Safety Data Sheet

Cat. # 786-070

HOOK™ Peptide Coupling Kit (Amine reactive) with OneQuant™ HyperCarrier™

Size: 5 Reactions
1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 03/25/2016  Revision date: 05/11/2017  Version: 7.1

SECTION 1: Identification

1.1. Identification

Product form: Substance
Substance name: 1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride
Chemical name: EDC
CAS-No.: 25952-53-8
Product code: 009E
Formula: C8H17N3.HCl
Synonyms:

- (3-dimethylaminopropyl)ethylcarbodiimide monohydrochloride / 1-(3-dimethylaminopropyl)-3-ethylcarbodiimide hydrochloride / 1,3-Propanediamine, N'-ethylcarbodiimoyl-N,N-dimethyl-, monohydrochloride / EDAP (=1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride) / EDC (=1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride) / EDCI (=1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride) / N-(3-dimethylaminopropyl)-N'-ethylcarbodiimide hydrochloride / N'-ethylcarbodiimoyl-N,N-dimethylpropane-1,3-diamine monohydrochloride / N-ethyl-N',3-diethylaminopropyl)carbodiimide hydrochloride / WSC (=1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride)

BIG No: 26531

1.2. Recommended use and restrictions on use

No additional information available

1.3. Supplier

Geno Technology, Inc./ G-Biosciences
9800 Page Avenue
Saint Louis, 63132-1429 - United States
T 800-628-7730 - F 314-991-1504
technical@GBiosciences.com - www.GBiosciences.com

1.4. Emergency telephone number

Emergency number: Chemtrec 1-800-424-9300 (USA/Canada), +1-703-527-3887 (Intl)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

- Acute toxicity (oral) Category 4: H302 - Harmful if swallowed
- Acute toxicity (dermal) Category 3: H311 - Toxic in contact with skin
- Skin corrosion/irritation Category 2: H315 - Causes skin irritation
- Serious eye damage/eye irritation Category 2: H319 - Causes serious eye irritation
- Skin sensitization, Category 1: H317 - May cause an allergic skin reaction
- Specific target organ toxicity (repeated exposure) Category 2: H373 - May cause damage to organs through prolonged or repeated exposure
- Hazardous to the aquatic environment - Acute Hazard Category 1: H400 - Very toxic to aquatic life
- Hazardous to the aquatic environment - Chronic Hazard Category 1: H410 - Very toxic to aquatic life with long lasting effects

Full text of H statements: see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US): 

Signal word (GHS US): Danger

Hazard statements (GHS US):

- H302 - Harmful if swallowed
- H311 - Toxic in contact with skin
- H315 - Causes skin irritation
- H317 - May cause an allergic skin reaction
- H319 - Causes serious eye irritation
- H373 - May cause damage to organs through prolonged or repeated exposure
- H400 - Very toxic to aquatic life
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Precautionary statements (GHS US):

P260 - Do not breathe dust/fume/gas/mist/vapors/spray.
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P264 - Wash hands, forearms and face thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P272 - Contaminated work clothing must not be allowed out of the workplace.
P273 - Avoid release to the environment.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312 - If swallowed: Call a poison center or doctor if you feel unwell.
P302+P352 - If on skin: Wash with plenty of water.
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 - Call a poison center or doctor if you feel unwell.
P313 - Get medical advice/attention if you feel unwell.
P314 - Get medical advice/attention if you feel unwell.
P315 - If inhaled: If you are feeling Ae different or you feel unwell, get medical attention without delay.
P320 - If eye irritation persists: Get medical advice/attention.
P360 - If swallowed: Call a poison center or doctor if you feel unwell.
P361+P364 - Take off immediately all contaminated clothing and wash it before reuse.
P362+P364 - Take off contaminated clothing and wash it before reuse.
P363 - Wash contaminated clothing before reuse.
P365 - If dust from the product is in the eyes: Remove contact lenses, if present and easy to do. Continue rinsing with plenty of water.
P381 - For safety, wear properly-fitted self-contained breathing apparatus.
P385 - Use dust-suppressing forms of swept-up material.
P391 - Collect spillage.
P405 - Store locked up.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Substance type: Mono-constituent

