SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product Name: LudgerZyme recombinant Peptide N-glycosidase F (Elizabethkingia miricola) supplied in 50mM NaCl 5mM EDTA 20mM Tris-HCl pH 7.5

Product Catalogue Name: PNGase F

Company: Ludger Ltd
Culham Science Centre
Abingdon
Oxford OX14 3EB

Telephone: 01865 408554
Emergency Telephone: 01865 408554
Email: info@ludger.com

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
The product is not classified as hazardous according to the CLP regulation.

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008: Void
Hazard pictograms: Void
Signal word: Void
Hazard statements: Void

2.3 Other hazard information:
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures
Description:
The product is a mixture of the hazardous substances listed below along with unlisted nonhazardous substances.
Components: Void

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures
General Advice
Immediate medical attention is required. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible). Remove from exposure, lie down. Do not breathe dust/fume/gas/mist/vapours/spray.

If ingested
Clean mouth with water and drink afterwards plenty of water. If the patient feels unwell or is concerned, obtain medical advice.

If skin is exposed
Wash skin with soap and water.

If eyes are exposed
Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

If inhaled
Remove to fresh air. If the patient feels unwell or is concerned, obtain medical advice.

4.2 Most important symptoms and effects, both acute and delayed
None

4.3 Indication of immediate medical attention and special treatment needed
Note to physicians
Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
CAUTION: Use of water spray when fighting fire may be inefficient.

5.2 Special hazards arising from the substance or mixture
None known.

5.3 Advice for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Personal precautions
Ensure adequate ventilation, especially in confined areas.

For emergency responders
Use personal protection recommended in Section 8.

6.2 Environmental Precautions
See Section 12 for additional Ecological Information.

6.3 Methods and material for containment and cleaning up
Methods for containment
Prevent further leakage or spillage if safe to do so.
Methods for cleaning up
Soak up with inert absorbent material. Pick up and transfer to properly labelled containers. This material and its container must be disposed of as hazardous waste.

6.4 Reference to other sections
No dangerous substances are released.
See Section 7 for information on safe handling
See Section 13 for disposal information.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Handle in accordance with good industrial hygiene and safety practice.

7.2 Conditions for safe storage, including any incompatibilities
Storage temperature
Refer to www.ludger.com for specific information.
Storage Conditions
Keep/store only in original container.
Incompatible materials
None known based on information supplied.

7.3 Specific end uses
Risk management methods [RMM]
The information required is contained in this Safety Data Sheet.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
Exposure Limits This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Derived No Effect Level (DNEL) No information available
Predicted No Effect Concentration (PNEC) No information available

8.2 Exposure controls
Engineering controls
Showers. Eyewash stations.
Individual protection measures, such as personal protective equipment
Eye/face protection
Wear safety glasses with side shields (or goggles).
Skin and body protection
Wear suitable protective clothing and gloves.
Respiratory protection
Use in well ventilated areas.
General hygiene considerations
Handle in accordance with good industrial hygiene and safety practice.
Environmental exposure controls
See Section 12: ECOLOGICAL INFORMATION.
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>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Colour</td>
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</tr>
<tr>
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<td>Odour threshold</td>
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<tr>
<td>pH value at 20°C</td>
<td>Refer to <a href="http://www.ludger.com">www.ludger.com</a> for specific information</td>
</tr>
<tr>
<td>Freezing/Melting Point</td>
<td>No data available</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash Point</td>
<td>No data available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability</td>
<td>No data available</td>
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<tr>
<td>Ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Self-igniting</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Density</td>
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</tr>
<tr>
<td>Relative density</td>
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<tr>
<td>Vapour density</td>
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</tr>
<tr>
<td>Evaporation rate</td>
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<td>Solubility in / Miscibility with Water</td>
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<td>Partition coefficient (n-octanol/water)</td>
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<td>Viscosity</td>
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<tr>
<td>Dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Kinematic</td>
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</tbody>
</table>

9.2 Other information
No further relevant information available.

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available.

10.2 Chemical stability
Stable under normal conditions.

10.3 Possibility of hazardous reactions
Can react briskly with oxidizers - danger of explosion.

10.4 Conditions to avoid

10.5 Incompatible materials
Strong oxidizing agents.
10.6 Hazardous decomposition products
Thermal decomposition can lead to release of irritating and toxic gases and vapours. Carbon monoxide. Carbon dioxide (CO2).

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Product information
Product does not present an acute toxicity hazard based on known or supplied information.

Inhalation
Avoid breathing vapours or mists. May cause irritation of respiratory tract.

