

Material Safety Data SheetBotulinum Neurotoxin Type D, Nicked, Recombinant
Product #146A**1. PRODUCT AND COMPANY INFORMATION**

Product Name : Botulinum Neurotoxin Type D, Nicked, Recombinant
Synonym : rBoNT/D
Product Number : 146A

Company : List Biological Laboratories, Inc.
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Campbell, CA 95008-6906, USA

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2. COMPOSITION / INFORMATION ON INGREDIENTS

Product #: 146A

Component	CAS No.	Percent (%)
Botulinum Neurotoxin Type D, Nicked, Recombinant	N/A	~2
Sodium Chloride (NaCl)	7647-14-5	~89
Potassium Phosphate, monobasic	7778-77-0	~1
Sodium Phosphate, dibasic, heptahydrate	7782-85-6	~8

3. HAZARDS IDENTIFICATION**Emergency Overview**

Warning. Irritant. Harmful.

Avoid contact with eyes, skin and clothing. Avoid prolonged contact with eyes, skin and clothing. Do not ingest. Avoid breathing dust. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

This product is a Tier 1 Select Agents & Toxins. Tier 1 Select Agents & Toxins are the organisms and toxins that have been designated by APHIS and/or CDC as presenting the greatest risk of deliberate misuse with the most significant potential for mass casualties or devastating effects to the economy, critical infrastructure or public confidence.

NFPA Rating

Health Hazard: 4
Fire: 0
Reactivity Hazard: 0

HMIS Rating

Health Hazard: 4*

Fire: 0

Physical Hazard: 0

Potential Health Effects

Inhalation May be harmful if inhaled. Causes respiratory tract irritation

Skin Causes skin irritation

Eyes Causes eye irritation

Ingestion Harmful if swallowed

For additional information on toxicity, please refer to Section 11.

4. FIRST AID MEASURES

General Advice

Move affected person out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.

Seek medical attention, since supportive therapy will be required if symptoms occur. Immune serum (available from the U.S. Public Health Service, Centers for Disease Control, at 404-639-3311 days or 404-639-2888 after hours) may also be a part of the medical treatment.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution. Consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Flammability of the product

Not flammable or combustible.

Extinguishing media

Use extinguishing media appropriate to surrounding fire conditions.

Protective equipment for fire-fighters

Use an approved/certified respirator.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Wear appropriate laboratory attire including lab coat, gloves and safety glasses. Nitrile gloves are recommended when handling lyophilized material.

Methods and materials for containment and cleaning up

In case of a spill or a release, take precautions to minimize worker exposure. For spills onto surface areas, the contaminated surface should be thoroughly sprayed or rinsed for at least five minutes with at least a 0.5% sodium hypochlorite solution (equivalent to a 1:10 dilution of household bleach), then wiped dry. Autoclaving may be applied to contaminated material which is in solution or to which the autoclave steam has access. Autoclaving at $\geq 121^{\circ}\text{C}$, ≥ 15 psi in a validated cycle will render the product safe.

Hold all material for appropriate disposal as described in Section 13 DISPOSAL CONDITIONS.

7. HANDLING AND STORAGE

Precautions for safe handling

Wear appropriate laboratory attire including lab coat, gloves and safety glasses. Nitrile gloves are

recommended when handling lyophilized material.

Recommended storage temperature

Store at 2 – 8°C prior to and following reconstitution.

8. **EXPOSURE CONTROLS / PERSONAL PROTECTION**

Occupational Exposure Limit

None identified.

Personal Protective Equipment

Eyes

Wear safety goggles or glasses.

Skin

Handle with appropriate gloves. Wear nitrile gloves when handling the product in the lyophilized form. Wear appropriate laboratory clothing / lab coat.

Respiratory protection

Use respirators and components tested and approved under appropriate government standards; or, ensure adequate ventilation using engineering controls, such as, a biological safety cabinet or chemical fume hood.

Hygiene measures

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. **PHYSICAL AND CHEMICAL PROPERTIES**

Physical state and appearance

Powder. (Lyophilized in 1X Phosphate Buffered Saline (PBS), pH 7.4)

Color

White

Solubility

Easily soluble in water.

Odor

Data not available

Odor threshold

Data not available

Melting point / freezing point

Data not available

Initial boiling point and boiling range

Data not available

Flash point

Data not available

Evaporation rate

Data not available

Flammability (solid, gas)

Data not available

Upper/Lower flammability limit

Data not available

Upper/Lower Explosive limit

Data not available

Vapor pressure

Data not available

Vapor density

Data not available

Relative density

Data not available

Partition coefficient: n-octanol/water

Data not available

Auto-ignition temperature

Data not available

Decomposition temperature

Data not available

Viscosity

Data not available

10. **STABILITY AND REACTIVITY**

Stability

Stable under recommended storage conditions.

Conditions to avoid

Not applicable for this product.

11. **TOXICOLOGY INFORMATION**

To the best of our knowledge, the chemical, physical and toxicological properties have not been fully investigated.

Toxicity Data

Estimated lethal amount for a 100 lb (45.5 kg) human – without treatment or vaccinations – extrapolated from animal studies:

22.8 – 90 ng ip

RTECS: LD₅₀ rat, 4 ng/kg subcutaneous, LD₅₀ mice, 30 pg/kg

Signs and Symptoms of Exposure

Botulinum neurotoxin is a very potent neurotoxin which may be fatal if inhaled, ingested, injected, or introduced into a wound. The incubation period is usually 4 hours to 8 days. Symptoms include muscle weakness (especially in the face and neck early on, then the upper extremities, and finally the lower extremities), fatigue, dizziness, incoordination, an extremely dry mouth, blurred vision, sensitivity to bright lights, difficulty swallowing (drooling), difficulty speaking clearly (slurring), difficulty breathing, nausea, abdominal bloating, constipation, and difficulty urinating. There are no mentation nor sensory abnormalities and no fever.

Additional Information

RTECS: ED9300000

Toxicity Data Reference:

Gill, D.M., *Microbiol. Rev.* **46**, 86, 1982.

Arnon, S.S., Schechter, R. Inglesby T.V. *et.al.*, for the working group on civilian biodefense (2001), *JAMA*, 285, 1059-1070. *Botulinum Toxin as a Biological Weapon: Medical and Public Health Management.*

12. ECOLOGICAL INFORMATION

Product is unlikely to cause a concern to the environment.

13. DISPOSAL CONSIDERATIONS

Dispose of waste in accordance with appropriate Federal, state and local regulations or applicable governmental requirements.

14. TRANSPORT INFORMATION

IATA

UN number: UN3462

Class: 6.1

Packing group: I

Proper shipping name: Clostridium botulinum

15. REGULATORY INFORMATION

OSHA Hazards

Irritant

SARA 302

Not subject to reporting requirements and there are no Threshold Planning Quantities for this product.

Safety Phrases

S22 – Do not breathe dust

S24/25 – Avoid contact with skin and eyes

S36/37/39 – Wear suitable protective clothing, gloves and eye/face protection

Risk Phrases

R23/24/25 – Toxic by inhalation, in contact with skin and if swallowed

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects or any other reproductive harm.

16. OTHER INFORMATION

Version: 1.0 / Issued Date: 07/2013

CAUTION – Not fully tested. For research use only. Not for human use.

The preceding information is based on available data and is believed to be correct, but does not purport to be all inclusive and should be used as a guide in handling this material. Users should make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials, the safety and health of employees and customers, and the protection of the environment. The absence of warning must not, under any circumstance, be taken to mean that no hazard exists. List Biological Laboratories, Inc. shall not be held liable for any damage resulting from handling or from contact with the above product.