<table>
<thead>
<tr>
<th>Name</th>
<th>Common Name (Synonyms)</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride (Main constituent)</td>
<td>(3-dimethylaminopropyl)ethylcarbodiimide monohydrochloride / 1-(3-dimethylaminopropyl)-3-ethylcarbodiimide hydrochloride / 1,3-Propanediamine, N,N'- (ethylcarboximidoyl)-N,N-dimethyl, monohydrochloride / EDAC (=1-ethyl-3-(3-dimethylamino)propylcarbodiimide, hydrochloride) / EDC (=1-ethyl-3-(3-dimethylamino)propylcarbodiimide, hydrochloride) / EDCI (=1-ethyl-3-(3-dimethylamino)propylcarbodiimide, hydrochloride) / N'-ethylcarbodiimide hydrochloride / N'- (ethylcarboximidoyl)-N,N-dimethylpropane-1,3-diamine monohydrochloride / N-ethyl-N'-(3-diethylaminopropyl)carbodiimide hydrochloride / WSC (=1-ethyl-3-(3-dimethylamino)propylcarbodiimide, hydrochloride)</td>
<td>(CAS-No.) 25952-53-8</td>
<td>100</td>
<td>Acute Tox. 4 (Oral), H302 Acute Tox. 3 (Dermal), H311 Eye Irrit. 2, H315 Skin Sens. 1, H317 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410</td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statement: see section 16

3.2. Mixtures

Not applicable
**1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride**

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## SECTION 4: First-aid measures

### 4.1. Description of first aid measures


First-aid measures after inhalation: Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact: Wash immediately with lots of water. Do not apply (chemical) neutralizing agents without medical advice. Consult a doctor/medical service.

First-aid measures after eye contact: Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply (chemical) neutralizing agents without medical advice. Take victim to an ophthalmologist if irritation persists.

First-aid measures after ingestion: Rinse mouth with water. Do not apply (chemical) neutralizing agents without medical advice. Call Poison Information Centre (www.big.be/antigif.htm). Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital. Take the container/vomit to the doctor/hospital.

### 4.2. Most important symptoms and effects (acute and delayed)

<table>
<thead>
<tr>
<th>Potential Adverse human health effects and symptoms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harmful if swallowed. Toxic in contact with skin. Causes skin irritation. Causes serious eye irritation.</td>
<td></td>
</tr>
<tr>
<td>Irritation of the respiratory tract. Irritation of the nasal mucous membranes.</td>
<td></td>
</tr>
<tr>
<td>Tingling/irritation of the skin.</td>
<td></td>
</tr>
<tr>
<td>Irritation of the eye tissue.</td>
<td></td>
</tr>
<tr>
<td>Gastrointestinal complaints.</td>
<td></td>
</tr>
<tr>
<td>Irritation of the gastric/intestinal mucosa. Respiratory difficulties.</td>
<td></td>
</tr>
</tbody>
</table>

### 4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

## SECTION 5: Fire-fighting measures

### 5.1. Suitable (and unsuitable) extinguishing media

| Unsuitable extinguishing media | Quick-acting BC powder extinguisher. Quick-acting CO2 extinguisher. |

### 5.2. Specific hazards arising from the chemical

| Fire hazard | DIRECT FIRE HAZARD: Non-flammable. Most organic solids may burn if strongly heated. INDIRECT FIRE HAZARD: Heating increases the fire hazard. |
| Explosion hazard | DIRECT EXPLOSION HAZARD: Most organic solids are liable to dust explosion hazard. INDIRECT EXPLOSION HAZARD: Dust cloud can be ignited by a spark. |

### 5.3. Special protective equipment and precautions for fire-fighters

| Precautionary measures fire | Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows. |
| Firefighting instructions | Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it. |
| Protection during firefighting | Heat/fire exposure: compressed air/oxygen apparatus. |

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

| Emergency procedures | Mark the danger area. Prevent dust cloud formation. No naked flames. Wash contaminated clothes. |
| Measures in case of dust release | In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows. |
1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride

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6.1.2. For emergency responders
Protective equipment: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions
Avoid release to the environment.

6.3. Methods and material for containment and cleaning up
For containment: Contain released product, pump into suitable containers. Plug the leak, cut off the supply. Knock down/dilute dust cloud with water spray. Take account of toxic/corrosive precipitation water.

Methods for cleaning up: Stop dust cloud by covering with sand/earth. Scoop solid spill into closing containers. Carefully collect the spill/leftovers. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

Other information: Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections
For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Hygiene measures: Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Contaminated work clothing should not be allowed out of the workplace.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions: Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Heat/ignition: KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.

Information on mixed storage: KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids. water/moisture.

Storage area: Store in a cool area. Store in a dry area. Keep container in a well-ventilated place. Keep locked up. Unauthorized persons are not admitted. Meet the legal requirements.

Special rules on packaging: SPECIAL REQUIREMENTS: closing. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

| 1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride (25952-53-8) |
| No additional information available |

8.2. Appropriate engineering controls

Appropriate engineering controls: Ensure good ventilation of the work station.

