Safety Data Sheet

Cat. # 786-076

Glutathione Assay (Colorimetric)

Size: 450 assays
SECTION 1: Identification

1.1. Identification

Product form: Substance
Substance name: Deproteination Reagent
CAS-No.: 5965-83-3
Product code: 026D
Formula: C7H6O6S.2H2O
Synonyms: 2-hydroxy 5-sulfobenzoic acid, dihydrate / 3-carboxy-4-hydroxybenzene, dihydrate / 5-sulfosalicylic acid, 2-hydrate / salicylic acid, 5-sulfo-salicylic acid, dihydrate / sulfosalicylic acid, dihydrate
BIG No.: 18169

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
Skin corrosion/irritation Category 2 H315 Causes skin irritation
Serious eye damage/eye irritation Category 2 H319 Causes serious eye irritation
Specific target organ toxicity (single exposure) Category 3 H335 May cause respiratory irritation

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): Warning

Hazard statements (GHS US): H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation

P264 - Wash hands, forearms and face thoroughly after handling.
P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 - If on skin: Wash with plenty of water
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
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
P321 - Specific treatment (see supplemental first aid instruction on this label)
P332+P313 - If skin irritation occurs: Get medical advice/attention.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P362+P364 - Take off contaminated clothing and wash it before reuse.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P501 - Dispose of contents/container to hazardous or special waste collection point,
**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>Deproteination Reagent</td>
<td>2-hydroxy 5-sulfobenzoic acid,dihydrate / 3-carboxy-4-hydroxybenzene,dihydrate / 5-sulfosalicylic acid 2-hydrate / salicylic acid, 5-sulfo-.dihydrate / salicylsulfonic acid,dihydrate / sulfosalicylic acid,dihydrate</td>
<td>(CAS-No.) 5965-83-3</td>
<td>100</td>
<td>Skin Irrit. 2, H315</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Eye Irrit. 2, H319</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3, H335</td>
</tr>
</tbody>
</table>

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

**3.2. Mixtures**

Not applicable

### SECTION 4: First-aid measures

**4.1. Description of first aid measures**

First-aid measures general:


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. Take victim to a doctor if irritation persists.

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 neutralizing agents. Take victim to an ophthalmologist if irritation persists.

First-aid measures after ingestion:

- Rinse mouth with water. 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)**

**Potential Adverse human health effects and symptoms**

- Practically non-toxic if swallowed (LD50 oral 2000/5000 mg/kg). Causes skin irritation. Non-toxic in contact with skin (LD50 skin > 5000 mg/kg). May cause respiratory irritation. Causes serious eye irritation.

**Symptoms/effects after inhalation**

- Irritation of the respiratory tract. Dry/sore throat. Irritation of the nasal mucous membranes. EXPOSURE TO HIGH CONCENTRATIONS: Respiratory difficulties. Possible oedema of the upper respiratory tract.

**Symptoms/effects after skin contact**

- Tingling/irritation of the skin.

**Symptoms/effects after eye contact**

- Irritation of the eye tissue.

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

Treat symptomatically.

### SECTION 5: Fire-fighting measures

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

Suitable extinguishing media:

- Water spray. Dry powder. Foam.

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

Fire hazard:

- DIRECT FIRE HAZARD: Non combustible.

**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 environmentally hazardous firefighting water. Use water moderately and if possible collect or contain it.

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.

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

Prevent soil and water pollution. Prevent spreading in sewers.

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. Dam up the solid spill. Knock down/dilute dust cloud with water spray.

Methods for cleaning up: Prevent dispersion by covering with powdered limestone or soda ash. Scoop solid spill into closing containers. Carefully collect the spill/leftovers. 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

Precautions for safe handling: Avoid raising dust. Keep away from naked flames/heat. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Comply with the legal requirements. Clean contaminated clothing. Do not discharge the waste into the drain. Keep container tightly closed.

Hygiene measures: Wash contaminated clothing before reuse. 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 locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

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

Information on mixed storage: KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) bases.

Storage area: Store in a dry area. Store in a dark area. Meet the legal requirements.

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

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Deproteination Reagent (5965-83-3)
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:
Gloves
**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 P2

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Crystalline solid. Powder.</td>
</tr>
<tr>
<td>Color</td>
<td>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>108 °C</td>
</tr>
<tr>
<td>Freezing point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</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>Molecular mass</td>
<td>254.2 g/mol</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water. Soluble in ethanol. Soluble in ether. Water: soluble, Literature</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>
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<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</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
Unstable on exposure to light.

