

SUPPORTING INFECTIOUS DISEASE RESEARCH

Issue Date 03-Jul-2018

Revision Date Not applicable.

Version 1

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name β -Cyclodextrin Derivative IB102 (AMBnT β CD)
Product Code NR-33152

Other means of identification

Synonyms Not available.

Recommended use of the chemical and restrictions on use

Recommended Use Material is authorized for research, non-commercial purposes only.
Uses Advised Against Not available.

Details of the supplier of the safety data sheet

Supplier Address

BEI Resources
 10801 University Blvd.,
 Manassas, VA,
 USA, 20110-2204

Emergency telephone number

Company Phone Number (800) 359-7370/ (703) 365-2727
24 Hour Emergency Phone Number Chemtrec (US): 1-800-424-9300.
 Domestic: (703) 365-2710.
 International: +1(703)-527-3887.

2. HAZARDS IDENTIFICATION

Classification

Health Hazards

Not classified.

Physical Hazards

Flammable Liquids	Category 4
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OSHA Regulatory Status

This product is not considered hazardous by the 2012 OSHA Hazard Communication Standard/Globally Harmonized System of Classification and Labelling of Chemicals (GHS); (29 CFR 1910.1200; Revision 3).

Label elements

Emergency Overview

Warning

Hazard Statements

Combustible liquid.

Normal precautions common to safe manufacturing practice should be followed in handling and storage.

Appearance Clear solution in screw-capped plastic cryovials.

Physical State Liquid.

Odor Not available.

Precautionary Statements - Prevention

Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Wear protective gloves/clothing/eye protection/face protection.

Precautionary Statements - Response

In case of fire: Use CO₂, dry chemical or alcohol-resistant foam to extinguish.

Precautionary Statements - Storage

Store in a well-ventilated place.

Precautionary Statements - Disposal

Dispose of contents and container in accordance with applicable regional, national and local laws and regulations.

Hazards not otherwise classified (HNOC)

Biosafety Level 1

Other information

DMSO is rapidly absorbed through the skin.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200; Revision 3).

Common name	IB102.
Chemical name	per-6-S-[(3-aminomethyl)-benzylthio]- β -cyclodextrin hydrochloride (AMBnT β CD).
Synonyms	Not available.
Chemical Family	Cyclic oligosaccharide; hepta-6-substituted β -cyclodextrin derivative.
Chemical nature	Inhibitor of spore-forming toxins (e. g. anthrax toxins, <i>Clostridium botulinum</i> C2 toxin, <i>Clostridium difficile</i> A, B and CDT toxins, and <i>Clostridium perfringens</i> iota toxin).

Chemical Name	CAS No.	Weight-%
Dimethyl sulfoxide (DMSO)	67-68-5	97.923
IB102	N/A	2.077

4. FIRST AID MEASURES

First aid measures

Eye Contact	Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for a duration of 15-20 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. If eye irritation persists: Get medical advice/attention.
Skin Contact	Take off immediately all contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Wash with plenty of lukewarm, gently flowing water for a duration of 15-20 minutes or until medical aid is available. Immediately call a POISON CENTER/doctor. Wash contaminated clothing before re-use or discard. If skin irritation occurs: Get medical advice/attention.
Inhalation	Remove source of exposure or move person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER/doctor. If breathing is difficult, trained personnel should administer emergency oxygen if advised to do so by the POISON CENTER/doctor. Immediately call a POISON CENTER/doctor.
Ingestion	Rinse mouth. Immediately call a POISON CENTER/doctor. If breathing has stopped, immediately start cardiopulmonary resuscitation (CPR) or automated external defibrillation (AED). Treatment of fluid and electrolyte loss is usually achieved through oral rehydration.

Most important symptoms and effects, both acute and delayed

Symptoms Not available.

Indication of any immediate medical attention and special treatment needed

Note to Physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES**Suitable extinguishing media**

For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

Unsuitable Extinguishing Media None known.

Specific hazards arising from the chemical

Not available.