Environmental exposure controls: Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:
Protective gloves against chemicals (EN374)

Eye protection:
Face shield. In case of dust production: protective goggles

Skin and body protection:
Protective clothing. In case of dust production: head/neck protection. In case of dust production: dustproof clothing

Respiratory protection:
Dust production: dust mask with filter type P3. High dust production: self-contained breathing apparatus
SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Solid.</td>
</tr>
<tr>
<td>Color</td>
<td>White to off-white</td>
</tr>
<tr>
<td>Odor</td>
<td>Odourless</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point</td>
<td>120 °C (1013 hPa, Equivalent or similar to OECD 102)</td>
</tr>
<tr>
<td>Freezing point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling point</td>
<td>Not applicable (decomposes)</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Non flammable</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>&lt; 0.000002 hPa (20 °C, EU Method A.4: Vapour Pressure)</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Specific gravity / density</td>
<td>1044 kg/m³ (20 °C, OECD 109: Density of Liquids and Solids)</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>191.71 g/mol</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water.</td>
</tr>
<tr>
<td>Water</td>
<td>Water: &gt; 100 g/100ml (20 °C, OECD 105: Water Solubility)</td>
</tr>
<tr>
<td>Log Pow</td>
<td>-2.98 (Experimental value, OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method, 20 °C)</td>
</tr>
</tbody>
</table>

9.2. Other information

VOC content: 0 %

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Hazardous decomposition products.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral): Harmful if swallowed.

Acute toxicity (dermal): Toxic in contact with skin.
1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride

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<table>
<thead>
<tr>
<th>Acute toxicity (inhalation)</th>
<th>Not classified</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride (25952-53-8)</td>
<td></td>
</tr>
<tr>
<td>LD50 oral rat</td>
<td>500 mg/kg body weight (OECD 423: Acute Oral Toxicity – Acute Toxic Class Method, Rat, Female, Experimental value, Oral, 14 day(s))</td>
</tr>
<tr>
<td>LD50 dermal rat</td>
<td>200 - 1000 mg/kg body weight (OECD 402: Acute Dermal Toxicity, 24 h, Rat, Male / female, Experimental value, Dermal)</td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>500 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (dermal)</td>
<td>200 mg/kg body weight</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Causes skin irritation.</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Causes serious eye irritation.</td>
</tr>
<tr>
<td>Respiratory or skin sensitization</td>
<td>May cause an allergic skin reaction.</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity – single exposure</td>
<td>Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity – repeated exposure</td>
<td>May cause damage to organs through prolonged or repeated exposure.</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Not classified</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Potential Adverse human health effects and symptoms</td>
<td>Harmful if swallowed. Toxic in contact with skin. Causes skin irritation. Causes serious eye irritation.</td>
</tr>
<tr>
<td>Symptoms/effects after inhalation</td>
<td>Irritation of the respiratory tract. Irritation of the nasal mucous membranes.</td>
</tr>
<tr>
<td>Symptoms/effects after skin contact</td>
<td>Tingling/irritation of the skin.</td>
</tr>
<tr>
<td>Symptoms/effects after eye contact</td>
<td>Irritation of the eye tissue.</td>
</tr>
<tr>
<td>Symptoms/effects after ingestion</td>
<td>Gastrointestinal complaints.</td>
</tr>
<tr>
<td>Chronic symptoms</td>
<td>Irritation of the gastric/intestinal mucosa. Respiratory difficulties.</td>
</tr>
</tbody>
</table>

**SECTION 12: Ecological information**

12.1. Toxicity

Ecology - general: The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment. Very toxic to aquatic life with long lasting effects.

Ecology - air: Not included in the list of substances which may contribute to the greenhouse effect (IPCC). Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014). Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).


1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride (25952-53-8)

| LC50 fish 1 | 4.6 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Cyprinus carpio, Static system, Experimental value, GLP) |
| EC50 Daphnia 1 | 0.41 mg/l (ISO 6341 15 Water quality - Determination of the Inhibition of the Mobility of Daphnia magna Straus (Cladocera, Crustaceae), 48 h, Daphnia magna, Experimental value) |

12.2. Persistence and degradability

1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride (25952-53-8)

Persistence and degradability: Not readily biodegradable in water.

12.3. Bioaccumulative potential

1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride (25952-53-8)

Log Pow: -2.98 (Experimental value, OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method, 20 °C)

Bioaccumulative potential: Not bioaccumulative.