Eye contact
Redness. May cause slight irritation.

Skin contact
Prolonged contact may cause redness and irritation. Repeated exposure may cause skin dryness or cracking.

Ingestion
May cause drowsiness or dizziness. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Symptoms include burning sensation, coughing, wheezing, shortness of breath, headache, nausea, and vomiting.

Unknown acute toxicity
0.24 % of the mixture consists of ingredient(s) of unknown toxicity.

The following values are calculated based on chapter 3.1 of the GHS document mg/kg mg/l

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Chloride</td>
<td>&gt; 50 mL/kg ( Rat )</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ethylenediamine tetraacetic acid</td>
<td>= 3 p/kg ( Rat )</td>
<td>&gt; 10 g/kg ( Rabbit )</td>
<td>&gt; 42 pim³ ( Rat ) 1 h</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation         Mild
Serious eye damage/eye irritation  Mild
Sensitization                    Not applicable
Germ cell mutagenicity           Not applicable
Carcinogenicity                  No information available
Reproductive toxicity            No information available
Developmental toxicity           No information available
Teratogenicity                   No information available
STOT - single exposure           No information available
STOT - repeated exposure        No information available
Neurological effects            No information available
Target organ effects             Eyes, Kidneys, Respiratory system, Skin.
Other adverse effects            No information available
Symptoms                         No information available
Aspiration hazard                No information available

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity
0.24 % of the mixture consists of component(s) of unknown hazards to the aquatic environment.

12.2 Persistence and degradability
Not available.
12.3 Bioaccumulative potential
Not known.

12.4 Mobility in soil
Not available.

12.5 Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

12.6 Other adverse effects
No further relevant information available.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Relevant Information
Keep out of drains, sewers, ditches and waterways.

Waste from Residues/Unused Products
Disposal should be in accordance with applicable regional, national and local laws and regulations. Send to a licensed recycler, reclamer or incinerator.

Contaminated packaging
Empty containers must be tripled rinsed prior to disposal.

SECTION 14. TRANSPORT INFORMATION

IMDG
14.1 UN/ID No Not regulated
14.2 Proper shipping name Not regulated
14.3 Hazard class Not regulated
14.4 Packing group Not regulated
14.5 Marine pollutant Not applicable
14.6 Special Provisions None
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information available

RID
14.1 UN/ID No Not regulated
14.2 Proper shipping name Not regulated
14.3 Hazard class Not regulated
14.4 Packing group Not regulated
14.5 Environmental hazard Not applicable
14.6 Special Provisions None

ADR
14.1 UN/ID No Not regulated
14.2 Proper shipping name Not regulated
14.3 Hazard class Not regulated
14.4 Packing group Not regulated
### 14.5 Environmental hazard
Not applicable

### 14.6 Special Provisions
None

#### ICAO (air)

| 14.1 UN/ID No | Not regulated |
| 14.2 Proper shipping name | Not regulated |
| 14.3 Hazard class | Not regulated |
| 14.4 Packing group | Not regulated |
| 14.5 Environmental hazard | Not applicable |
| 14.6 Special Provisions | None |

#### IATA

| 14.1 UN/ID No | Not regulated |
| 14.2 Proper shipping name | Not regulated |
| 14.3 Hazard class | Not regulated |
| 14.4 Packing group | Not regulated |
| 14.5 Environmental hazard | Not applicable |
| 14.6 Special Provisions | None |

### SECTION 15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

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

**National Regulations**

- Occupational Illnesses (R-463-3, France)
- European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

**International Inventories**

All of the components in the product are on the following Inventory lists: TSCA (United States), Canada (DSL/NDSL), Europe (EINECS/ELINCS), Australia (AICS), South Korea (KECL), China (IECSC), Philippines (PICCS).

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Compliance</th>
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<tbody>
<tr>
<td>TSCA</td>
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<tr>
<td>EINECS</td>
<td>Complies</td>
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<td>ELINCS</td>
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<td>Complies</td>
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<td>NDSL</td>
<td>Complies</td>
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<td>PICCS</td>
<td>Complies</td>
</tr>
<tr>
<td>ENCS</td>
<td>-</td>
</tr>
<tr>
<td>IECSC</td>
<td>Complies</td>
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<tr>
<td>AICS</td>
<td>Complies</td>
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<tr>
<td>KECL</td>
<td>Complies</td>
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</tbody>
</table>

#### 15.2 Chemical Safety Assessment

No information available.

### SECTION 16. OTHER INFORMATION

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reproduced with their permission.

