SECTION 1: IDENTIFICATION

1.1. Product Identifier
Product Form: Mixture
Product Name: Diaminobenzidine
Product Code: 4800-30-07

1.2. Intended Use of the Product
No use is specified.

1.3. Name, Address, and Telephone of the Responsible Party
Company
Trevigen Inc.
8405 Helgerman Court
20877 Gaithersburg, MD 20877
T 1-800-TREVIGEN

1.4. Emergency Telephone Number
Emergency Number: 301-216-2800

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture
Classification (GHS-US)
Muta. 2 H341
Carc. 1B H350
Full text of H-phrases: see section 16

2.2. Label Elements
GHS-US Labeling
Hazard Pictograms (GHS-US):

Signal Word (GHS-US): Danger
H350 - May cause cancer.
Precautionary Statements (GHS-US): P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P280 - Wear protective gloves, protective clothing, and eye protection.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P405 - Store locked up.
P501 - Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

2.3. Other Hazards
Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions. Overexposure to this material may result in methemoglobinemia. Methemoglobinemia decreases the blood's ability to carry oxygen and results in symptoms such as dizziness, drowsiness, headache, shortness of breath, blue skin and lips, rapid heart rate, unconsciousness, and possibly death.

2.4. Unknown Acute Toxicity (GHS-US)
No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances
Not applicable

3.2. Mixture

<table>
<thead>
<tr>
<th>Name</th>
<th>Product Identifier</th>
<th>% (w/w)</th>
<th>Classification (GHS-US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,3'-Diaminobenzidine tetrahydrochloride</td>
<td>(CAS No) 7411-49-6</td>
<td>10</td>
<td>Muta. 2, H341</td>
</tr>
</tbody>
</table>
Diaminobenzidine
Safety Data Sheet
According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations

SECTION 4: FIRST AID MEASURES

4.1. Description of First Aid Measures
General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label if possible).
Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.
Skin Contact: Rinse immediately with plenty of water. Obtain medical attention if irritation develops or persists.
Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.
Ingestion: Do not induce vomiting. Rinse mouth. Seek medical attention if a large amount is swallowed.

4.2. Most Important Symptoms and Effects Both Acute and Delayed
General: Suspected of causing genetic defects. May cause cancer.
Inhalation: May cause respiratory irritation.
Skin Contact: May cause skin irritation.
Eye Contact: May cause eye irritation.
Ingestion: Ingestion is likely to be harmful or have adverse effects.
Chronic Symptoms: Suspected of causing genetic defects. May cause cancer. May cause the blood disorder Methemoglobinemia, and with over exposure in predisposed individuals may cause: renal problems, cardiac abnormalities, other blood disorders.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed
If you feel unwell, seek medical advice (show the label where possible).

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media
Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire.
Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire.

5.2. Special Hazards Arising From the Substance or Mixture
Fire Hazard: Not flammable.
Explosion Hazard: Product is not explosive.
Reactivity: Hazardous reactions will not occur under normal conditions.

5.3. Advice for Firefighters
Precautionary Measures Fire: Exercise caution when fighting any chemical fire.
Firefighting Instructions: Use water spray or fog for cooling exposed containers.
Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.
Reference to Other Sections
Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures
General Measures: Avoid all contact with skin, eyes, or clothing. Avoid breathing (vapor, mist, spray).

6.1.1. For Non-Emergency Personnel
Protective Equipment: Use appropriate personal protection equipment (PPE).

6.1.2. For Emergency Personnel
Protective Equipment: Equip cleanup crew with proper protection.
Emergency Procedures: Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit.

6.2. Environmental Precautions
Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and Material for Containment and Cleaning Up
For Containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. Spills should be contained with mechanical barriers. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill.

6.4. Reference to Other Sections
See Heading 8. Exposure controls and personal protection. For further information refer to section 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling
Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for Safe Storage, Including Any Incompatibilities
Technical Measures: Comply with applicable regulations.
Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep/Store away from direct sunlight, extremely high or low temperatures and incompatible materials.

7.3. Specific End Use(s)
No use is specified.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters
For substances listed in section 3 that are not listed here, there are no established Exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), OSHA (PEL), Canadian provincial governments, or the Mexican government.

8.2. Exposure Controls
Appropriate Engineering Controls: Ensure adequate ventilation, especially in confined areas. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure all national/local regulations are observed.


Materials for Protective Clothing: Chemically resistant materials and fabrics.
Hand Protection: Wear chemically resistant protective gloves.
Eye Protection: Chemical goggles or safety glasses.
Skin and Body Protection: Wear suitable protective clothing.
Respiratory Protection: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn.

