Safety Data Sheet

Cat. # RC-484

Ellman's Reagent, 5-5-Dithiobis(2-nitrobenzoic-acid)

Size: 25 G
SECTION 1: Identification

1.1. Identification

Product form: Substance
Substance name: 5,5'-Dithiobis(2-nitrobenzoic acid)
CAS-No.: 69-78-3
Product code: 725A
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): ![Warning]

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, in accordance with local, regional, national and/or international regulation.
5,5’-Dithiobis(2-nitrobenzoic acid)
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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>Name</th>
<th>Common Name (Synonyms)</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,5'-Dithiobis(2-nitrobenzoic acid) (Main constituent)</td>
<td>2,2’-dinitro-5,5’-dithiodibenzoic acid / 3,3’-dithiobis(6-nitrobenzoic acid / dithionitrobenzoic acid / DTNB (=dithionitrobenzoic acid)</td>
<td>(CAS-No.) 69-78-3</td>
<td>100</td>
<td>Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335</td>
</tr>
</tbody>
</table>

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. 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
Treatment 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. INDIRECT FIRE HAZARD: Heating increases the 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.

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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
5,5’-Dithiobis(2-nitrobenzoic acid) (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
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according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

**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>9.1. Information on basic physical and chemical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical state</strong></td>
</tr>
<tr>
<td><strong>Appearance</strong></td>
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<tr>
<td><strong>Color</strong></td>
</tr>
<tr>
<td><strong>Odor</strong></td>
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<tr>
<td><strong>Odor threshold</strong></td>
</tr>
<tr>
<td><strong>pH</strong></td>
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<tr>
<td><strong>Melting point</strong></td>
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<tr>
<td><strong>Freezing point</strong></td>
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<tr>
<td><strong>Boiling point</strong></td>
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<tr>
<td><strong>Flash point</strong></td>
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<tr>
<td><strong>Relative evaporation rate (butyl acetate=1)</strong></td>
</tr>
<tr>
<td><strong>Flammability (solid, gas)</strong></td>
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<tr>
<td><strong>Vapor pressure</strong></td>
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<tr>
<td><strong>Relative vapor density at 20 °C</strong></td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
</tr>
<tr>
<td><strong>Molecular mass</strong></td>
</tr>
<tr>
<td><strong>Solubility</strong></td>
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<tr>
<td><strong>Log Pow</strong></td>
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<tr>
<td><strong>Auto-ignition temperature</strong></td>
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<tr>
<td><strong>Decomposition temperature</strong></td>
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<tr>
<td><strong>Viscosity, kinematic</strong></td>
</tr>
<tr>
<td><strong>Viscosity, dynamic</strong></td>
</tr>
<tr>
<td><strong>Explosion limits</strong></td>
</tr>
<tr>
<td><strong>Explosive properties</strong></td>
</tr>
<tr>
<td><strong>Oxidizing properties</strong></td>
</tr>
</tbody>
</table>

**9.2. Other information**
No additional information available

### SECTION 10: Stability and reactivity

<table>
<thead>
<tr>
<th>10.1. Reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reacts with (strong) oxidizers and with (some) bases.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10.2. Chemical stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable under normal conditions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10.3. Possibility of hazardous reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>No dangerous reactions known under normal conditions of use.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10.4. Conditions to avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>None under recommended storage and handling conditions (see section 7).</td>
</tr>
</tbody>
</table>
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10.5. Incompatible materials
No additional information available

10.6. Hazardous decomposition products
Hazardous decomposition products.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

- Acute toxicity (oral): Not classified
- Acute toxicity (dermal): Not classified
- Acute toxicity (inhalation): Not classified
- Skin corrosion/irritation: Causes skin irritation.
  pH: > 7
- Serious eye damage/irritation: Causes serious eye irritation.
  pH: > 7
- 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: 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

<table>
<thead>
<tr>
<th>5,5'-Dithiobis(2-nitrobenzoic acid) (69-78-3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence and degradability</td>
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</table>

12.3. Bioaccumulative potential

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</thead>
<tbody>
<tr>
<td>Bioaccumulative potential</td>
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</tbody>
</table>

12.4. Mobility in soil
No additional information available

12.5. Other adverse effects
No additional information available
5,5’-Dithiobis(2-nitrobenzoic acid)
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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 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.</td>
</tr>
</tbody>
</table>


SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Other information: No supplementary information available.

Transportation of Dangerous Goods

Transport by sea

Not regulated

Air transport

Not regulated

SECTION 15: Regulatory information

15.1. US Federal regulations

5,5’-Dithiobis(2-nitrobenzoic acid) (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>H315</th>
<th>Causes skin irritation</th>
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<td>H319</td>
<td>Causes serious eye irritation</td>
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<td>May cause respiratory irritation</td>
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</table>

SDS US (GHS HazCom 2012)

06/28/2019 EN (English US)
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.