The information in this SDS is provided in good faith based on our knowledge as of the issue date (or subsequent revision date, if any), and is to be used only as a guide. This SDS does not constitute a guarantee (express or implied) of any kind and we make no warranties or merchantability or fitness for a particular purpose. This information relates only to the designated product as shipped and may not be valid if the product is used in combination with any other materials or is not used in accordance with our instructions. It is the responsibility of the buyer/user to ensure that its activities comply with all applicable governmental requirements. Since conditions of use of the product are not under the control of Ludger, it is the duty of the buyer/user to determine the necessary conditions for the safe use of the product. Ludger will not be liable for any damages resulting from handling or contact with the product.
SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY / UNDERTAKING

Product Name: Ammonium Formate, 2M aqueous solution
Product Catalogue Name: LC-N-BUFFX40-30
Company: Ludger Ltd
Culham Science Centre
Abingdon
Oxfordshire
OX14 3EB
Telephone: 01865 408554
Emergency Telephone: 01865 408554
Email: info@ludger.com

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
Skin irritation (Category 2)
Eye irritation (Category 2)
Specific target organ toxicity – single exposure (Category 3)

2.2 Label elements

Signal Word: Warning

Hazard Statement(s)
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary Statement(s)
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
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 so. Continue rinsing.

2.3 Other hazard information:
None.
SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms: None

Formula: CH₅NO₂

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
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</thead>
<tbody>
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<td>540-69-2</td>
<td></td>
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<tr>
<td>EC-No.</td>
<td>208-753-9</td>
<td></td>
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<tr>
<td>Name</td>
<td>Formic Acid</td>
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<tr>
<td>CAS-No.</td>
<td>64-18-6</td>
<td></td>
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<tr>
<td>EC-No.</td>
<td>200-579-1</td>
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<tr>
<td>CAS-No.</td>
<td>7732-18-5</td>
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<tr>
<td>EC-No.</td>
<td>231-791-2</td>
<td></td>
</tr>
</tbody>
</table>

For the full text of the H-statements mentioned in this section, see Section 16 or 2.

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

General Advice
Consult a physician if exposure causes ill effects and if in any doubt. Show this safety data sheet to the physician/first responder in attendance.

If Ingested
Rinse mouth well with water, NEVER give anything by mouth is person is unconscious. Consult a physician.

If skin is exposed
Wash area well with plenty of soap and water. Consult a physician.

If eyes are exposed
Rinse thoroughly for at least 15 minutes with water or eye wash solution. If present and safe to do so, remove contact lenses and carry on rinsing. Consult a physician.

If inhaled
Move affected person to a source of fresh air/strong ventilation. If not breathing, give artificial respiration. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

4.3 Indication of immediate medical attention and special treatment needed
No data available.
SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Select extinguishing media appropriate to surrounding area. Compatible media for use with the product are water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides, nitrogen oxides (NOx)

5.3 Advice for firefighters
If necessary wear self-contained breathing equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear PPE, Personal protective equipment. Avoid breathing in vapours, mist or gas by ensuring adequate ventilation. Relocate any non-essential staff away from the spillage.

6.2 Environmental Precautions
Do not let the product enter the drainage system.

6.3 Methods and material for containment and cleaning up
Contain the spillage with a spill kit, using a spillage mat or an inert material such as vermiculite. Collect the contaminated material and store in a suitable container with a lid, in cool, dry well-ventilated area. Arrange disposal.

6.4 Reference to other sections
For more information on disposal see Section 13.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin, eyes and breathing in vapours/mist/gas.

7.2 Conditions for safe storage, including any incompatibilities
Store the product in a dry, cool cabinet/cupboard, not in direct sunlight.

7.3 Specific end uses
No data available.

SECTION 8. EXPOSURE CONTROLS/PERSOAL PROTECTION

8.1 Control parameters
This product contains no substances with occupational exposure limits values.

8.2 Exposure controls
Appropriate engineering controls
Wear PPE, Personal protective equipment and wash/dry hands before and after handling the product, avoid contact with skin and eyes. Handle the product in accordance to good laboratory and hygiene practice.