Environmental Exposure Controls: Do not allow the product to be released into the environment.
Consumer Exposure Controls: Do not eat, drink or smoke during use.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties
Physical State: Liquid
Appearance: Not available
Odor: Not available
Odor Threshold: Not available
pH: Not available
Evaporation Rate: Not available
Melting Point: Not available
Freezing Point: Not available
Boiling Point: Not available
Flash Point: Not available
Auto-ignition Temperature: Not available
Decomposition Temperature: Not available
Diaminobenzidine
Safety Data Sheet

Flammability (solid, gas) : Not available
Lower Flammable Limit : Not available
Upper Flammable Limit : Not available
Vapor Pressure : Not available
Relative Vapor Density at 20 °C : Not available
Relative Density : Not available
Specific Gravity : Not available
Solubility : Not available
Partition Coefficient: N-Octanol/Water : Not available
Viscosity : Not available

Explosion Data – Sensitivity to Mechanical Impact : Not expected to present an explosion hazard due to mechanical impact
Explosion Data – Sensitivity to Static Discharge : Not expected to present an explosion hazard due to static discharge

SECTION 10: STABILITY AND REACTIVITY
10.1. Reactivity: Hazardous reactions will not occur under normal conditions.
10.2. Chemical Stability: Stable under recommended handling and storage conditions (see section 7).
10.3. Possibility of Hazardous Reactions: Hazardous polymerization will not occur.
10.4. Conditions to Avoid: Direct sunlight. Extremely high or low temperatures. Incompatible materials.
10.5. Incompatible Materials: Strong acids, strong bases, strong oxidizers.
10.6. Hazardous Decomposition Products: None known.

SECTION 11: TOXICOLOGICAL INFORMATION
11.1. Information on Toxicological Effects - Product
Acute Toxicity: Not classified
LD50 and LC50 Data: Not available
Skin Corrosion/Irritation: Not classified
Serious Eye Damage/Irritation: Not classified
Respiratory or Skin Sensitization: Not classified
Germ Cell Mutagenicity: Suspected of causing genetic defects
Teratogenicity: Not classified
Carcinogenicity: May cause cancer
Specific Target Organ Toxicity (Repeated Exposure): Not classified
Reproductive Toxicity: Not classified
Specific Target Organ Toxicity (Single Exposure): Not classified
Aspiration Hazard: Not classified
Symptoms/Injuries After Inhalation: May cause respiratory irritation
Symptoms/Injuries After Skin Contact: May cause skin irritation
Symptoms/Injuries After Eye Contact: May cause eye irritation
Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects
Chronic Symptoms: Suspected of causing genetic defects. May cause cancer. May cause the blood disorder Methemoglobinemia, and with over exposure in predisposed individuals may cause: renal problems, cardiac abnormalities, other blood disorders

11.2. Information on Toxicological Effects - Ingredient(s)
LD50 and LC50 Data: Not available

SECTION 12: ECOLOGICAL INFORMATION
12.1. Toxicity: Not classified
12.2. Persistence and Degradability: Not available
12.3. Bioaccumulative Potential: Not available
12.4. Mobility in Soil: Not available
12.5. Other Adverse Effects: Not available

SECTION 13: DISPOSAL CONSIDERATIONS
13.1. Waste treatment methods
Diaminobenzidine

Safety Data Sheet

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

SECTION 14: TRANSPORT INFORMATION

14.1. In Accordance with DOT Not regulated for transport
14.2. In Accordance with IMDG Not regulated for transport
14.3. In Accordance with IATA Not regulated for transport
14.4. In Accordance with TDG Not regulated for transport

SECTION 15: REGULATORY INFORMATION

15.1. US Federal Regulations
Diaminobenzidine
SARA Section 311/312 Hazard Classes Delayed (chronic) health hazard
3,3'-Diaminobenzidine tetrahydrochloride (7411-49-6)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. US State Regulations
Neither this product nor its chemical components appear on any US state lists.

15.3. Canadian Regulations
Diaminobenzidine
WHMIS Classification Class D Division 2 Subdivision A - Very toxic material causing other toxic effects

3,3'-Diaminobenzidine tetrahydrochloride (7411-49-6)
Listed on the Canadian DSL (Domestic Substances List)
WHMIS Classification Class D Division 2 Subdivision A - Very toxic material causing other toxic effects

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date: 05/13/2015
Other Information: This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Carc. 1B Carcinogenicity Category 1B
Muta. 2 Germ cell mutagenicity Category 2
H341 Suspected of causing genetic defects
H350 May cause cancer

Party Responsible for the Preparation of This Document
Trevigen INC. 8405 Helgerman Court Gaithersburg, MD 20877 T: 301-216-2800

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.