12.4. Mobility in soil

1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride (25952-53-8)

Ecology - soil: No (test)data on mobility of the substance available.
12.5. Other adverse effects
No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Product/Packaging disposal recommendations: Do not discharge into drains or the environment. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Refer to manufacturer/supplier for information on recovery/recycling. Remove to an incinerator for chlorinated waste materials with energy recovery. Dissolve or mix with a combustible solvent.


SECTION 14: Transport information

Department of Transportation (DOT)
In accordance with DOT

Dangerous for the environment: Yes
Marine pollutant: Yes

Other information: No supplementary information available.

Transportation of Dangerous Goods

Transport by sea

Transport document description (IMDG): UN 2811 toxic solid, organic, n.o.s., 6.1, III, MARINE POLLUTANT
UN-No. (IMDG): 2811
Proper Shipping Name (IMDG): toxic solid, organic, n.o.s.
Class (IMDG): 6.1 - Toxic substances
Packing group (IMDG): III - substances presenting low danger
EmS-No. (1): F-A
EmS-No. (2): S-A
Marine pollutant: Yes

Air transport

Transport document description (IATA): UN 2811 Toxic solid, organic, n.o.s., 6.1, III
UN-No. (IATA): 2811
Proper Shipping Name (IATA): Toxic solid, organic, n.o.s.
Class (IATA): 6.1 - Toxic Substances
Packing group (IATA): III - Minor Danger
1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride

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SECTION 15: Regulatory information

15.1. US Federal regulations

1-ethyl-3-(3-dimethylamino)propyl carbodiimide, hydrochloride (25952-53-8)
Not listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

EU-Regulations

National regulations
No additional information available

15.3. US State regulations

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date : 05/11/2017

Full text of H-phrases:

<table>
<thead>
<tr>
<th>H-phrases</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H302</td>
<td>Harmful if swallowed</td>
</tr>
<tr>
<td>H311</td>
<td>Toxic in contact with skin</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
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<tr>
<td>H317</td>
<td>May cause an allergic skin reaction</td>
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<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>H373</td>
<td>May cause damage to organs through prolonged or repeated exposure</td>
</tr>
<tr>
<td>H400</td>
<td>Very toxic to aquatic life</td>
</tr>
<tr>
<td>H410</td>
<td>Very toxic to aquatic life with long lasting effects</td>
</tr>
</tbody>
</table>

SDS US (GHS HazCom 2012)

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.
# HyperCarrier™ (Immunological Grade)
## Safety Data Sheet

**according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations**

**Date of issue**: 01/01/2017  
**Revision date**: 05/11/2017  
**Version**: 7.1

### SECTION 1: Identification

<table>
<thead>
<tr>
<th>1.1.</th>
<th>Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product form</strong>:</td>
<td>Substance</td>
</tr>
<tr>
<td><strong>Substance name</strong>:</td>
<td>HyperCarrier™ (Immunological Grade)</td>
</tr>
<tr>
<td><strong>Product code</strong>:</td>
<td>698H_108O</td>
</tr>
<tr>
<td><strong>Synonyms</strong>:</td>
<td>Bovine albumin, BSA</td>
</tr>
<tr>
<td><strong>BIG No</strong>:</td>
<td>18529</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.2.</th>
<th>Recommended use and restrictions on use</th>
</tr>
</thead>
<tbody>
<tr>
<td>No additional information available</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.3.</th>
<th>Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geno Technology, Inc./ G-Biosciences</td>
<td></td>
</tr>
</tbody>
</table>
| 9800 Page Avenue  
| Saint Louis, 63132-1429 - United States  
| T 800-628-7730 - F 314-991-1504  
| technical@G Biosciences.com - www.G Biosciences.com |

<table>
<thead>
<tr>
<th>1.4.</th>
<th>Emergency telephone number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emergency number</strong>:</td>
<td>Chemtrec 1-800-424-9300 (USA/Canada), +1-703-527-3887 (Intl)</td>
</tr>
</tbody>
</table>

### SECTION 2: Hazard(s) identification

<table>
<thead>
<tr>
<th>2.1.</th>
<th>Classification of the substance or mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHS US classification</td>
<td></td>
</tr>
<tr>
<td>Not classified</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.2.</th>
<th>GHS Label elements, including precautionary statements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GHS US labeling</strong>:</td>
<td>No labeling applicable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.3.</th>
<th>Other hazards which do not result in classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>No additional information available</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.4.</th>
<th>Unknown acute toxicity (GHS US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

### SECTION 3: Composition/Information on ingredients

<table>
<thead>
<tr>
<th>3.1.</th>
<th>Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Substance type</strong>:</td>
<td>Mono-constituent</td>
</tr>
<tr>
<td><strong>Name</strong>:</td>
<td>HyperCarrier™ (Immunological Grade)</td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statements: see section 16

<table>
<thead>
<tr>
<th>3.2.</th>
<th>Mixtures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

### SECTION 4: First-aid measures

<table>
<thead>
<tr>
<th>4.1.</th>
<th>Description of first aid measures</th>
</tr>
</thead>
</table>

**First-aid measures after inhalation**: Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

**First-aid measures after skin contact**: Rinse with water. Soap may be used. Take victim to a doctor if irritation persists.

