

Shiga Toxoids

(Recombinant)

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Stx 1a: Product No. 300900 (10µg)

Stx 1c: Product No. 300905 (10µg)

Stx 1d: Product No. 300910 (10µg)

Stx 2a: Product No. 300920 (10µg)

Stx 2b: Product No. 300925 (10µg)

Stx 2c: Product No. 300930 (10µg)

Stx 2d: Product No. 300935 (10µg)

Stx 2e: Product No. 300940 (10µg)

Stx 2f: Product No. 300945 (10µg)

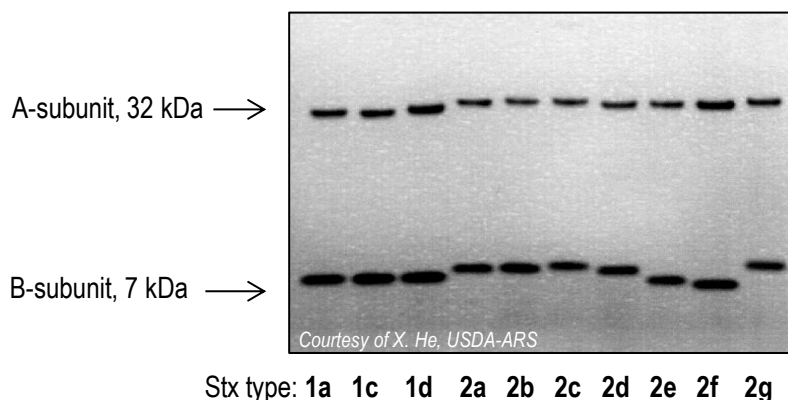
Stx 2g: Product No. 300950 (10µg)

1. General Description

Shiga toxins (also known as verotoxins) are a family of toxins of emerging concern to human health. Shiga toxins are produced by certain bacteria, including select Shiga toxin-producing *E. coli* (STEC), and are diagnostically separated into two groups, Stx 1 and Stx 2. Stx 1 is further broken down into three subtypes (Stx 1a, Stx 1c, Stx 1d) and Stx 2 into seven subtypes (Stx 2a, Stx 2b, Stx 2c, Stx 2d, Stx 2e, Stx 2f, Stx 2g). Both groups are AB₅ toxins, consisting of a 32kDa A-subunit with five ~7.7kDa B-subunits, for a total molecular weight of approximately 72kDa. Due to their cytotoxic activity, consuming meats and produce contaminated with STEC is a main cause of food poisoning, resulting in a range of symptoms from diarrhea to hemorrhagic colitis and hemolytic uremic syndrome.

The Shiga toxoids produced by Abraxis, Inc. in recombinant *E. coli* have an altered glutamic acid active site in the A-subunit, rendering the modified toxin ("toxoid") non-cytotoxic as confirmed by Vero cell tests.

The gel image below shows 1µg of each recombinant Shiga toxoid subtype separated by SDS-PAGE into A- and B-subunits:



2. Safety Instructions

Use safe laboratory practices and protective equipment (including but not limited to gloves, lab coats, and safety glasses) when working with Shiga toxoids. Refer to Safety Data Sheet for further information.

3. Storage and Stability

The Shiga toxoid is supplied as a lyophilized powder. Upon receipt, store at 4°C. In lyophilized form, the toxoid is stable at least one year. After reconstitution, store the solution at 4°C for up to two weeks, or at -20°C for up to a year (aliquot to avoid repeated freezing and thawing). When reconstituted in 100µL of water, each vial contains 10µg of Shiga toxoid in 1X PBS pH 7.3 + 10% trehalose. Mix by gently inverting the tube, do not vortex.

4. Applications

Shiga toxoids can be used as controls for ELISA or Western blot analyses, or for other research purposes.

General Limited Warranty: Abraxis, Inc. warrants the products manufactured by the Company, against defects and workmanship when used in accordance with the applicable instructions for a period not to extend beyond the product's printed expiration date. Abraxis Inc. makes no other warranty, expressed or implied. There is no warranty of merchantability or fitness for a particular purpose.

This product is intended for research use only.



Safety Data Sheet

Section 1: Product and Company Identification

1.1 Product Identifiers:

Product Name: Recombinant Stx1a, Recombinant Stx1c, Recombinant Stx1d, Recombinant Stx2a, Recombinant Stx2b, Recombinant Stx2c, Recombinant Stx2d, Recombinant Stx2e, Recombinant Stx2f, Recombinant Stx2g

Product Code: 300900, 300905, 300910, 300915, 300920, 300925, 300930, 300935, 300940, 300945, 300950,

1.2 Identified Use: Study of Shiga toxins. **Restrictions on Use:** For research use only.

1.3 Company: Abraxis, Inc., 124 Railroad Drive, Warminster, PA 18974 USA, info@abraxiskits.com +1(215) 357-3911, FAX +1(215) 357-5232

1.4 Emergency Telephone Number: +1(215) 357-3911

Section 2: Hazard(s) Identification

2.1 Classification of the substance: Not a hazardous substance.

2.2 GHS Label elements, including precautionary statements: Not applicable.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS: No data available. See section 11.

2.4 Unknown acute toxicity: No data available. See section 11.

Section 3: Composition / Information on Ingredients

3.1 Substances: Not a hazardous substance. We recommend handling all substances with caution.

Name and Synonym(s): Stx, Shiga toxin/Shiga toxoid, Verotoxin/Verotoxoid

Section 4: First Aid Measures

4.1 Description of first aid measures: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

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: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

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

4.2 Most important symptoms and effects, both acute and delayed: See section 11.

4.3 Indication of any immediate medical attention and special treatment needed: No data available. Treat symptomatically.

