

Material Safety Data Sheet

1. Product and company identification

Product name : Sulfo-NHS-SS-Biotin
 Synonym : EZ-Link® Sulfo-NHS-SS-Biotin, No-Weight™ Format, Sulfoacetylindolyl-2-(6-biotinamido)ethyl-1,3-dithiopropionate
 Supplier : Thermo Fisher Scientific
 Pierce Biotechnology
 P.O. Box 117
 Rockford, IL 61105
 United States
 815.968.0747 or
 800.874.3723
 Product No. : 0021331 0021331B 0021328 1859385 1859978 1881230
 MSDS # : 174
 Validation date : 10/13/2008
 Print date : 10/13/2008
 Responsible name : MSDS Specialist
 In case of emergency : CHEMTREC: Use of
 800.424.9300 Substance/Preparation
 OUTSIDE US:
 202.463.7616
 Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

2. Hazards identification

Physical state : Solid, [Solid powder.]
 OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), the MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.
 Emergency overview : NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.
 Routes of entry : No known significant effects or critical hazards. Avoid prolonged contact with eyes, skin and clothing.
 Potential acute health effects :
 Inhalation : Eye contact. Inhalation. Ingestion.
 Ingestion : No known significant effects or critical hazards.
 Skin : No known significant effects or critical hazards.
 Eyes : No known significant effects or critical hazards.
 Potential chronic health effects :
 Chronic effects : No known significant effects or critical hazards.
 Carcinogenicity : No known significant effects or critical hazards.
 Mutagenicity : No known significant effects or critical hazards.
 Teratogenicity : No known significant effects or critical hazards.

10/13/2008.

2. Hazards identification

Developmental effects : No known significant effects or critical hazards.
 Fertility effects : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Inhalation : No specific data.
 Ingestion : No specific data.
 Skin : No specific data.
 Eyes : No specific data.
 Medical conditions aggravated by over-exposure : None known.

The preparation is not classified as dangerous according to Directive 1999/45/EC and its amendments.
 Classification : Not classified.
 See toxicological information (section 11)

3. Composition/information on ingredients

Substance/preparation : Preparation

There are no ingredients or additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

Inhalation

: Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention if symptoms occur. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Ingestion

: Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if symptoms occur. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact

: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Eye contact

: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Protection of first-aiders

: No action shall be taken involving any personal risk or without suitable training.

See section 11 for more detailed information on health effects and symptoms.

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5. Fire-fighting measures

- Flammability of the product** : No specific fire or explosion hazard.
- Extinguishing media**
- : Use an extinguishing agent suitable for the surrounding fire.
 - : None known.
- Not suitable**
- : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
 - : No specific data.
- Hazardous combustion products**
- : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Special protective equipment for fire-fighters**

6. Accidental release measures

- Personal precautions**
- : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).
- Environmental precautions**
- : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Large spill**
- : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.
- Small spill**
- : Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

7. Handling and storage

- Handling**
- : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage**
- : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

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Responsible Director Name: J.P. N. Macdonald Esq. PG 004-117
 Revision: 5
 Date: 08/07/07
 AHS 004-216 FA
 Date Thermo Scientific was last reviewed: 01/10/05

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8. Exposure controls/personal protection

- Europe**
- No exposure limit value known.**
- Consult local authorities for acceptable exposure limits.**
- Recommended monitoring procedures**
- : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
- Engineering measures**
- : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.
 - : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Hygiene measures**
- : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Personal protection**
- Respiratory**
- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Hands**
- : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.
- Eyes**
- : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Skin**
- : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
- Environmental exposure controls**

9. Physical and chemical properties

- Physical state** : Solid. [Solid powder.]
- Color** : White. Off-white.
- Solubility** : Soluble in the following materials: cold water and hot water.

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10. Stability and reactivity

- Chemical stability** : The product is stable. Under normal conditions of storage and use, hazardous polymerization will not occur.
- Conditions to avoid** : No specific data.
- Incompatible materials** : No specific data.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Possibility of hazardous reactions** : Will not occur.

11. Toxicological information**United States**

- Acute toxicity** : To the best of our knowledge, the toxicological properties of this product have not been thoroughly investigated.

Chronic toxicity

- Conclusion/Summary** : Not available.

Carcinogenicity

- Conclusion/Summary** : Not available.

Mutagenicity

- Conclusion/Summary** : Not available.

Irritogenicity

- Conclusion/Summary** : Not available.

Reproductive toxicity

- Conclusion/Summary** : Not available.

Europe

- Chronic effects** : No known significant effects or critical hazards.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.

12. Ecological information

- Environmental effects** : No known significant effects or critical hazards.

United States

- Aquatic toxicity** : Not available.
- Conclusion/Summary** : No known significant effects or critical hazards.
- Other adverse effects** : No known significant effects or critical hazards.

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13. Disposal considerations

- Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

- Hazardous waste** : Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 91/689/EEC.

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

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*
DOT Classification	Not regulated.	-	-	-
IATA-DGR Class	Not regulated.	-	-	-

PG* : Packing group

15. Regulatory information**United States**

- HCS Classification** : Not regulated.
- U.S. Federal regulations** : TSCA 4(g) final test rules: ethyl acetate; Hexane

United States Inventory (TSCA 8b): Not determined.

TSCA 8(d) H and S data reporting: ethyl acetate

TSCA 12(b) one-time export: ethyl acetate

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.

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: hydrochloric acid

Clean Air Act (CAA) 112 accidental release prevention: hydrochloric acid

Clean Air Act (CAA) 112 regulated flammable substances: hydrochloric acid

Clean Air Act (CAA) 112 regulated toxic substances: hydrochloric acid

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

Ingredient name

	Cancer	Reproductive	No significant risk level	Maximum acceptable dose level
1,4-Dioxycyclohexane	Yes	No	Yes	No

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Sulfo-NHS-SS-Biotin

15. Regulatory information

- Canada
WHMIS (Canada) : Not controlled under WHMIS (Canada).
Canada Inventory : Canada Inventory: Not determined.
EU regulations
Risk phrases : This product is not classified according to EU legislation.
International regulations
International lists : Australia Inventory (AICS): Not determined.
China Inventory (IECSC): All components are listed or exempted.
Korea Inventory (KECI): Not determined.
Philippines Inventory (PICCS): Not determined.
Japan Inventory (JNCIS): Not determined.

16. Other information

- Label requirements : NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.
Hazardous Material Information System (U.S.A.) :

Health	0
Flammability	0
Physical hazards	0

The customer is responsible for determining the PPE code for this material.
National Fire Protection Association (U.S.A.) :



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Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

10/13/2008.