**First-aid measures after eye contact**: Rinse with water. Remove contact lenses, if present and easy to do. Continue rinsing. Take victim to an ophthalmologist if irritation persists.

**First-aid measures after ingestion**: Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Call Poison Information Centre (www.big.be/antigif.htm). Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital.
4.2. Most important symptoms and effects (acute and delayed)
No additional information available

4.3. Immediate medical attention and special treatment, if necessary
Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media


5.2. Specific hazards arising from the chemical
Fire hazard: DIRECT FIRE HAZARD: Most organic solids may burn if strongly heated.

Explosion hazard: DIRECT EXPLOSION HAZARD: Most organic solids are liable to dust explosion hazard.
INDIRECT EXPLOSION HAZARD: Dust cloud can be ignited by a spark.

5.3. Special protective equipment and precautions for fire-fighters
Precautionary measures fire: Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.

Firefighting instructions: Dilute toxic gases with water spray.


SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures: Mark the danger area. Prevent dust cloud formation, e.g. by wetting. No naked flames. Wash contaminated clothes.

Measures in case of dust release: In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows.

6.1.2. For emergency responders
Protective equipment: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions
Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment: Contain released product, pump into suitable containers. Plug the leak, cut off the supply. Knock down/dilute dust cloud with water spray.

Methods for cleaning up: Stop dust cloud by humidifying. Scoop solid spill into closing containers. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.

Other information: Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections
For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Hygiene measures: Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a well-ventilated place. Keep cool.

Storage temperature: -20 °C

Heat-ignition: KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.
Information on mixed storage: KEEP SUBSTANCE AWAY FROM: oxidizing agents.
Storage area: Store in a dry area. Keep container in a well-ventilated place. Meet the legal requirements.
Special rules on packaging: SPECIAL REQUIREMENTS: closing, correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>HyperCarrier™ (Immunological Grade)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No additional information available</td>
</tr>
</tbody>
</table>

8.2. Appropriate engineering controls

Appropriate engineering controls: Ensure good ventilation of the work station.
Environmental exposure controls: Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

**Hand protection:**
Gloves

**Eye protection:**
Safety glasses. In case of dust production: protective goggles

**Skin and body protection:**
Protective clothing

**Respiratory protection:**
Dust production: dust mask with filter type P1

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Powder.</td>
</tr>
<tr>
<td>Color</td>
<td>White-yellow</td>
</tr>
<tr>
<td>Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Freezing point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Non flammable</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water.</td>
</tr>
<tr>
<td>Water: poorly soluble, Literature</td>
<td></td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
</tbody>
</table>
Oxidizing properties : No data available

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability
Stable under normal conditions.

10.3. Possibility of hazardous reactions
No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid
None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials
No additional information available

10.6. Hazardous decomposition products
Hazardous decomposition products.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified
Skin corrosion/irritation : Not classified
Serious eye damage/irritation : Not classified
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified
Reproductive toxicity : Not classified
Specific target organ toxicity – single exposure : Not classified
Specific target organ toxicity – repeated exposure : Not classified
Aspiration hazard : Not classified
Viscosity, kinematic : No data available

SECTION 12: Ecological information

12.1. Toxicity
Ecology - general : Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008.
Ecology - air : Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).

12.2. Persistence and degradability
HyperCarrier™ (Immunological Grade)

| Persistence and degradability | Readily biodegradable in water. |

12.3. Bioaccumulative potential
No additional information available

12.4. Mobility in soil
No additional information available

12.5. Other adverse effects
No additional information available
SECTION 13: Disposal considerations

13.1. Disposal methods

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Product/Packaging disposal recommendations</td>
<td>: Remove to an authorized incinerator with energy recovery.</td>
</tr>
</tbody>
</table>