Section 5: Fire-fighting Measures

5.1 Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture: No data available

5.3 Advice for firefighters: Wear self-contained breathing apparatus for fire-fighting if necessary.

5.4 Further information: No data available

Section 6: Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures: Use personal protective equipment (see section 8). Avoid dust formation. Avoid breathing vapors, mist, dust, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

6.2 Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal. Do not let product enter drains.

6.4 Reference to other sections: For information on safe handling see section 7.

For information on personal protection see section 8.

For information on disposal see section 13.

Section 7: Handling and Storage

7.1 Precautions for safe handling: See section 2. Avoid inhalation of vapors and contact with skin and eyes. Wear appropriate personal protective equipment. Do not eat, drink, or smoke in work area.

7.2 Precautions for safe storage: Keep container(s) tightly closed in a dry, well-ventilated place. Protect from physical damage. See label or product insert for appropriate storage temperature and additional specific information.

7.3 Specific end use(s): No data available

Section 8: Exposure Controls / Personal Protection

8.1 Control parameters: Not applicable.

8.2 Exposure controls:

Appropriate engineering controls: Provide adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Keep away from food and beverages.

Personal protective equipment: The usual precautionary measures, including eye/face/skin protection, should be taken when handling any chemical. Avoid contact with eyes, skin, and clothing.

Eye protection: As with handling of any chemical, wear approved safety goggles.

Skin protection: Handle with gloves. No specific information regarding glove material or thickness is available, but gloves must be impermeable and resistant to the substance being handled. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Respiratory protection: As with any chemical, where excessive vapor, mist, or dust may result, use a chemical fume hood or approved respiratory protection equipment.

Body protection: Lightweight, protective clothing.

Section 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties of the substance

Appearance: Solid **Odor:** No data available **Odor Threshold:** No data available

pH: No data available **Melting point/freezing point:** No data available

Initial boiling point and boiling range: No data available **Flash point:** No data available

Evaporation rate: No data available **Flammability (solid, gas):** No data available

Upper/lower flammability or explosive limits: No data available **Vapor pressure:** No data available

Vapor density: No data available **Relative density:** No data available

Water solubility: No data available **Partition coefficient: n-octanol/water:** No data available

Auto-ignition temperature: Not applicable **Decomposition temperature:** No data available

Viscosity: No data available **Explosive properties:** No data available

Oxidizing properties: No data available

9.2 Other information: No data available

Section 10: Stability and Reactivity

10.1 Reactivity: No data available

10.2 Chemical stability: Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions: No data available

10.4 Conditions to avoid: No data available

10.5 Incompatible materials: No data available

10.6 Hazardous decomposition products: No data available. In the event of fire: see section 5.

Section 11: Toxicological Information

11.1 Information on toxicological effects

Acute toxicity: Not available. To the best of our knowledge, the chemical, physical, and toxicological properties of this product have not been thoroughly investigated. The amino acid sequences of these toxoids are modified to make the resulting proteins non-catalytic, and they are not toxic by the Vero cell test (see X. He *et al.*, J Immunol Methods 389:18-28, 2013; and C. Skinner *et al.*, PLoS One 10:e0132419, 2015).

Inhalation: No data available

Ingestion: No data available

Skin contact: No data available

Eye contact: No data available

Signs and symptoms of Exposure: No data available

Respiratory or skin sensitization: No data available **Aspiration hazard:** No data available **Mutagenicity:** No data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Teratogenicity: No data available

Reproductive/fertility toxicity: No data available

Specific target organ toxicity, single exposure: No data available

Specific target organ toxicity, repeated exposure: No data available

Section 12: Ecological Information

12.1 Toxicity: No data available

12.2 Persistence and degradability: No data available

12.3 Bioaccumulative potential: No data available

12.4 Mobility in soil: No data available

12.5 Results of PBT and vPvB assessment: No data available

12.6 Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Section 13: Disposal Considerations

13.1 Waste treatment methods

Product: All waste must be handled and disposed according to local, state, and federal regulations. Avoid disposing large volumes in sewer.

Contaminated packaging: All waste must be handled and disposed according to local, state, and federal regulations.

Refer to sections 7 and 8 for safe handling guidance.

Section 14: Transport Information

UN Number: Not regulated **UN Proper shipping name:** Not classified as dangerous in the meaning of transport regulations.

Transport hazard class(es): No data available **Packing group:** No data available

Environmental hazard: IMDG not a marine pollutant **Bulk transport:** No data available **Special considerations:** No data available

Section 15: Regulatory Information

SARA Title III, Section 302 Components: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA Title III, Section 313 Components: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 311/312.

State Right-to-Know

Massachusetts: Not applicable; Pennsylvania: Not applicable; New Jersey: Not applicable

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

Section 16: Other information

This information is based on our present knowledge. While Abraxis , INC. believes that the data contained herein are factual and the opinions expressed represent a best effort to present accurate information, the data are not to be taken as a warranty or representation for which Abraxis , INC. assumes legal responsibility. The information shall not be taken as being all-inclusive and is to be used only as a guide. The data are offered solely for the user's consideration, investigation, and verification. These suggestions should not be confused with either state, municipal, or insurance requirements, or with national safety codes and constitute no warranty. Any use of these data and information must be determined by the user to be in accordance with applicable federal, state, and local regulations.

All materials and mixtures may present unknown hazards and should be used with caution. Since Abraxis , INC. cannot control the methods, volumes, or conditions of use of this product, Abraxis , INC. shall not be held liable for any damages or losses resulting from the handling or from contact with the product as described herein. An individual technically qualified to handle potentially hazardous chemicals must supervise the use of this material. This product is sold for research use only. It is not for any human or animal therapeutic or clinical diagnostic use.

Date this SDS was prepared: 5/20/2016

Version: 1

Changes from previous version: N/A