#### 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

<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>

**Deproteination Reagent (5965-83-3)**

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>2450 mg/kg (Rat, Oral)</td>
</tr>
<tr>
<td>LD50 dermal rabbit</td>
<td>&gt; 5000 mg/kg (Rabbit, Dermal)</td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>2450 mg/kg body weight</td>
</tr>
</tbody>
</table>

- **Skin corrosion/irritation**: Causes skin irritation.
- **Serious eye damage/irritation**: Causes serious eye irritation.
- **Respiratory or skin sensitization**: Not classified
- **Germ cell mutagenicity**: Not classified
- **Carcinogenicity**: Not classified
- **Reproductive toxicity**: Not classified
- **Specific target organ toxicity – single exposure**: May cause respiratory irritation.
- **Specific target organ toxicity – repeated exposure**: Not classified
- **Aspiration hazard**: Not classified
- **Viscosity, kinematic**: No data available
- **Potential Adverse human health effects and symptoms**: Practically non-toxic if swallowed (LD50 oral 2000/5000 mg/kg). Causes skin irritation. Non-toxic in contact with skin (LD50 skin> 5000 mg/kg). May cause respiratory irritation. Causes serious eye irritation.
- **Symptoms/effects after inhalation**: Irritation of the respiratory tract. Dry/sore throat. Irritation of the nasal mucous membranes. EXPOSURE TO HIGH CONCENTRATIONS: Respiratory difficulties. Possible oedema of the upper respiratory tract.
- **Symptoms/effects after skin contact**: Tingling/irritation of the skin.
- **Symptoms/effects after eye contact**: Irritation of the eye tissue.

### 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.
- **Ecology - air**: Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).
- **Ecology - water**: Water pollutant (surface water). No data available on ecotoxicity.

#### 12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence and degradability</td>
<td>Biodegradability in water: no data available.</td>
</tr>
</tbody>
</table>

#### 12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioaccumulative potential</td>
<td>No bioaccumulation data available.</td>
</tr>
</tbody>
</table>

#### 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>Waste treatment methods</th>
<th>Waste treatment methods.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product/Packaging disposal recommendations</td>
<td>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. Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber with energy recovery.</td>
</tr>
</tbody>
</table>


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

| Deproteination Reagent (5965-83-3) | 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

Revision date: 05/11/2017

Full text of H-phrases:

H315 Causes skin irritation
H319 Causes serious eye irritation
H335 May cause respiratory irritation
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: Substance
Substance name: Ellman's Reagent
CAS-No.: 69-78-3
Product code: 049E
Formula: C14H8N2O8S2
Synonyms: 2,2'-dinitro-5,5'-dithiodibenzoic acid / 3,3'-dithiobis(6-nitrobenzoic)acid / benzoic acid, 3,3'-dithiobis[6-nitro- / dithionitrobenzoic acid / DTNB (=dithionitrobenzoic acid)
BIG No.: 44584

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
Skin corrosion/irritation Category 2 - H315 - Causes skin irritation
Serious eye damage/eye irritation Category 2 - H319 - Causes serious eye irritation
Specific target organ toxicity (single exposure) Category 3 - H335 - May cause respiratory irritation

Full text of H statements: see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling
Hazard pictograms (GHS US): ![Exclamation Mark]
Signal word (GHS US): Warning
Hazard statements (GHS US):
- H315 - Causes skin irritation
- H319 - Causes serious eye irritation
- H335 - May cause respiratory irritation

Precautionary statements (GHS US):
- P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
- P264 - Wash hands, forearms and face thoroughly after handling.
- P271 - Use only outdoors or in a well-ventilated area.
- P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- P302+P352 - If on skin: Wash with plenty of water
- P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
- 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
- P321 - Specific treatment (see supplemental first aid instruction on this label)
- P332+P313 - If skin irritation occurs: Get medical advice/attention.
- P337+P313 - If eye irritation persists: Get medical advice/attention.
- P362+P364 - Take off contaminated clothing and wash it before reuse.
- P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
- 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
Ellman's Reagent
Safety Data Sheet

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>
</table>
| Ellman's Reagent (Main constituent) | 2,2'-dinitro-5,5'-dithiodibenzonic acid / 3,3'-dithiobis(6-nitrobenzoic)acid / benzoic acid, 3,3'-dithiobis(6-nitro- / dithionitrobenzoic acid / DTNB (=dithionitrobenzoic acid) | (CAS-No.) 69-78-3 | 100 | Skin Irrit. 2, H315  
     Eye Irrit. 2, H319  
     STOT SE 3, H335 |

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

3.2. Mixtures
Not applicable

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. Take victim to a doctor if irritation persists.

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 neutralizing agents. Take victim to an ophthalmologist if irritation persists.


4.2. Most important symptoms and effects (acute and delayed)
Potential Adverse human health effects and symptoms: Causes skin irritation. May cause respiratory irritation. Causes serious eye irritation.

Symptoms/effects after inhalation: AFTER INHALATION OF DUST/MIST: Irritation of the respiratory tract. Irritation of the nasal mucous membranes.

Symptoms/effects after skin contact: Tingling/irritation of the skin.

Symptoms/effects after eye contact: Irritation of the eye tissue.

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: Not easily combustible. In finely divided state: increased fire hazard.

Explosion hazard: DIRECT EXPLOSION HAZARD: Fine dust is explosive with air. 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.


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. Powdered form: no compressed air for pumping over spills.

