Safety Data Sheet

Cat. # RC-072

MOPS (3-[N-Morpholino] propane-sulfonic acid)

Size: 100g
SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance
Substance name : MOPS
Chemical name : MOPS (3-[N-Morpholino] propane-usildonic acid)
EC-No. : 214-478-5
CAS-No. : 1132-61-2
Product code : 148M
Type of product : Pure substance
Formula : C7H15NO4S
Synonyms : 3-(N-morpholino)propanesulfonic acid / 3-(N-morpholino)propanesulphonic acid / 3-morpholinopropanesulfonic acid / 4-morpholinopropanesulfonic acid / MOPS / MOPS, DNase, RNase, protease free / morpholinepropanesulfonic acid / N-(3-sulfopropyl)morpholine / WAS 15

Product group : Raw material
BIG No : 32566

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Main use category : Research purposes

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Geno Technology, Inc./ G-Biosciences
9800 Page Avenue
63132-1429 Saint Louis - 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)

<table>
<thead>
<tr>
<th>Country</th>
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<th>Address</th>
<th>Emergency number</th>
<th>Comment</th>
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<tr>
<td>United Kingdom</td>
<td>National Poisons Information Service (Belfast Centre)</td>
<td>Grosvenor Road BT12 6BA Belfast</td>
<td>0344 892 0111</td>
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<tr>
<td></td>
<td>Royal Victoria Hospital</td>
<td></td>
<td></td>
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<td>National Poisons Information Service (Birmingham Centre)</td>
<td>Dudley Road B18 7QH Birmingham</td>
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<td>City Hospital</td>
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<td>Penarth CF64 2XX Cardiff</td>
<td>0344 892 0111</td>
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<tr>
<td></td>
<td>Gwynwyn Ward, Llandough Hospital</td>
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<td>Little France Crescent EH16 4SA</td>
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<tr>
<td></td>
<td>Royal Infirmary of Edinburgh</td>
<td>Edinburgh</td>
<td></td>
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</tr>
<tr>
<td>United Kingdom</td>
<td>Guy's &amp; St Thomas' Poisons Unit</td>
<td>Avenley Road SE14 5ER London</td>
<td>+44 20 7188 7188</td>
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</tr>
<tr>
<td></td>
<td>Medical Toxicology Unit, Guy's &amp; St Thomas' Hospital Trust</td>
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<td>United Kingdom</td>
<td>National Poisons Information Service (Newcastle Centre)</td>
<td>Claremont Place Newcastle-upon-Tyne</td>
<td>0344 892 0111</td>
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<tr>
<td></td>
<td>Regional Drugs and Therapeutics Centre, Wolfson Unit</td>
<td>NE1 4LP Newcastle</td>
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</table>

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Skin corrosion/irritation, Category 2 H315
Adverse physicochemical, human health and environmental effects
May cause respiratory irritation. Causes skin irritation. Causes serious eye irritation.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP):

CLP Signal word: Warning
Hazard statements (CLP):
- H315 - Causes skin irritation.
- H319 - Causes serious eye irritation.
- H335 - May cause respiratory irritation.

Precautionary statements (CLP):
- P261 - Avoid breathing dust/fume/gas/mist/vapours/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 CENTRE or doctor if you feel unwell.
- 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+P405 - Store in a well-ventilated place. Keep container tightly closed.
- 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
No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance type: Mono-constituent

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
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<td>(CAS-No.) 1132-61-2</td>
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<td>Skin Irrit. 2, H315</td>
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<td>(EC-No.) 214-478-5</td>
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<td>Eye Irrit. 2, H319, STOT SE 3, H335</td>
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</table>

Full text of 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.

First-aid measures after skin contact:
- Wash immediately with lots of water (15 minutes)/shower. Soap may be used.
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. Take victim to an ophthalmologist. Do not apply neutralizing agents.

First-aid measures after ingestion: Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Ingestion of large quantities: immediately to hospital. Call Poison Information Centre (www.big.be/antigif.htm).

4.2. Most important symptoms and effects, both acute and delayed
Symptoms/effects after inhalation: 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. Indication of any immediate medical attention and special treatment needed
Treat symptomatically.

SECTION 5: Firefighting measures
5.1. Extinguishing media

5.2. Special hazards arising from the substance or mixture
Fire hazard: DIRECT FIRE HAZARD: Combustible. In finely divided state: increased fire hazard. INDIRECT FIRE HAZARD: Temperature above flashpoint: higher fire/explosion hazard.
Explosion hazard: DIRECT EXPLOSION HAZARD: Fine dust is explosive with air. INDIRECT EXPLOSION HAZARD: Dust cloud can be ignited by a spark.
Hazardous decomposition products in case of fire: Toxic fumes may be released.

5.3. Advice for firefighters
Precautionary measures fire: Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.
Firefighting instructions: Dilute toxic gases with water spray. Take account of toxic fire-fighting 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, 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
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. Provide equipment/receptacles with earthing. 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. Carefully collect the spill/leftovers. Clean contaminated surfaces with a soap solution. 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:
- Clean contaminated clothing. Do not discharge the waste into the drain. Powdered form: no compressed air for pumping over. 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 and ignition sources:
- 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 dry area. Keep container in a well-ventilated place. Store at room temperature. Keep out of direct sunlight. Meet the legal requirements.
Special rules on packaging:
- SPECIAL REQUIREMENTS: closing. correctly labelled. meet the legal requirements.
Packaging materials:
- SUITABLE MATERIAL: plastics.