SECTION 14: Transport information

Department of Transportation (DOT)
In accordance with DOT
Not regulated

Transportation of Dangerous Goods

Transport by sea
Not regulated

Air transport
Not regulated

SECTION 15: Regulatory information

15.1. US Federal regulations
No additional information available

15.2. International regulations

CANADA
EU-Regulations
National regulations
No additional information available

15.3. US State regulations

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date : 05/11/2017

SDS US (GHS HazCom 2012)

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.
SECTION 1: Identification

1.1. Identification
Product form : Mixture
Product name : Optimizer Buffer IV [5X]
Product code : 264O

1.2. Recommended use and restrictions on use
No additional information available

1.3. Supplier
Geno Technology, Inc./ G-Biosciences
9800 Page Avenue
Saint Louis, 63132-1429 - United States
T 800-628-7730 - F 314-991-1504
technical@GBiosciences.com - www.GBiosciences.com

1.4. Emergency telephone number
Emergency number : Chemtrec 1-800-424-9300 (USA/Canada), +1-703-527-3887 (Intl)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture
GHS US classification
Not classified

2.2. GHS Label elements, including precautionary statements
GHS US labeling
No labeling applicable

2.3. Other hazards which do not result in classification
No additional information available

2.4. Unknown acute toxicity (GHS US)
Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances
Not applicable

3.2. Mixtures
This mixture does not contain any substances to be mentioned according to the criteria of section 3.2 of HazCom 2012

SECTION 4: First-aid measures

4.1. Description of first aid measures
First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact : Wash skin with plenty of water.
First-aid measures after eye contact : Rinse eyes with water as a precaution.
First-aid measures after ingestion : Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)
No additional information available

4.3. Immediate medical attention and special treatment, if necessary
Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

5.2. Specific hazards arising from the chemical
No additional information available
5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures: Ventilate spillage area.

6.1.2. For emergency responders

Protective equipment: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up: Take up liquid spill into absorbent material.

Other information: Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling: Ensure good ventilation of the work station. Wear personal protective equipment.

Hygiene measures: Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a well-ventilated place. Keep cool.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Optimizer Buffer IV [5X]

No additional information available

8.2. Appropriate engineering controls

Appropriate engineering controls: Ensure good ventilation of the work station.

Environmental exposure controls: Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Protective gloves

Eye protection:

Safety glasses

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: Liquid

Color: No data available
Optimizer Buffer IV [5X]

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Odor : No data available
Odor threshold : No data available
pH : No data available
Melting point : Not applicable
Freezing point : No data available
Boiling point : No data available
Flash point : No data available
Relative evaporation rate (butyl acetate=1) : No data available
Flammability (solid, gas) : Not applicable.
Vapor pressure : No data available
Relative vapor density at 20 °C : No data available
Relative density : No data available
Solubility : No data available
Log Pow : No data available
Auto-ignition temperature : No data available
Decomposition temperature : No data available
Viscosity, kinematic : No data available
Viscosity, dynamic : No data available
Explosion limits : No data available
Explosive properties : No data available
Oxidizing properties : No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Hazardous decomposition products.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified
Skin corrosion/irritation : Not classified
Serious eye damage/irritation : Not classified
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified
Reproductive toxicity : Not classified
Specific target organ toxicity – single exposure : Not classified
### Optimizer Buffer IV [5X]

**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

| Specific target organ toxicity – repeated exposure | Not classified |
| Aspiration hazard | Not classified |
| Viscosity, kinematic | No data available |

#### SECTION 12: Ecological information

**12.1. Toxicity**

Ecology - general: The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

**12.2. Persistence and degradability**

No additional information available

**12.3. Bioaccumulative potential**

No additional information available

**12.4. Mobility in soil**

No additional information available

**12.5. Other adverse effects**

No additional information available

#### SECTION 13: Disposal considerations

**13.1. Disposal methods**


#### SECTION 14: Transport information

**Department of Transportation (DOT)**

In accordance with DOT

Not applicable

**Transportation of Dangerous Goods**

Not applicable

**Transport by sea**

Not applicable

**Air transport**

Not applicable

#### SECTION 15: Regulatory information

**15.1. US Federal regulations**

**Optimizer Buffer IV [5X]**

Not listed on the United States TSCA (Toxic Substances Control Act) inventory

**15.2. International regulations**

**CANADA**

**EU-Regulations**

**National regulations**

No additional information available
15.3. US State regulations

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date : 05/11/2017

SDS US (GHS HazCom 2012)

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.
Section 1: Identification

1.1. Identification

- Product form: Mixture
- Product name: Tube-O-DIALYZER Storage Solution
- Product code: Tube-O