Methods for cleaning up: Stop dust cloud by humidifying. Scoop solid spill into closing containers. Powdered: do not use compressed air for pumping over spills. 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: Wash contaminated clothing before reuse. 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 locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Storage temperature: 2 - 8 °C

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

Information on mixed storage: KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) bases.

Storage area: Store in a cool area. Store in a dry area. Keep container in a well-ventilated place. Keep only in the original container. Meet the legal requirements.

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

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Ellman’s Reagent (69-78-3)

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:**
- Gloves

**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 P2

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**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. Powder.</td>
</tr>
<tr>
<td>Color</td>
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</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>&gt; 7</td>
</tr>
<tr>
<td>Melting point</td>
<td>243 °C</td>
</tr>
<tr>
<td>Freezing point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</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>
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<td>Molecular mass</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Water</td>
<td>poorly soluble, Literature</td>
</tr>
<tr>
<td>Log Pow</td>
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</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>
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</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>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
</tbody>
</table>

### 9.2. Other information

No additional information available

---

**SECTION 10: Stability and reactivity**

### 10.1. Reactivity

Reacts with (strong) oxidizers and with (some) bases.

### 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**

<table>
<thead>
<tr>
<th>Effect</th>
<th>Class</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>
<tr>
<td>Skin corrosion/irritation</td>
<td>Causes skin irritation. pH: &gt; 7</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Causes serious eye irritation. pH: &gt; 7</td>
</tr>
<tr>
<td>Respiratory or skin sensitization</td>
<td>Not classified</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>May cause respiratory irritation.</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>
<tr>
<td>Potential Adverse human health effects and symptoms</td>
<td>Causes skin irritation. May cause respiratory irritation. Causes serious eye irritation.</td>
</tr>
<tr>
<td>Symptoms/effects after inhalation</td>
<td>AFTER INHALATION OF DUST/MIST: 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>
</tbody>
</table>

**SECTION 12: Ecological information**

**12.1. Toxicity**

<table>
<thead>
<tr>
<th>Effect</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology - general</td>
<td>The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.</td>
</tr>
<tr>
<td>Ecology - air</td>
<td>Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).</td>
</tr>
<tr>
<td>Ecology - water</td>
<td>Mild water pollutant (surface water). No data available on ecotoxicity.</td>
</tr>
</tbody>
</table>

**12.2. Persistence and degradability**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ellman's Reagent (69-78-3)</td>
<td>Biodegradability in water: no data available.</td>
</tr>
</tbody>
</table>

**12.3. Bioaccumulative potential**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ellman's Reagent (69-78-3)</td>
<td>No bioaccumulative data available.</td>
</tr>
</tbody>
</table>

**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


Product/Packaging disposal recommendations: Remove to an authorized plant for the destruction, neutralization and elimination of hazardous waste. Remove waste in accordance with local and/or national regulations. 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.


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

Ellman's Reagent (69-78-3)
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-Phrase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation</td>
</tr>
</tbody>
</table>
Ellman's Reagent
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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. Product Identification

Product form : Mixture
Product name : Glutathione Assay Buffer [5X]
Product code : 114G

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
### SECTION 5: Other information

**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

**Glutathione Assay Buffer [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**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>No data available</td>
</tr>
</tbody>
</table>
Glutathione Assay Buffer [5X]  
Safety Data Sheet  
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<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>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</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>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
</tbody>
</table>

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

<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>
<tr>
<td>Skin corrosion/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Respiratory or skin sensitization</td>
<td>Not classified</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>
</tbody>
</table>
**Glutathione Assay Buffer [5X]**

Safety Data Sheet

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**
No additional information available

15.2. **International regulations**

**CANADA**

EU-Regulations

National regulations
No additional information available

15.3. **US State regulations**
Glutathione Assay Buffer [5X]
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and 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: Glutathione Reductase
Product code: 116G

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 labelling
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

<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>1,4-dithiothreitol, DL-</td>
<td>(R*,R*)+/-/1,4-dimercapto-2,3-butanediol / (R*,R*)-/-/1,4-dimercaptopropane-2,3-diol / 1,4-dimercapto-2,3-butanediol, (R*,R*)+/-/1,4-dimercaptopropane-2,3-diol, (R*,R*)+/-/2,3-butanediol, 1,4-dimercapto-, (R*,R*)+/-/2,3-butanediol, 1,4-dimercapto-, DL-threo- / Cleland's reagent, DL- / dithiothreitol, DL- / DL-1,4-dithiothreitol / DL-Cleland's reagent / DL-dithiothreitol / DL-DTT (=dithiothreitol) / DL-threo-1,4-dimercapto-2,3-butanediol / DTT (=dithiothreitol), DL- / rac-dithiothreitol / threitol, 1,4-dithio-</td>
<td>(CAS-No.) 27565-41-9</td>
<td>0.5 - 2</td>
<td>Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335</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.
Glutathione Reductase
Safety Data Sheet

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

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

5.3. 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

Glutathione Reductase
No additional information available

1,4-dithiothreitol, DL- (27565-41-9)
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
Glutathione Reductase
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

**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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>No data available</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>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</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>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
</tbody>
</table>

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

1,4-dithiothreitol, DL- (27565-41-9)
ATE US (oral) 500 mg/kg body weight

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

1,4-dithiothreitol, DL- (27565-41-9)
Specific target organ toxicity – single exposure May cause respiratory irritation.
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

1,4-dithiothreitol, DL- (27565-41-9)
Persistence and degradability Biodegradability in water: no data available.