Hazardous Combustion Products

- Carbon oxides (CO_x).
- Sulfur oxides (SO_x).

Explosion data

Sensitivity to Mechanical Impact None known.

Sensitivity to Static Discharge None known.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

Personal Precautions Wear appropriate personal protective equipment (see Section 8). Keep unnecessary personnel away. Ensure adequate ventilation, especially in confined areas.

Environmental precautions

Environmental Precautions See Section 12 for additional ecological information.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

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: Mix with sand or similar inert absorbent material, sweep up and keep in a tightly closed container for disposal.

7. HANDLING AND STORAGE**Precautions for safe handling**

Advice on Safe Handling Use aseptic procedures. Decontamination of work surfaces daily, after finishing work and following spills. Do not get in eyes, on skin or on clothing. Do not breathe vapors or mist. Use good personal hygiene practices. Eating, drinking and smoking in work areas is prohibited. Remove contaminated clothing and protective equipment before entering eating

areas. Eyewash stations and showers should be available in areas where this material is used and stored. Access to the laboratory is restricted when work is being conducted. Frequent and careful hand-washing and laboratory decontamination should be strictly enforced. Ventilation Requirements: Use only with adequate ventilation to control air contaminants to their exposure limits. Required HEPA-filtered vacuum lines.

Conditions for safe storage, including any incompatibilities

Storage Conditions	All containers must be properly labelled. Store in approved containers and protect against physical damage. Keep containers in a well ventilated area. Containers that have been opened must be carefully resealed to prevent leakage. Empty containers retain residue and may be dangerous. If frozen suspension, store intact at -70°C. If the item is freeze-dried, store at -20°C. Freeze-dried products are hygroscopic and must be protected from exposure to moisture and oxygen during storage.
Packaging materials	Packaged in screw-capped plastic cryovials.
Incompatible materials	Not available.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines	This product, as supplied, does not contain any hazardous materials with Occupational Exposure Limits (OEL) established by the region-specific regulatory bodies.
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Appropriate engineering controls

Engineering Controls	The health hazard risks of handling this material are dependent on factors, such as physical form and quantity. Site-specific risk assessments should be conducted to determine the appropriate exposure control measures. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels as low as reasonably achievable.
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Individual protection measures, such as personal protective equipment

Eye/Face Protection	In laboratory, medical or industrial settings, safety glasses with side shields are highly recommended. The use of goggles or full face protection may be required depending on the industrial exposure setting. Contact a health and safety professional for specific information.
Skin and Body Protection	In laboratory, medical or industrial settings, gloves and lab coats are recommended. The use of additional personal protective equipment such as shoe coverings, gauntlets, hoods or head coverings may be necessary. Contact a health and safety professional for specific information.
Respiratory Protection	Not required for normal handling of packed product. Respirators may be required for certain laboratory and manufacturing tasks if engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (where the exposure limits have not been established). Workplace risk assessments should be completed before specifying and implementing respirator usage. All respirators must conform to specifications for efficiency and performance indicated by OSHA Standard 29 CFR 1910.134.
General Hygiene Considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid.	Odor	Not available.
Appearance	Clear solution	Odor Threshold	Not available.
Color	Clear.		

<u>Property</u>	<u>Values</u>	<u>Remarks</u>
pH	Not available.	
Melting Point/Freezing Point	Not available.	
Boiling Point/Boiling Range	Not available.	
Flash Point	95°C	Flammability flash point of DMSO
Evaporation Rate	Not available.	
Flammability (solid, gas)	Not available.	
Flammability Limit in Air		
Upper Flammability Limit:	Not available.	
Lower Flammability Limit:	Not available.	
Vapor Pressure	Not available.	
Vapor Density	Not available.	
Specific Gravity	Not available.	
Water Solubility	Not available.	
Solubility in Other Solvents	Soluble in dimethyl sulfoxide (DMSO)	
Partition Coefficient	Not available.	
Autoignition Temperature	Not available.	
Decomposition Temperature	Not available.	
Kinematic Viscosity	Not available.	
Dynamic Viscosity	Not available.	
Explosive Properties	Not available.	
Oxidizing Properties	Not available.	
 <u>Other information</u>		
Softening Point	Not available.	
Molecular Weight	~ 2,337 g/mol	
VOC Content (%)	Not available.	
Density	Not available.	
Bulk Density	Not available.	

