

Section 1 – Product and Company Information

Product Name: Beta Toxin, from *Clostridium perfringens*

Catalog Number: NR-10359

Company:

American Type Culture Collection
10801 University Boulevard
Manassas, Virginia, 20110-2204, USA

Telephone: 800-638-6597 or 703-365-2700

Fax: 703-365-2745

24 hour Emergency Number: 703-365-2710 or 800-424-9300 (Chemtrec - transport only)

Product Use: This material is authorized for research, non-commercial purposes only. It is not intended for use on human subjects.

Section 2 – Composition/Information on Ingredient

Substance Name: Beta Toxin, from *Clostridium perfringens* in 0.3M Tris-HCl, 0.1M NaCl, pH 7.5.

CAS #: Not applicable

Alternate CAS #: Not applicable

UN #: 3172

RTECS #: Not available

Synonym or Cross Reference: *Bacillus aerogenes capsulatus*, *Clostridium welchii*, *C. perfringens*, Darmbrand, Pig-bel, Struck, Pulpy kidney disease, CPB

Section 3 – Hazards Identification

Health Hazards: Moderately Toxic. Beta Toxin, from *Clostridium perfringens* is hazardous as defined by the Occupational Safety and Health Standards, 29 CFR Part 1910.1200. The OSHA Hazcom Standard is available online at http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10099.

Biosafety: The toxicological properties of this material have not been thoroughly investigated but, based on demonstrated toxicity in animal studies and disease caused by *Clostridium perfringens* organisms that produce beta toxin, purified beta toxin presumed toxic in humans. Handle as potentially biohazardous material under at least Biosafety Level 2 containment.

Chemical Safety:

HMIS Rating:

Health: 3
Flammability: 0
Reactivity: 0

NFPA Rating:

Health: 3
Flammability: 0
Reactivity: 0

Section 4 – First Aid Measures

In case of any exposure, seek medical attention.

Eye Exposure: With clean hands remove any contact lenses. Immediately flush with copious amounts of water, including under the eyelids, for at least 15 minutes. Then report to your safety officer and seek medical attention.

Dermal Exposure: Remove contaminated clothes. Rinse skin with plenty of water and soap if available. Then report to your safety officer and seek medical attention.

Inhalation Exposure: If victim is having trouble breathing or stops breathing seek emergency medical help. Do not perform CPR unless it can be done safely and you are a certified individual.

Oral Exposure: If a person is unconscious never give them anything to drink and seek emergency medical help. Do not induce vomiting unless directed by medical personnel. If victim begins to vomit, turn on side or stomach to prevent backflow into respiratory tract.

Section 5 – Fire Fighting Measures

Flammability: Not flammable

Suitable Extinguishing Media: Water spray, carbon dioxide, dry chemical powder, Halon (where regulations permit), or appropriate foam.

Firefighting

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent inhalation, ingestion, skin and eye contact.

Specific Hazard(s): Material is not flammable. Responders should take into consideration the biohazard risk associated with responding to a fire in the area where the material may be stored or handled.

Section 6 – Accidental Release Measures

Procedure(s) of Personal Precaution(s): At a minimum use PPE listed in Section 8. Wear laboratory coat, gloves and eye protection. Avoid all contact.

Methods for Cleaning Up

Patient/Victim: Wash with soap and water. Work clothes should be laundered separately. Launder contaminated clothing before re-use. Do not take clothing home.

Equipment/Environment: Allow aerosols to settle; wearing protective clothing, gently cover spill with paper towel and apply 1% sodium hypochlorite, starting at perimeter and working towards the center; allow sufficient contact time before clean up (30 min).

Note: The use of additional proper PPE may be necessary for cleaning solutions.

Section 7 – Handling and Storage

Handling/User Exposure: Handle in accordance with at least Biosafety Level 2 practices. Keep closed or covered when not in use. Wear appropriate PPE. Avoid direct contact. Avoid tasks that may create aerosols.

Suitable Storage: The product is provided frozen on dry ice and should be stored at -80°C or colder immediately upon arrival. Repeated freeze-thaw cycles should be avoided.

Special Requirements: Follow established laboratory procedures when handling material.

Section 8 – Exposure Controls/PPE

AVOID DIRECT CONTACT

Work should be conducted under at least Biosafety Level 2. Appropriate safety procedures should always be used with this material. Laboratory safety is discussed in the following publication: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health. Biosafety in Microbiological and Biomedical Laboratories. 5th ed. Washington, DC: U.S. Government Printing Office, 2007. This text is available online at <http://www.cdc.gov/od/ohs/biosfty/bmb15/bmb15toc.htm>.

Engineering Controls: For all manipulations that could cause splashes or aerosols this material must be handled in a Class I or Class II Biosafety Cabinet with easy access to a safety shower and eyewash. Avoid handling the material in a manner likely to create aerosols. Dispose all sharps in an approved sharps container.

Respiratory Protection: Consult your organization's Respiratory Protection Program and OSHA 1910.134 for respiratory protection guidance.

Personal Protective Equipment: Laboratory coat, gloves and safety glasses with side-shields should be worn.