12.3. Bioaccumulative potential

1,4-dithiothreitol, DL- (27565-41-9)
Bioaccumulative potential No bioaccumulative data 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

1,4-dithiothreitol, DL- (27565-41-9)
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-Phrase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H302</td>
<td>Harmful if swallowed</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation</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.
# SECTION 1: Identification

## 1.1. Identification

<table>
<thead>
<tr>
<th>Product form</th>
<th>Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance name</td>
<td>dimethyl sulfoxide (DMSO)</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>67-68-5</td>
</tr>
<tr>
<td>Product code</td>
<td>183D</td>
</tr>
<tr>
<td>Formula</td>
<td>C2H6OS</td>
</tr>
<tr>
<td>BIG No</td>
<td>10461</td>
</tr>
</tbody>
</table>

## 1.2. Recommended use and restrictions on use

<table>
<thead>
<tr>
<th>Use of the substance/mixture</th>
<th>Solvent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pharmaceutical product: active ingredient</td>
</tr>
<tr>
<td></td>
<td>Cleansing product: component</td>
</tr>
</tbody>
</table>

## 1.3. Supplier

Geno Technology, Inc./ GBiosciences  
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**  
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**

<table>
<thead>
<tr>
<th>Signal word (GHS US)</th>
<th>Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard statements (GHS US)</td>
<td>H227 - Combustible liquid</td>
</tr>
</tbody>
</table>
| 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

| Substance type | Mono-constituent |
dimethyl sulfoxide (DMSO)
Safety Data Sheet

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

<table>
<thead>
<tr>
<th>Name</th>
<th>Common Name (Synonyms)</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS US classification</th>
</tr>
</thead>
</table>

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

3.2. Mixtures
Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general: If you feel unwell, seek medical advice.
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. Do not apply (chemical) neutralizing agents. 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. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.

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

Potential Adverse human health effects and symptoms: Non-toxic if swallowed (LD50 oral, rat > 5000 mg/kg). Non-toxic in contact with skin (LD50 skin> 5000 mg/kg). Slightly irritant to skin. Slightly harmful by inhalation. Slightly irritant to eyes. Caution! Substance is absorbed through the skin.
Symptoms/effects after inhalation: No effects known.
Symptoms/effects after skin contact: Slight irritation. ON CONTINUOUS EXPOSURE/CONTACT: Red skin. Skin rash/inflammation. Breath has characteristic odour. Symptoms similar to those listed under ingestion.
Symptoms/effects after eye contact: Slight irritation. Redness of the eye tissue.

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: Water (quick-acting extinguisher, reel); risk of puddle expansion. Water; risk of puddle expansion.

5.2. Specific hazards arising from the chemical

Fire hazard: DIRECT FIRE HAZARD: Material presenting a fire hazard. INDIRECT FIRE HAZARD: Temperature above flashpoint: higher fire/explosion hazard. Reactions involving a fire hazard: see "Reactivity Hazard".

Explosion hazard: INDIRECT EXPLOSION HAZARD: Reactions with explosion hazards: see "Reactivity Hazard".

5.3. Special protective equipment and precautions for fire-fighters

Precautonary measures fire: Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: seal off low-lying areas. Exposure to fire/heat: have neighbourhood close doors and windows.

Firefighting instructions: Cool tanks/drums with water spray/remove them into safety. 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

Protective equipment: Gloves. Protective clothing.

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.
Methods for cleaning up: For minor spillages wash down with excess of water. Take up liquid spill into absorbent material, e.g.: sand, earth, vermiculite or kieselguhr. Scoop absorbed substance into closing containers. Spill must not return in its original container. 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: 15 - 25 °C
Heat-ignition: KEEP SUBSTANCE AWAY FROM: heat sources.
Information on mixed storage: KEEP SUBSTANCE AWAY FROM: oxidizing agents. reducing agents. (strong) acids. (strong) bases. halogens. water/moisture.
Storage area: Store in a dry area. Store at ambient temperature. Keep out of direct sunlight. Ventilation at floor level. May be stored under nitrogen. Meet the legal requirements.
Special rules on packaging: SPECIAL REQUIREMENTS: closing. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
Packaging materials: MATERIAL TO AVOID: metal. plastics.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>dimethyl sulfoxide (DMSO) (67-68-5)</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
dimethyl sulfoxide (DMSO)
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Materials for protective clothing:
GIVE GOOD RESISTANCE: butyl rubber. chloroprene rubber. neoprene. tetrafluoroethylene. latex. nitrile rubber. GIVE POOR RESISTANCE: PVC. PVA. viton. nitrile rubber. natural rubber

