Safety Data Sheet

Cat. # 786-513

Triton® X-100

Size: 500ml
polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Date of issue: 11/10/2015 Revision date: 05/11/2017 Version: 7.1

SECTION 1: Identification

1.1. Identification

Product form : Substance
Substance name : polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether
Chemical name : Triton® X-100
CAS-No. : 9002-93-1
Product code : 204T
Formula : C34H62O12
Synonyms : 2-[4-(2,4,4-trimethylpentan-2-yl)phenoxy]ethanol / 4(1,1,3,3-tetramethylbutyl)phenyl polyethylene glycol / poly(oxy-1,2-ethanediyl), alpha-(4(1,1,3,3-tetramethylbutyl)phenyl)-omega-hydroxy / polyethylene glycol tert-octylphenyl ether / tert-octylphenoxypolyethoxyethanol / TRITON X-100

BIG No : 18801

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Surfactant

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

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

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification
Acute toxicity (oral) Category 4 : H302 Harmful if swallowed
Serious eye damage/eye irritation Category 2 : H319 Causes serious eye irritation
Hazardous to the aquatic environment - Acute Hazard Category 2 : H401 Toxic to aquatic life
Hazardous to the aquatic environment - Chronic Hazard Category 2 : H411 Toxic to aquatic life with long lasting effects

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling
Hazard pictograms (GHS US) :

Signal word (GHS US) : Warning
Hazard statements (GHS US) : H302 - Harmful if swallowed
H319 - Causes serious eye irritation
H401 - Toxic to aquatic life
H411 - Toxic to aquatic life with long lasting effects

Precautionary statements (GHS US) : P264 - Wash hands, forearms and face thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P273 - Avoid release to the environment.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312 - If swallowed: Call a poison center or doctor if you feel unwell
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P330 - Rinse mouth.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P391 - Collect spillage.
P501 - Dispose of contents/container to hazardous or special waste collection point, in
polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether
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

<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>polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether (Main constituent)</td>
<td>2-(4-(2,4,4-trimethylpentan-2-yl)phenoxy)ethanol / 4-(1,1,3,3-tetramethylbutyl)phenyl polyethylene glycol / poly(oxy-1,2-ethanediyl), alpha-(4-(1,1,3,3-tetramethylbutyl)phenyl)-omega-hydroxy- / polyethylene glycol tert-octylphenyl ether / tert-octylphenoxypolyethoxyethanol / TRITON X-100</td>
<td>(CAS-Nr.) 9002-93-1</td>
<td>100</td>
<td>Acute Tox. 4 (Oral), H302; Eye Irrit. 2, H319; Aquatic Acute 2, H401; Aquatic Chronic 2, H411</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: Rinse with 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 for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents. Take victim to an ophthalmologist.


4.2. Most important symptoms and effects (acute and delayed)
Potential Adverse human health effects and symptoms: Harmful if swallowed. Non-toxic in contact with skin (LD50 skin> 5000 mg/kg). Slightly irritant to skin. Causes serious eye irritation. Caution! Substance is absorbed through the skin.

Symptoms/effects after skin contact: Slight irritation.
Symptoms/effects after eye contact: Irritation of the eye tissue.
Chronic symptoms: No effects known.

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: Not easily combustible. INDIRECT FIRE HAZARD: Temperature above flashpoint: higher fire/explosion hazard.
polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether

Safety Data Sheet

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5.3. Special protective equipment and precautions for fire-fighters

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

Firefighting instructions: No specific fire-fighting instructions required.


SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment: Gloves. Safety glasses. Protective clothing.

Emergency procedures: Mark the danger area. 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.

Methods for cleaning up: Take up liquid spill into inert absorbent material, e.g.: sand, earth, vermiculite. Scoop absorbed substance into closing containers. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.

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

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling


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

7.2. Conditions for safe storage, including any incompatibilities

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

Storage temperature: 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.

Storage area: Meet the legal requirements.

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

Packaging materials: SUITABLE MATERIAL: metal. glass. MATERIAL TO AVOID: copper. bronze.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether (9002-93-1)

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
polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether

Safety Data Sheet

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

Materials for protective clothing:

GIVE EXCELLENT RESISTANCE: nitrile rubber

Hand protection:

Protective gloves against chemicals (EN374)

Eye protection:

Safety glasses

Skin and body protection:

Protective clothing

Respiratory protection:

Respiratory protection not required in normal conditions

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>Appearance</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Color</td>
<td>Light yellow</td>
</tr>
<tr>
<td>Odor</td>
<td>Mild odour</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>9.7</td>
</tr>
<tr>
<td>Melting point</td>
<td>6 °C</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>&gt; 200 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>251 °C (Closed cup)</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>&lt; 1.33 hPa (20 °C)</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>&gt; 1</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.007</td>
</tr>
<tr>
<td>Specific gravity / density</td>
<td>1007 kg/m³</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>646.37 g/mol</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water. Soluble in ethanol. Soluble in acetone. Soluble in aromatic hydrocarbons. Water: complete</td>
</tr>
<tr>
<td>Log Pow</td>
<td>4.86 (Estimated value)</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

Other properties: Gas/vapour heavier than air at 20°C. Clear. Slightly volatile. Basic reaction.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reacts with (strong) oxidizers and with (strong) reducers.