1.2. Recommended use and restrictions on use

No additional information available

1.3. Supplier

Geno Technology, Inc./G-Biosciences
9800 Page Avenue
Saint Louis, 63132-1429 - United States
T 800-628-7730 - F 314-991-1504
technical@GBiosciences.com - www.GBiosciences.com

1.4. Emergency telephone number

Emergency number: Chemtrec 1-800-424-9300 (USA/Canada), +1-703-527-3887 (Intl)

Section 2: Hazard Identification

2.1. Classification of the substance or mixture

GHS US Classification

Flammable liquids Category 4  H227  Combustible liquid

Full text of H statements: see section 16

2.2. GHS Label elements, including precautionary statements

GHS US Labeling

Signal word (GHS US): Warning
Hazard statements (GHS US): H227 - Combustible liquid
Precautionary statements (GHS US): P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P370+P378 - In case of fire: Use media other than water to extinguish.
P403+P235 - Store in a well-ventilated place. Keep cool.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

Section 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

<table>
<thead>
<tr>
<th>Name</th>
<th>Common Name (Synonyms)</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethanol</td>
<td>ethanol (ethyl alcohol) / ethanol, anhydrous,</td>
<td>(CAS-No.) 64-17-5</td>
<td>10-50</td>
<td>Flam. Liq. 2, H225</td>
</tr>
<tr>
<td></td>
<td>undenatured / ethyl alcohol</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statements: see section 16

Section 4: First-aid measures

4.1. Description of first aid measures

First-aid measures after inhalation: Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact: Wash skin with plenty of water.
First-aid measures after eye contact: Rinse eyes with water as a precaution.
First-aid measures after ingestion: Call a poison center/doctor/physician if you feel unwell.
### 4.2. Most important symptoms and effects (acute and delayed)

No additional information available

### 4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

### SECTION 5: Fire-fighting measures

#### 5.1. Suitable (and unsuitable) extinguishing media


#### 5.2. Specific hazards arising from the chemical

Fire hazard: Combustible liquid.

#### 5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

**For non-emergency personnel**

Emergency procedures: Ventilate spillage area. No open flames, no sparks, and no smoking.

**For emergency responders**

Protective equipment: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: “Exposure controls/personal protection”.

#### 6.2. Environmental precautions

Avoid release to the environment.

#### 6.3. Methods and material for containment and cleaning up

Methods for cleaning up: Take up liquid spill into absorbent material. Notify authorities if product enters sewers or public waters.

Other information: Dispose of materials or solid residues at an authorized site.

#### 6.4. Reference to other sections

For further information refer to section 13.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Precautions for safe handling: Ensure good ventilation of the work station. Wear personal protective equipment. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Hygiene measures: Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

#### 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a well-ventilated place. Keep cool.

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

<table>
<thead>
<tr>
<th>Tube-O-DIALYZER Storage Solution</th>
<th>No additional information available</th>
</tr>
</thead>
<tbody>
<tr>
<td>ethanol (64-17-5)</td>
<td></td>
</tr>
<tr>
<td><strong>USA - ACGIH - Occupational Exposure Limits</strong></td>
<td></td>
</tr>
<tr>
<td>ACGIH STEL (ppm)</td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>

#### 8.2. Appropriate engineering controls

Appropriate engineering controls: Ensure good ventilation of the work station.

Environmental exposure controls: Avoid release to the environment.

#### 8.3. Individual protection measures/Personal protective equipment

Treat symptomatically.
Hand protection:
Protective gloves

Eye protection:
Safety glasses

Skin and body protection:
Wear suitable protective clothing

Respiratory protection:
In case of insufficient ventilation, wear suitable respiratory equipment

SECTION 9: Physical and chemical properties
9.1. Information on basic physical and chemical properties
Physical state: Liquid
Color: No data available
Odor: No data available
Odor threshold: No data available
pH: No data available
Melting point: Not applicable
Freezing point: No data available
Boiling point: No data available
Flash point: 65 °C
Relative evaporation rate (butyl acetate=1): No data available
Flammability (solid, gas): Not applicable.
Vapor pressure: No data available
Relative vapor density at 20 °C: No data available
Relative density: No data available
Solubility: No data available
Log Pow: No data available
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Viscosity, kinematic: No data available
Viscosity, dynamic: No data available
Explosion limits: No data available
Explosive properties: No data available
Oxidizing properties: No data available

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity
10.1. Reactivity
The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability
Stable under normal conditions.

10.3. Possibility of hazardous reactions
No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid
Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition.

10.5. Incompatible materials
No additional information available
### 10.6. Hazardous decomposition products

Hazardous decomposition products.