Hand protection:
Gloves

Eye protection:
Safety glasses

Skin and body protection:
Protective clothing

Respiratory protection:
Full face mask with filter type A at conc. in air > exposure limit

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| Physical state | Liquid |
| Appearance     | Liquid. |
| Color          | Colourless |
| Odor           | Almost odourless Garlic odour |
| Odor threshold | No data available |
| pH             | No data available |
| Melting point  | 18 °C |
| Freezing point | No data available |
| Boiling point  | 189 °C (1013 hPa) |
| Flash point    | 87 °C (1013 hPa) |
| Relative evaporation rate (butyl acetate=1) | No data available |
| Flammability (solid, gas) | Not applicable. |
| Vapor pressure | 0.55 hPa (20 °C, EU Method A.4: Vapour Pressure) |
| Vapor pressure at 50 °C | 7.5 hPa (EU Method A.4: Vapour Pressure) |
| Relative vapor density at 20 °C | 2.7 |
| Relative density | 1.1 (20 °C, EU Method A.3: Relative Density) |
| Relative density of saturated gas/air mixture | 1 |
| Specific gravity / density | 1101 kg/m³ (20 °C) |
| Molecular mass | 78.14 g/mol |
| Solubility | Soluble in water. Soluble in ethanol. Soluble in ether. Soluble in acetone. Soluble in chloroform. Water: 100 g/100ml (25 °C, Calculated) |
| Log Pow | -1.35 (Experimental value, 20 °C) |
| Auto-ignition temperature | 300 °C (1013 hPa) |
| Decomposition temperature | > 190 °C |
| Viscosity, kinematic | 1.944 mm²/s |
| Viscosity, dynamic | 2.14 mPa·s (20 °C) |
| Explosion limits | 2.6 - 28.5 vol %
| Lower explosive limit (LEL): 2.6 vol %
| UEL: 28.5 vol % |
| Explosive properties | No data available |
| Oxidizing properties | No data available |

9.2. Other information

| Specific conductivity | 200000 pS/m |
| Saturation concentration | 8 g/m³ |
| VOC content | 100 % |
| Other properties | Gas/vapour heavier than air at 20°C. Clear. Hygroscopic. Slightly volatile. |
**dimethyl sulfoxide (DMSO)**  
Safety Data Sheet  
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity
Reacts violently with many compounds e.g.: with (strong) oxidizers, with (some) halogens compounds and with (some) acids: (increased) risk of fire/explosion.

#### 10.2. Chemical stability
Hygroscopic.

#### 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>Parameter</th>
<th>Value</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>

**dimethyl sulfoxide (DMSO) (67-68-5)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>28300 mg/kg body weight (Equivalent or similar to OECD 401, Rat, Male / female, Experimental value, Oral)</td>
</tr>
<tr>
<td>LD50 dermal rat</td>
<td>40000 mg/kg body weight (Rat, Male / female, Experimental value, Dermal)</td>
</tr>
<tr>
<td>LC50 inhalation rat (mg/l)</td>
<td>&gt; 5.33 mg/l air (OECD 403: Acute Inhalation Toxicity, 4 h, Rat, Male / female, Experimental value, Inhalation)</td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>28300 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (dermal)</td>
<td>40000 mg/kg body weight</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin corrosion/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Respiratory or skin sensitization</td>
<td>Not classified</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>Not classified</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Not classified</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>1.944 mm²/s</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential Adverse human health effects and symptoms</td>
<td>Non-toxic if swallowed (LD50 oral, rat &gt; 5000 mg/kg). Non-toxic in contact with skin (LD50 skin&gt; 5000 mg/kg). Slightly irritant to skin. Slightly harmful by inhalation. Slightly irritant to eyes. Caution! Substance is absorbed through the skin.</td>
</tr>
<tr>
<td>Symptoms/effects after inhalation</td>
<td>No effects known.</td>
</tr>
<tr>
<td>Symptoms/effects after skin contact</td>
<td>Slight irritation. ON CONTINUOUS EXPOSURE/CONTACT: Red skin. Skin rash/inflammation. Breath has characteristic odour. Symptoms similar to those listed under ingestion.</td>
</tr>
<tr>
<td>Symptoms/effects after eye contact</td>
<td>Slight irritation. Redness of the eye tissue.</td>
</tr>
</tbody>
</table>
**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**: Photolysis in the air. Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).

<table>
<thead>
<tr>
<th>dimethyl sulfoxide (DMSO) (67-68-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LC50 fish 1</strong></td>
</tr>
<tr>
<td>&gt; 25 g/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Brachydanio rerio, Static system, Fresh water, Experimental value, Lethal)</td>
</tr>
<tr>
<td><strong>EC50 Daphnia 1</strong></td>
</tr>
<tr>
<td>24.6 g/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value)</td>
</tr>
</tbody>
</table>

### 12.2. Persistence and degradability

- **Persiste**: Not readily biodegradable in water.