10.2. Chemical stability

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

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

10.5. Incompatible materials
No additional information available

10.6. Hazardous decomposition products
Hazardous decomposition products.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

| Acute toxicity (oral) | Harmful if swallowed. |
| Acute toxicity (dermal) | Not classified |
| Acute toxicity (inhalation) | Not classified |

<table>
<thead>
<tr>
<th>polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether (9002-93-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
</tr>
<tr>
<td>LD50 dermal rabbit</td>
</tr>
<tr>
<td>ATE US (oral)</td>
</tr>
<tr>
<td>ATE US (dermal)</td>
</tr>
</tbody>
</table>

| Skin corrosion/irritation | Not classified |
| pH: 9.7 |
| Serious eye damage/irritation | Causes serious eye irritation. |
| pH: 9.7 |
| Respiratory or skin sensitization | Not classified |
| Germ cell mutagenicity | Not classified |
| Carcinogenicity | Not classified |
| Reproductive toxicity | Not classified |

| Specific target organ toxicity – single exposure | 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 | Harmful if swallowed. Non-toxic in contact with skin (LD50 skin> 5000 mg/kg). Slightly irritant to skin. Causes serious eye irritation. Caution! Substance is absorbed through the skin. |
| Symptoms/effects after skin contact | Slight irritation. |
| Symptoms/effects after eye contact | Irritation of the eye tissue. |
| Chronic symptoms | No effects known. |

SECTION 12: Ecological information

12.1. Toxicity

| Ecology - general | Toxic to aquatic life with long lasting effects. Toxic to aquatic life. |
| Ecology - water | Harmful to crustacea. Toxic to fishes. pH shift. |

<table>
<thead>
<tr>
<th>polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether (9002-93-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 1</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether (9002-93-1)</th>
</tr>
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<tbody>
<tr>
<td>Persistence and degradability</td>
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polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether
Safety Data Sheet

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

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<th>polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether (9002-93-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical oxygen demand (COD)</td>
</tr>
<tr>
<td>ThOD</td>
</tr>
</tbody>
</table>

12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether (9002-93-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Pow</td>
</tr>
<tr>
<td>Bioaccumulative potential</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil

<table>
<thead>
<tr>
<th>polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether (9002-93-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology - soil</td>
</tr>
</tbody>
</table>

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Product/Packaging disposal recommendations : Do not discharge into drains or the environment. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. In authorized incinerator equipped with flue gas scrubber with energy recovery. Dissolve or mix with a combustible solvent. May be discharged to wastewater treatment installation.


SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Dangerous for the environment : Yes
Marine pollutant : Yes

Other information : No supplementary information available.

Transportation of Dangerous Goods

Transport by sea

Transport document description (IMDG) : UN 3082 environmentally hazardous substance, liquid, n.o.s., 9, III, MARINE POLLUTANT
UN-No. (IMDG) : 3082
Proper Shipping Name (IMDG) : environmentally hazardous substance, liquid, n.o.s.
Class (IMDG) : 9 - Miscellaneous dangerous substances and articles
Packing group (IMDG) : III - substances presenting low danger
EmS-No. (1) : F-A
EmS-No. (2) : S-F
polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether
Safety Data Sheet

Marine pollutant: Yes

**Air transport**

Transport document description (IATA): UN 3082 Environmentally hazardous substance, liquid, n.o.s., 9, III
UN-No. (IATA): 3082
Proper Shipping Name (IATA): Environmentally hazardous substance, liquid, n.o.s.
Class (IATA): 9 - Miscellaneous Dangerous Goods
Packing group (IATA): III - Minor Danger

**SECTION 15: Regulatory information**

**15.1. US Federal regulations**

<table>
<thead>
<tr>
<th>polyethyleneglycol para-(1,1,3,3-tetramethylbutyl)phenyl ether (9002-93-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not listed on the United States TSCA (Toxic Substances Control Act) inventory</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EPA TSCA Regulatory Flag</th>
<th>XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).</th>
</tr>
</thead>
</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:

<table>
<thead>
<tr>
<th>H302</th>
<th>Harmful if swallowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>H401</td>
<td>Toxic to aquatic life</td>
</tr>
<tr>
<td>H411</td>
<td>Toxic to aquatic life with long lasting effects</td>
</tr>
</tbody>
</table>

**NFPA health hazard**

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

**NFPA fire hazard**

1 - Materials that must be preheated before ignition can occur.

**NFPA reactivity**

0 - Material that in themselves are normally stable, even under fire conditions.

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.