10. STABILITY AND REACTIVITY

Reactivity

DMSO can react with oxidizing materials.

Chemical stability

Stable under normal conditions.

Possibility of hazardous reactions

Not available.

Conditions to avoid

Not available.

Incompatible materials

Not available.

Hazardous decomposition products

Sulfurous oxides (SO_x).

11. TOXICOLOGICAL INFORMATION

Product Information

Acute Toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50	Intravenous LD50
Dimethyl sulfoxide 67-68-5	= 28300 mg/kg (Rat) = 14500 mg/kg (Rat)	= 40 g/kg (Rat)	> 5.33 mg/L (Rat) 4 h	-

Information on toxicological effects

Symptoms Not available.

Delayed and immediate effects as well as chronic effects from short- and long-term exposure

Skin Corrosion/Irritation Dermal exposure to DMSO causes skin reactions, erythema and pruritus, which appear immediately after contact with the undiluted substance; 70% solutions are usually tolerated without symptoms. In very sensitive individuals, however, reactions have been seen after contact with 10% solutions.

Serious Eye Damage/Eye Irritation No data available.

Sensitization No data available.

Germ Cell Mutagenicity DMSO was negative for genotoxicity when tested in the *Salmonella typhimurium* pre-incubation protocol at concentrations of DMSO (100, 333, 1000, 3333, 10000 ug) /with strains TA97, TA98, TA100, TA102, TA104, TA1537, and TA1538.

Carcinogenicity No data available.

Reproductive Toxicity Dimethyl sulfoxide interfered with embryo development in some but not all experimental animal studies when given parenterally. We did not locate human data. Parenteral exposure is not anticipated in humans.

STOT - Single Exposure Not classified.

STOT - Repeated Exposure Not classified.

Aspiration Hazard Not applicable.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Dimethyl sulfoxide 67-68-5	12350 - 25500: 96 h Skeletonema costatum mg/L EC50	34000: 96 h Pimephales promelas mg/L LC50 33 - 37: 96 h Oncorhynchus mykiss g/L LC50 static 40: 96 h Lepomis macrochirus g/L LC50 static 41.7: 96 h Cyprinus carpio g/L LC50		7000: 24 h Daphnia species mg/L EC50

Persistence and degradability

No data available.

Bioaccumulation

No data available.

Mobility

Chemical Name	Partition Coefficient
Dimethyl sulfoxide 67-68-5	-2.03

Other adverse effects

No data available.

13. DISPOSAL CONSIDERATIONS**Waste treatment methods**

Disposal of Wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations. Do not reuse container.

U.S. EPA Waste Number Not available.

California Hazardous Waste Codes Not available.

This product does not contain substances that are listed with the State of California as hazardous waste.

14. TRANSPORT INFORMATION

DOT Not determined.

IATA Not determined.

15. REGULATORY INFORMATION**U.S. Federal Regulations****SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

U.S. State Regulations

California Proposition 65

No component is on the Prop 65 list.

U.S. State Right-to-Know Regulations

This product contains the following substances regulated by state right-to-know regulations.

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Dimethyl sulfoxide 67-68-5	X		

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable.

16. OTHER INFORMATION

Prepared By	IES Engineers
Issue Date	03-Jul-2018
Revision Date	Not applicable.
Revision Note	New SDS.

Disclaimer

BEI Resources considers that the information contained in this Safety Data Sheet is accurate, and while it is provided in good faith, it is without warranty of any kind, expressed or implied. The information contained herein is designated only as guidance for safe handling, storage and use of the substance and is not a specification nor does it guarantee any specific properties. Only competent personnel, within a controlled environment should handle all chemicals. BEI Resources is not to be held liable for any loss, injury or damage from contact with the product.

End of Safety Data Sheet