### 12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>dimethyl sulfoxide (DMSO) (67-68-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BCF fish 1</strong></td>
</tr>
<tr>
<td>&lt; 0.4 (Cyprinus carpio, Test duration: 6 weeks)</td>
</tr>
<tr>
<td><strong>Log Pow</strong></td>
</tr>
<tr>
<td>-1.35 (Experimental value, 20 °C)</td>
</tr>
</tbody>
</table>

### 12.4. Mobility in soil

<table>
<thead>
<tr>
<th>dimethyl sulfoxide (DMSO) (67-68-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surface tension</strong></td>
</tr>
<tr>
<td>0.0435 N/m (20 °C, 10 g/l)</td>
</tr>
<tr>
<td><strong>Log Koc</strong></td>
</tr>
<tr>
<td>0.64 (log Koc, SRC PCKOCWIN v1.66, Calculated value)</td>
</tr>
</tbody>
</table>

### 12.5. Other adverse effects

No additional information available

**SECTION 13: Disposal considerations**

### 13.1. Disposal methods

- **Waste treatment methods**: Waste treatment methods.
- **Product/Packaging disposal recommendations**: Do not discharge into surface water. Recycle by distillation. Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber with energy recovery.
- **Additional information**: Can be considered as non hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.

**SECTION 14: Transport information**

**Department of Transportation (DOT)**

In accordance with DOT

Not applicable

**Transportation of Dangerous Goods**

Not applicable

**Transport by sea**

- **Transport document description (IMDG)**: UN 1993 FLAMMABLE LIQUID, N.O.S., 3, III
- **UN-No. (IMDG)**: 1993
- **Proper Shipping Name (IMDG)**: FLAMMABLE LIQUID, N.O.S.
- **Class (IMDG)**: 3 - Flammable liquids
- **Packing group (IMDG)**: III - substances presenting low danger
- **Limited quantities (IMDG)**: 5 L
Air transport

Transport document description (IATA) : UN 1993 Flammable liquid, n.o.s., 3, III
UN-No. (IATA) : 1993
Proper Shipping Name (IATA) : Flammable liquid, n.o.s.
Class (IATA) : 3 - Flammable Liquids
Packing group (IATA) : III - Minor Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

<table>
<thead>
<tr>
<th>dimethyl sulfoxide (DMSO) (67-68-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
</tr>
</tbody>
</table>

15.2. International regulations

CANADA

EU-Regulations

National regulations
No additional information available

15.3. US State regulations

SECTION 16: Other information

Revision date : 05/11/2017
Full text of H-phrases:

<table>
<thead>
<tr>
<th>H227</th>
<th>Combustible liquid</th>
</tr>
</thead>
</table>

NFPA health hazard : 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

NFPA fire hazard : 2 - Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur.

NFPA reactivity : 2 - Materials that readily undergo violent chemical change at elevated temperatures and pressures.

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.
**Oxidized Glutathione Standard (GSSG) [400uM]**

Safety Data Sheet

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

Date of issue: 08/31/2016  
Revision date: 05/11/2017  
Version: 7.1

---

**SECTION 1: Identification**

**1.1. Identification**

- **Product form:** Substance
- **Substance name:** Oxidized Glutathione Standard (GSSG) [400uM]
- **CAS-No.:** 27025-41-8
- **Product code:** 2000
- **Formula:** C20H32N6O12S2
- **Synonyms:** bi(glutathion-S-yl) / glutathione disulfide / glutathione, L-(2',>2')-oxidized / glycine, L-gamma-glutamyl-L-cysteinyl-(2',>2')-disulfide / L-(2',>2')-glutathione, oxidized / L-gamma-glutamyl-L-cysteinyl glycine, (2',>2')-disulfide / L-oxiglutatione / oxiglutatione, L-
- **BIG No.:** 44689

**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**
  - Skin corrosion/irritation Category 2: H315 - Causes skin irritation
  - Serious eye damage/eye irritation Category 2: H319 - Causes serious eye irritation
  - Specific target organ toxicity (single exposure) Category 3: H335 - May cause respiratory irritation

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):** Warning

- **Hazard statements (GHS US):**
  - H315 - Causes skin irritation
  - H319 - Causes serious eye irritation
  - H335 - May cause respiratory irritation

- **Precautionary statements (GHS US):**
  - P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
  - P264 - Wash hands, forearms and face thoroughly after handling.
  - P271 - Use only outdoors or in a well-ventilated area.
  - P280 - Wear protective gloves/protective clothing/eye protection/face protection.
  - P302+P352 - If on skin: Wash with plenty of water
  - P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
  - 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
  - P321 - Specific treatment (see supplemental first aid instruction on this label)
  - P332+P313 - If skin irritation occurs: Get medical advice/attention.
  - P337+P313 - If eye irritation persists: Get medical advice/attention.
  - P362+P364 - Take off contaminated clothing and wash it before reuse.
  - P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
  - P405 - Store locked up.
  - P501 - Dispose of contents/container to hazardous or special waste collection point, in
Oxidized Glutathione Standard (GSSG) [400uM]

