:** Respiratory tract irritation, skin irritation, eye irritation, narcosis.

### Potential Health Effects (Acute, Chronic and Delayed):

**Inhalation:** Ethanol may cause irritation of mucous membranes, headache, drowsiness, fatigue, nervousness, dullness, narcosis, lack of concentration, somnolence, and symptoms of drunkenness. Reproductive effects have been reported in animals.

**Skin Contact:** Ethanol may cause irritation, mild redness and burning, sensitization, allergic, contact dermatitis. Chronic exposure to ethanol may result in defatting of the skin.

**Eye Contact:** Ethanol may cause irritation, conjunctivitis, and corneal cloudiness. Vapors exposure at sufficiently high concentrations may cause stinging and watering of the eye.

**Ingestion:** Ethanol short term exposure may cause headache, drowsiness, emotional lability, decreased inhibitions, exhilaration, boastfulness, talkativeness, remorse, belligerency, gradual visual impairment, muscular incoordination, slurring of speech, and symptoms of drunkenness; long term exposure may result in liver damage. Reproductive effects have been reported in animals.

### Numerical Measures of Toxicity

**Acute Toxicity:** Category 1, Oral

Ethanol,      Rat, Oral LD50: 7060 mg/kg

                  Rat, Inhalation LC50: 124.7 mg/L (4 h)

Saxitoxin,    Mouse, Oral LD50: 263 µg/kg

                  Human, minimum lethal oral dose is between 1 and 4 mg.

**Skin Corrosion/Irritation:** Not classified.

Ethanol,      Rabbit skin, moderate: 20 mg (24 h)

                  Human skin: 70 %

**Serious Eye Damage/Irritation:** Not classified.

Ethanol,      Rabbit eyes, mild: 500 mg (24 h)

                  Rabbit eyes, severe: 500 mg

**Respiratory Sensitization:** No data available; not classified.

**Skin Sensitization:** No data available; not classified.

**Germ Cell Mutagenicity:** Not classified.

Ethanol, Human: 15 mmol/L (24 h), 100 mmol/L (3 h)

**Carcinogenicity:** Not classified, this RM is not for human consumption.

**Listed as a Carcinogen/Potential Carcinogen**      \_\_\_\_\_ Yes        X   No

      IARC lists ethanol (as related to alcoholic beverages) as Group 1 (carcinogenic to humans).

**Reproductive Toxicity:** Not classified.

Ethanol,      Rat, Oral TDLo: 112 mg/kg (14 d)

                  Human, Oral TDLo (37 weeks pregnant): 250 mg/kg

**Specific Target Organ Toxicity, Single Exposure:** No data available; not classified.

**Specific Target Organ Toxicity, Repeated Exposure:** No data available; not classified.

**Aspiration Hazard:** No data available; not classified.

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## 12. ECOLOGICAL INFORMATION

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### Ecotoxicity Data:

Ethanol, Fish: Rainbow trout (*Oncorhynchus mykiss*) LC50 (static): 12.0 mL/L to 16.0 mL/L (96 h)

Fathead minnow (*Pimephales promelas*) LC50 (static): >100 mg/L (96 h)

Invertebrate: Freshwater water flea (*Daphnia magna*) EC50 (static): 2 mg/L (48 h)

**Persistence and Degradability:** No data available.

**Bioaccumulative Potential:** No data available.

**Mobility in Soil:** No data available.

**Other Adverse effects:** No data available.

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## 13. DISPOSAL CONSIDERATIONS

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**Waste Disposal:** Dispose of waste in accordance with all applicable federal, state, and local regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.

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## 14. TRANSPORTATION INFORMATION

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**U.S. DOT and IATA:** UN2810, Toxic liquid, organic, n.o.s. (saxitoxin dihydrochloride, ethanol), Hazard Class 6.1, Packing Group I.

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## 15. REGULATORY INFORMATION

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### U.S. Regulations

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not regulated.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21)

ACUTE HEALTH:	Yes
CHRONIC HEALTH:	No
FIRE:	No
REACTIVE:	No
PRESSURE:	No

### State Regulations

California Proposition 65: Not listed.

**U.S. TSCA Inventory:** Ethanol and hydrochloric acid are listed.

**TSCA 12(b), Export Notification:** Not listed.

**Canadian Regulations:** WHMIS Information is not provided for this material.

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## 16. OTHER INFORMATION

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**Issue Date:** 25 July 2016

**Sources:** ChemADVISOR, Inc., SDS *Ethyl Alcohol, 20 %*, 09 December 2015.

ChemADVISOR, Inc., SDS *Ethyl Alcohol*, 09 December 2015.

ChemADVISOR, Inc., SDS *Ethyl Alcohol*, 09 December 2015.

ChemADVISOR, Inc., SDS *Hydrochloric Acid*, 09 December 2015.

### Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NTP	National Toxicology Program
CAS	Chemical Abstracts Service	OSHA	Occupational Safety and Health Administration
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	PEL	Permissible Exposure Limit
CFR	Code of Federal Regulations	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	REL	Recommended Exposure Limit
EINECS	European Inventory of Existing Commercial Chemical Substances	RQ	Reportable Quantity
EPCRA	Emergency Planning and Community Right-to-Know Act	RTECS	Registry of Toxic Effects of Chemical Substances
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act
IATA	International Air Transport Association	SCBA	Self-Contained Breathing Apparatus
IDLH	Immediately Dangerous to Life and Health	RM	Standard Reference Material
LC50	Lethal Concentration	STOT	Specific Target Organ Toxicity
LD50	Median Lethal Dose or Lethal Dose, 50 %	STEL	Short Term Exposure Limit
LEL	Lower Explosive Limit	TLV	Threshold Limit Value
MSDS	Material Safety Data Sheet	TPQ	Threshold Planning Quantity
NFPA	National Fire Protection Association	TSCA	Toxic Substances Control Act
NIOSH	National Institute for Occupational Safety and Health	TWA	Time Weighted Average
NIST	National Institute of Standards and Technology	UEL	Upper Explosive Limit
n.o.s.	Not Otherwise Specified	WHMIS	Workplace Hazardous Materials Information System

**Disclaimer:** Physical and chemical data contained in this SDS are provided only for use in assessing the hazardous nature of the material. The SDS was prepared carefully, using current references; however, NIST does not certify the data in the SDS. The values for this material are given in the NIST Report of Investigation.

Users of this RM should ensure that the SDS in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail [srmmsds@nist.gov](mailto:srmmsds@nist.gov); or via the Internet at <http://www.nist.gov/srm>.