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

<table>
<thead>
<tr>
<th>Effect</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity (oral)</td>
<td>Not classified</td>
</tr>
<tr>
<td>Acute toxicity (dermal)</td>
<td>Not classified</td>
</tr>
<tr>
<td>Acute toxicity (inhalation)</td>
<td>Not classified</td>
</tr>
</tbody>
</table>

**ethanol (64-17-5)**

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>10740 mg/kg body weight (Rat; OECD 401: Acute Oral Toxicity; Experimental value)</td>
</tr>
<tr>
<td>LD50 dermal rabbit</td>
<td>&gt; 16000 mg/kg (Rabbit; Literature study)</td>
</tr>
<tr>
<td>LC50 inhalation rat (mg/l)</td>
<td>&gt; 20 mg/l (4 h, Rat, Inhalation)</td>
</tr>
</tbody>
</table>

**Skin corrosion/irritation**: Not classified

**Serious eye damage/irritation**: Not classified

**Respiratory or skin sensitization**: Not classified

**Germ cell mutagenicity**: Not classified

**Carcinogenicity**: Not classified

**ethanol (64-17-5)**

<table>
<thead>
<tr>
<th>Classification</th>
<th>IARC group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reproductive toxicity</td>
<td>1 - Carcinogenic to humans</td>
</tr>
<tr>
<td>Specific target organ toxicity – single exposure</td>
<td>Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity – repeated exposure</td>
<td>Not classified</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Not classified</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
</tbody>
</table>

### SECTION 12: Ecological information

#### 12.1. Toxicity

**Ecology - general**: The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

**ethanol (64-17-5)**

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 1</td>
<td>14200 mg/l (US EPA, 96 h, Pimephales promelas, Flow-through system, Fresh water, Experimental value)</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
<td>9300 mg/l (48 h, Daphnia magna, Pure substance)</td>
</tr>
</tbody>
</table>

#### 12.2. Persistence and degradability

**ethanol (64-17-5)**

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence and degradability</td>
<td>Readily biodegradable in water. Biodegradable in the soil. No (test)data on mobility of the substance available.</td>
</tr>
<tr>
<td>Biochemical oxygen demand (BOD)</td>
<td>0.8 - 0.967 g O₂/g substance</td>
</tr>
<tr>
<td>Chemical oxygen demand (COD)</td>
<td>1.7 g O₂/g substance</td>
</tr>
<tr>
<td>ThOD</td>
<td>2.1 g O₂/g substance</td>
</tr>
<tr>
<td>BOD (% of ThOD)</td>
<td>0.43</td>
</tr>
</tbody>
</table>

#### 12.3. Bioaccumulative potential

**ethanol (64-17-5)**

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCF fish 1</td>
<td>1 (Other, 72 h, Cyprinus carpio, Static system, Fresh water, Read-across)</td>
</tr>
<tr>
<td>Log Pow</td>
<td>-0.35 (Experimental value; OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method; 24 °C)</td>
</tr>
<tr>
<td>Bioaccumulative potential</td>
<td>Low potential for bioaccumulation (Log Kow &lt; 4).</td>
</tr>
</tbody>
</table>

#### 12.4. Mobility in soil
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<table>
<thead>
<tr>
<th>ethanol (64-17-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface tension</td>
</tr>
<tr>
<td>Ecology - soil</td>
</tr>
</tbody>
</table>

12.5. Other adverse effects
No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

SECTION 14: Transport information

Department of Transportation (DOT)
In accordance with DOT
Not regulated

Transportation of Dangerous Goods
Not applicable

Transport by sea
Not regulated

Air transport
Not regulated

SECTION 15: Regulatory information

15.1. US Federal regulations

<table>
<thead>
<tr>
<th>ethanol (64-17-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
</tr>
</tbody>
</table>

15.2. International regulations

CANADA

<table>
<thead>
<tr>
<th>ethanol (64-17-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on the Canadian DSL (Domestic Substances List)</td>
</tr>
</tbody>
</table>

EU-Regulations

National regulations

<table>
<thead>
<tr>
<th>ethanol (64-17-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listed on IARC (International Agency for Research on Cancer)</td>
</tr>
</tbody>
</table>

15.3. US State regulations

SECTION 16: Other information

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Tube-O-DIALYZER Storage Solution
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Full text of H-phrases:

<table>
<thead>
<tr>
<th>H225</th>
<th>Highly flammable liquid and vapour</th>
</tr>
</thead>
<tbody>
<tr>
<td>H227</td>
<td>Combustible liquid</td>
</tr>
</tbody>
</table>

SDS US (GHS HazCom 2012)

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.