Safety Data Sheet

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

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>Oxidized Glutathione Standard (GSSG)</td>
<td>bi(glutathionyl) / glutathione disulfide / glutathione, L(−)-, oxidized / glycine, L-gamma-glutamyl-L-cysteinyl- (2-&gt;Z)-disulfide / L(−)-glutathione, oxidized / L-gamma-glutamyl-L-cysteinyl glycine, (2-&gt;Z)-disulfide / L-oxiglutathione / oxiglutathione, L-</td>
<td>(CAS-No.) 27025-41-8</td>
<td>100</td>
<td>Skin Irrit. 2, H315</td>
</tr>
<tr>
<td>[400uM] (Main constituent)</td>
<td></td>
<td></td>
<td></td>
<td>Eye Irrit. 2, H319</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3, H335</td>
</tr>
</tbody>
</table>

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

3.2. Mixtures

Not applicable

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. Soap may be used. Take victim to a doctor if irritation persists.

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


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

Potential Adverse human health effects and symptoms: Non-toxic if swallowed (LD50 oral, rat > 5000 mg/kg). Causes skin irritation. May cause respiratory irritation. Causes serious eye irritation.

Symptoms/effects after inhalation: AFTER INHALATION OF DUST/MIST: Irritation of the respiratory tract. Irritation of the nasal mucous membranes.

Symptoms/effects after skin contact: Tingling/irritation of the skin.

Symptoms/effects after eye contact: Irritation of the eye tissue.

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

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

Protective equipment


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

Precautions for safe handling

Avoid raising dust. Keep away from naked flames/heat. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Comply with the legal requirements. Clean contaminated clothing. Keep container tightly closed.

Hygiene measures

Wash contaminated clothing before reuse. 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 locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Heat-ignition

KEEP SUBSTANCE AWAY FROM: heat sources.

Information on mixed storage

KEEP SUBSTANCE AWAY FROM: oxidizing agents.

Storage area

Store in a cool area. Store in a dry area. 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>Oxidized Glutathione Standard (GSSG) [400uM] (27025-41-8)</th>
</tr>
</thead>
</table>

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:

Gloves

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 P2

### SECTION 9: Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Details</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>178 °C</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>Molecular mass</td>
<td>612.63 g/mol</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water. Water: soluble, Literature</td>
</tr>
<tr>
<td>Log Pow</td>
<td>-7.89 (Estimated value)</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>178 °C</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>
<tr>
<td>Oxidizing properties</td>
<td>No data available</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.
Oxidized Glutathione Standard (GSSG) [400uM] Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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

Oxidized Glutathione Standard (GSSG) [400uM] (27025-41-8)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>&gt; 5000 mg/kg (Rat, Oral)</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation : Causes skin irritation.
Serious eye damage/irritation : Causes serious eye irritation.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified
Reproductive toxicity : Not classified

Specific target organ toxicity – single exposure : May cause respiratory irritation.
Specific target organ toxicity – repeated exposure : Not classified

Aspiration hazard : Not classified
Viscosity, kinematic : No data available

Potential Adverse human health effects and symptoms : Non-toxic if swallowed (LD50 oral, rat > 5000 mg/kg). Causes skin irritation. May cause respiratory irritation. Causes serious eye irritation.

Symptoms/effects after inhalation : AFTER INHALATION OF DUST/MIST: Irritation of the respiratory tract. Irritation of the nasal mucous membranes.
Symptoms/effects after skin contact : Tingling/irritation of the skin.
Symptoms/effects after eye contact : Irritation of the eye tissue.

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.
Ecology - air : Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).
Ecology - water : Mild water pollutant (surface water). No data available on ecotoxicity.

12.2. Persistence and degradability

Oxidized Glutathione Standard (GSSG) [400uM] (27025-41-8)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biodegradability in water :</td>
<td>no data available.</td>
</tr>
</tbody>
</table>

12.3. Bioaccumulative potential

Oxidized Glutathione Standard (GSSG) [400uM] (27025-41-8)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Pow :</td>
<td>-7.89 (Estimated value)</td>
</tr>
<tr>
<td>Bioaccumulative potential :</td>
<td>Not bioaccumulative.</td>
</tr>
</tbody>
</table>

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

Oxidized Glutathione Standard (GSSG) [400uM]  
Safety Data Sheet  
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Product/Packaging disposal recommendations: Remove to an authorized plant for the destruction, neutralization and elimination of hazardous waste. 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.