General Hygiene Measures: Avoid direct contact with skin, eyes, nose or mouth. Do not swallow or inhale. Wash hands at completion of work.

Section 9 – Physical/Chemical Properties

Appearance/Physical State:	Liquid (shipped as frozen solid)
Molecular Weight:	35 kDa
Boiling Point/Range:	Not available
Melting Point/Range:	Not available
Freezing Point:	Not available
Vapor Pressure:	Not available
Vapor Density:	Not available
Saturated Vapor Concentration:	Not available
Specific Gravity:	Not available
Density:	Not available
Odor Threshold:	Not available
Decomposition Temperature:	Not available
Flash Point:	Not available
Flammability Limits:	Not available
Autoignition Temperature:	Not available
Solubility:	Not available

Section 10 – Stability and Reactivity

Stability: Stable under ambient conditions. Refer to Section 7 for handling and storage information.

Conditions to Avoid: None known

Materials to Avoid: None known

Hazardous Decomposition Products: Not applicable

Hazardous Polymerization: Not applicable

Section 11 – Toxicological Information

Route of Exposure

Eye Contact: Data not available. Avoid eye contact.

Skin Contact: Inoculation into an open wound is a possible exposure route. Avoid skin contact.

Skin Absorption: Data not available. Avoid skin absorption.

Inhalation: Data not available. Avoid inhalation.

Ingestion: Ingestion is a possible route of exposure. Avoid ingestion.

Parenteral Exposure: Accidental autoinoculation is a possible exposure route. Avoid parenteral exposure.

Sensitization

Skin: Not known to occur.

Respiratory: Not known to occur.

Target Organ(s) or System(s)

See below

Signs and Symptoms of Exposure

There is little or no published data on the effects of pure beta toxin in humans. Extrapolating from studies in animals and disease caused by *Clostridium perfringens* organisms that produce beta toxin, necrotic lesions may be possible. All five types of *Clostridium perfringens* can contaminate wounds and may result in gas gangrene, clostridial cellulitis or superficial contamination by production of toxins that cause local tissue necrosis.

Beta toxin is a lethal necrotizing toxin produced during vegetative growth of *Clostridium perfringens* type C which cause the disease necrotizing enteritis (also known as enteritis necroticans or pig-bel) in humans. The toxin causes hemorrhagic necrosis and significant destruction of the intestinal villi. The disease is characterized by vomiting, diarrhea, severe abdominal pain, and the presence of blood in the stools. Death may occur from intestinal obstruction or systemic toxemia. The incubation time for infection with *Clostridium perfringens* type C that produce beta toxin is at least 5–6 h, and symptoms start with an acute sudden onset of severe abdominal pain and diarrhea (often bloody), sometimes with vomiting, followed by necrotic inflammation of the small intestine. If not treated, the disease is often fatal and has a mortality rate of 15–25% even with treatment.

Toxicity Data:

INV Mouse: LD₅₀: 310 ng/kg

IPR Mouse: LD₅₀: 4500 ng/kg

Effects of Long Term or Repeated Exposure: Data not available

Chronic Exposure–Teratogen: Data not available

Chronic Exposure–Mutagen: Data not available

Chronic Exposure–Reproductive Hazard: Data not available

Section 12 – Ecological Information

Ecotoxicological Information: No ecological information available

Section 13 – Disposal Considerations

Decontaminate all wastes before disposal (steam sterilization, chemical disinfection, and/or incineration).

Dispose of in accordance with applicable regulations.

Section 14 – Transport Information

Contact BEI Resources for transport information.

Section 15 – Regulatory Information

Beta Toxin, from *Clostridium perfringens* is not a Select Agent and hence is not required to be registered with the CDC.

Section 16 – Other Information

Disclaimer of expressed and implied warranties

The above information was compiled from sources believed to be reliable and is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. ATCC®, BEI Resources and the U.S. Government shall not be held liable for any damage resulting from handling or from contact with the above product. See the appropriate Product Information Sheet, Certificate of Analysis and invoice for additional terms and conditions of sale.

Abbreviations

ACGIH – American Conference of Industrial Hygienists
ANSI – American National Standards Institute
ATCC – American Type Culture Collection
BEI Resources – Biodefense and Emerging Infections Research Resources Repository
CAS # – Chemical Abstract System Registry Number
CDC – Center for Disease Control
CFR – Code of Federal Regulations
CPB – *Clostridium perfringens* Beta toxin
CPR – CardioPulmonary Resuscitation
E. coli – *Escherichia coli*
HCl – Hydrochloride
HHS – Health and Human Services
INV – Intravenous
IPR – Intraperitoneal
kDa – Kilodalton
kg – Kilogram
LD₅₀ – Lethal Dose, 50%
NFPA – National Fire Protection Association
ng – Nanogram
OSHA – Occupational Safety & Health Administration

Biodefense and Emerging Infections Research Resources Repository
P.O. Box 4137
Manassas, VA 20108-4137 USA
www.beiresources.org

800-359-7370
Fax: 703-365-2898
E-mail: contact@beiresources.org

PPE – Personal Protective Equipment
RTECS # – Registry of Toxic Effects of Chemical Substances Number