7.3. Specific end use(s)
No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
No additional information available

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

Materials for protective clothing:
- GIVE GOOD RESISTANCE: nitrile rubber. plastics

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

Environmental exposure controls:
Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties
Physical state:
- Solid

Appearance:
- Crystalline solid. Crystalline powder.

Molecular mass:
- 209.26 g/mol

Colour:
- White to off-white.

Odour:
- Odourless.

Odour threshold:
- No data available

pH:
- 2.5 - 4 (21 %)

Relative evaporation rate (butylacetate=1):
- No data available

Melting point:
- 277 °C

Freezing point:
- Not applicable

Boiling point:
- Not applicable

Flash point:
- 116 °C

Auto-ignition temperature:
- Not applicable
Decomposition temperature: 277 °C
Flammability (solid, gas): Non flammable.
Vapour pressure: No data available
Relative vapour density at 20 °C: Not applicable
Relative density: Not applicable
Solubility: Soluble in water.
  Water: 100 g/100ml
  Ethanol: < 10 g/100ml
Log Pow: No data available
Viscosity, kinematic: No data available
Viscosity, dynamic: No data available
Explosive properties: No data available
Oxidising properties: No data available
Explosive limits: Not applicable

9.2. Other information
Other properties: Acid reaction.

SECTION 10: Stability and reactivity
10.1. Reactivity
On heating: release of carcinogenic products.

10.2. Chemical stability
Stable under normal conditions.

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

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

10.5. Incompatible materials
No additional information available

10.6. Hazardous decomposition products
Hazardous decomposition products.

SECTION 11: Toxicological information
11.1. Information on toxicological effects
Acute toxicity (oral): Not classified
Acute toxicity (dermal): Not classified
Acute toxicity (inhalation): Not classified
Skin corrosion/irritation: Causes skin irritation.
  pH: 2.5 - 4 (21 %)
Serious eye damage/irritation: Causes serious eye irritation.
  pH: 2.5 - 4 (21 %)
Respiratory or skin sensitisation: Not classified
Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified
Reproductive toxicity: Not classified
STOT-single exposure: May cause respiratory irritation.
STOT-repeated exposure: Not classified
Aspiration hazard: Not classified
Potential adverse human health effects and symptoms: Causes skin irritation. May cause respiratory irritation. Causes serious eye irritation.

SECTION 12: Ecological information
12.1. Toxicity
Ecology - general: The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.
Ecology - water: Water pollutant (surface water). No data available on ecotoxicity. pH shift.
Acute aquatic toxicity: Not classified
Chronic aquatic toxicity: Not classified
12.2. Persistence and degradability

MOPS (1132-61-2)

Persistence and degradability: Biodegradability in water: no data available.

12.3. Bioaccumulative potential

MOPS (1132-61-2)

Bioaccumulative potential: No bioaccumulation data available.

12.4. Mobility in soil

No additional information available.

12.5. Results of PBT and vPvB assessment

No additional information available.

12.6. Other adverse effects

No additional information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods


Product/Packaging disposal recommendations: 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.


European List of Waste (LoW) code: 15 01 10* - packaging containing residues of or contaminated by dangerous substances 16 03 05* - organic wastes containing dangerous substances

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

UN-No. (ADR): Not regulated
UN-No. (IMDG): Not regulated
UN-No. (IATA): Not regulated
UN-No. (ADN): Not regulated
UN-No. (RID): Not regulated

14.2. UN proper shipping name

Proper Shipping Name (ADR): Not regulated
Proper Shipping Name (IMDG): Not regulated
Proper Shipping Name (IATA): Not regulated
Proper Shipping Name (ADN): Not regulated
Proper Shipping Name (RID): Not regulated

14.3. Transport hazard class(es)

ADR: Transport hazard class(es) (ADR): Not regulated
IMDG: Transport hazard class(es) (IMDG): Not regulated
IATA: Transport hazard class(es) (IATA): Not regulated
ADN: Transport hazard class(es) (ADN): Not regulated
RID: Transport hazard class(es) (RID): Not regulated

14.4. Packing group

Packing group (ADR): Not regulated
Packing group (IMDG): Not regulated
Packing group (IATA): Not regulated
Packing group (ADN): Not regulated
Packing group (RID): Not regulated
### 14.5. Environmental hazards

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<tr>
<td>Marine pollutant</td>
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<tr>
<td>Other information</td>
<td>: No supplementary information available</td>
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</table>

### 14.6. Special precautions for user

#### Overland transport
Not regulated

#### Transport by sea
Not regulated

#### Air transport
Not regulated

#### Inland waterway transport
Not regulated

#### Rail transport
Not regulated

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code
Not applicable

### SECTION 15: Regulatory information

#### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

**15.1.1. EU-Regulations**

- No REACH Annex XVII restrictions
- MOPS is not on the REACH Candidate List
- MOPS is not on the REACH Annex XIV List
- MOPS is not subject to REGULATION (EU) No 649/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 concerning the export and import of hazardous chemicals.

**15.1.2. National regulations**

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

### 15.2. Chemical safety assessment

No chemical safety assessment has been carried out

### SECTION 16: Other information

<table>
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<tr>
<th>Full text of H- and EUH-statements:</th>
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<tbody>
<tr>
<td>Eye Irrit. 2</td>
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<td>Skin Irrit. 2</td>
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<tr>
<td>STOT SE 3</td>
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Safety Data Sheet applicable for regions : GB - United Kingdom

SDS EU (REACH Annex II)

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.