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

<table>
<thead>
<tr>
<th>Oxidized Glutathione Standard (GSSG) [400uM] (27025-41-8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
</tr>
</tbody>
</table>

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:

| H315 | Causes skin irritation |
| H319 | Causes serious eye irritation |
| H335 | May cause respiratory irritation |

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.
# NADPH Safety Data Sheet

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

Date of issue: 08/31/2016  
Revision date: 05/11/2017  
Version: 7.1

## SECTION 1: Identification

### 1.1. Identification

<table>
<thead>
<tr>
<th>Product form</th>
<th>Substance</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Substance name</th>
<th>NADPH</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>2646-71-1</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Product code</th>
<th>300N</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Formula</th>
<th>C21H30N7O17P3.4Na</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Synonyms</th>
<th>adenosine 5'-trihydrogen diphosphate, 2'-dihydrogen phosphate, 5'-&gt;5'-ester with 1,4-dihydro-1-beta-D-ribofuranosyl-3-pyridinecarboxamide, tetrasodium salt / beta-nicotinamide adenine dinucleotide phosphate, tetrasodium salt / dihydronicotinamide adenine dinucleotide phosphate, tetrasodium salt / NADPH (=nicotinamide adenine dinucleotide phosphate), tetrasodium salt</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>BIG No</th>
<th>44749</th>
</tr>
</thead>
</table>

### 1.2. Recommended use and restrictions on use

Use of the substance/mixture: Medicine

### 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**

Serious eye damage/eye irritation Category 2  
H319 - Causes serious eye irritation

Full text of H statements: see section 16

### 2.2. GHS Label elements, including precautionary statements

**GHS US labeling**

Hazard pictograms (GHS US): ![Exclamation Mark]

<table>
<thead>
<tr>
<th>Signal word (GHS US)</th>
<th>Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard statements (GHS US)</td>
<td>H319 - Causes serious eye irritation</td>
</tr>
</tbody>
</table>

| Precautionary statements (GHS US) | P264 - Wash hands, forearms and face thoroughly after handling.  
P280 - Wear protective gloves/protective clothing/eye protection/face protection.  
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P337+P313 - If eye irritation persists: Get medical advice/attention. |

### 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

<table>
<thead>
<tr>
<th>Substance type</th>
<th>Mono-constituent</th>
</tr>
</thead>
</table>
NADPH
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<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>NADPH (Main constituent)</td>
<td>adenosine 5'-trihydrogen diphosphate, 2'-dihydrogen phosphate, 5'-ester with 1,4-dihydro-1-beta-D-ribofuranosyl-3-pyridinecarboxamide, tetrasodium salt / beta-nicotinamide adenine dinucleotide phosphate, tetrasodium salt / dihydronicotinamide adenine dinucleotide phosphate, tetrasodium salt / NADPH (=nicotinamide adenine dinucleotide phosphate), tetrasodium salt</td>
<td>(CAS-No.) 2646-71-1</td>
<td>100</td>
<td>Eye Irrit. 2, H319</td>
</tr>
</tbody>
</table>

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

3.2. Mixtures
Not applicable

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. Soap may be used. Take victim to a doctor if irritation persists.

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


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

Potential Adverse human health effects and symptoms: Causes serious eye irritation.

Symptoms/effects after skin contact: ON CONTINUOUS EXPOSURE/CONTACT: Tingling/irritation of the skin.

Symptoms/effects after eye contact: Irritation of the eye tissue.

Symptoms/effects after ingestion: AFTER INGESTION OF HIGH QUANTITIES: Irritation of the gastric/intestinal mucosa.

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

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.

06/28/2019 EN (English US)
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
Precautions for safe handling: Avoid raising dust. Keep away from naked flames/heat. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Comply with the legal requirements. Clean contaminated clothing. Keep container tightly closed.
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.
Information on mixed storage: KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids. (strong) bases.
Storage area: Store in a dark area. To be kept quick-frozen. 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
NADPH (2646-71-1)
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:
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>Solid, Powder.</td>
</tr>
<tr>
<td>Color</td>
<td>Off-white to light yellow</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>No data available</td>
</tr>
<tr>
<td>Freezing point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</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>Molecular mass</td>
<td>833.36 g/mol</td>
</tr>
<tr>
<td>Solubility</td>
<td>No data available</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>
<tr>
<td>Oxidizing properties</td>
<td>No data available</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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</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>
<tr>
<td>Skin corrosion/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Causes serious eye irritation.</td>
</tr>
</tbody>
</table>
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
Potential Adverse human health effects and symptoms:
- Causes serious eye irritation.
- ON CONTINUOUS EXPOSURE/CONTACT: Tingling/irritation of the skin.
- Irritation of the eye tissue.
- AFTER INGESTION OF HIGH QUANTITIES: Irritation of the gastric/intestinal mucosa.

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.
Ecology - air: Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).
Ecology - water: Mild water pollutant (surface water). No data available on ecotoxicity.

12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>NADPH (2646-71-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence and degradability</td>
</tr>
</tbody>
</table>

12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>NADPH (2646-71-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioaccumulative potential</td>
</tr>
</tbody>
</table>

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
Product/Packaging disposal recommendations: Remove to an authorized waste treatment plant. 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.

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

NADPH (2646-71-1)
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

Full text of H-phrases:

H319 Causes serious eye irritation

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.