Personal Protective Equipment
Eye / face protection
Wear Safety glasses/ goggles with side shields, which conform to EN 166. Equipment used must conform to an appropriated and approved government standard such as NIOSH (US) or EN 166 (EU).
**Skin protection**
Handle the product wearing gloves; these are to be inspected before use. Remove used gloves using the proper removal technique so skin does not touch the outer layer of the gloves. Dispose of used gloves as contaminated solid waste; see section 13 for more information. Wash and dry hands. Gloves must satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

**Body Protection**
Wear a laboratory coat or a similar covering over clothing.

**Respiratory protection**
No data available.

**Thermal hazards**
No data available.

---

**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>Appearance</td>
<td>Form: clear, liquid</td>
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<tr>
<td></td>
<td>Colour: Colourless</td>
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<td>Odour</td>
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<td>Odour threshold</td>
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<td>Freezing/Melting Point</td>
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<td>Initial boiling point and boiling range</td>
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<td>Flash Point</td>
<td>No data available</td>
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<tr>
<td>Evaporation rate</td>
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<tr>
<td>Flammability</td>
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<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity</td>
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</tr>
<tr>
<td>Explosive properties</td>
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</tr>
<tr>
<td>Oxidising properties</td>
<td>No data available</td>
</tr>
</tbody>
</table>

**9.2 Other information**
No data available

---

**SECTION 10. STABILITY AND REACTIVITY**

**10.1 Reactivity**
No data available

**10.2 Chemical stability**
No data available

**10.3 Possibility of hazardous reactions**
10.4 Conditions to Avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents, Strong acids.

10.6 Hazardous decomposition products
Other decomposition products – No data available.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
No data available.

Skin corrosion/irritation
No data available.

Serious eye damage/irritation
No data available.

Respiratory or skin sensitisation
No data available.

Germ cell mutagenicity
No data available.

Carcinogenicity
IARC: No components of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
No data available.

STOT-single exposure
No data available.

STOT-repeated exposure
No data available.

Aspiration hazard.
No data available.

Potential Health Hazards

Inhalation  May be harmful if inhaled. Causes respiratory tract irritation.
Ingestion  May be harmful if swallowed. Causes burns.
Skin  May be harmful if absorbed through skin. Causes skin irritation and burns.
Eyes  Causes serious eye irritation.

Signs and symptoms of exposure
To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.
SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity
No data available.

12.2 Persistence and degradability
No data available.

12.3 Bioaccumulative potential
No data available.

12.4 Mobility in soil
No data available.

12.5 Results of PBT and vPvB assessment
No data available.

12.6 Other adverse effects
No data available.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Use a licensed chemical waste (solid and chemical) disposal company.

Contaminated packaging
Treat as unused product, solid chemical waste.

SECTION 14. TRANSPORT INFORMATION

14.1 UN Number
ADR/RID: - IMDG: - IATA: -

14.2 UN Proper Shipping Name
ADR/RID: Not dangerous goods IMDG: Not dangerous goods IATA: Not dangerous goods

14.3 Transport hazard class(es)
ADR/RID: - IMDG: - IATA: -

14.4 Packing group
ADR/RID: - IMDG: - IATA: -

14.5 Environmental hazards
ADR/RID: No IMDG Marine pollutant: No IATA: No

14.6 Special precautions for user
No data available

SECTION 15. REGULATORY INFORMATION

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
No data available

**15.2 Chemical Safety Assessment**

No data available

Please note that the label elements that used to go in Section 15 are now in Section 2.

**SECTION 16. OTHER INFORMATION**

The advice offered is derived from the current available information on the hazardous materials in this product and it component(s). Consideration has been made regarding the quantities offered in the pre dispensed container. The advice offered is, therefore not all inclusive nor should it be taken as the descriptive of the compound generally.

Text of the H-codes mentioned in Section 3.

**Eye Irrit.**

- H314 Causes severe skin burns and eye damage.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H335 May cause respiratory irritation.
- Skin Irrit.
- STOT SE Specific target organ toxicity – single exposure.
SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY / UNDERTAKING

Product Name: dimethyl sulfoxide
Product Catalogue Name: LT-DMSO-02
CAS-No.: 67-68-5
Company: Ludger Ltd
Culham Science Centre
Abingdon
Oxford OX14 3EB
Telephone: 01865 408554
Emergency Telephone: 01865 408554
Email: info@ludger.com

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No. 1272/2008 [EU-GHS-CLP]
Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008 [EU-GHS-CLP].

2.2 Label elements
The product does not require to be labelled in accordance with EC directives or respective national laws.

Signal Word: None

Hazard Statement(s)
None

Precautionary Statement(s)
None

2.3 Other hazard information:
None

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3. 1 Substances
Synonyms:
DMSO
methyl sulfoxide
dimethyl sulfoxide

Formula: C₂H₆OS
Molecular Weight: 78.13g/mol

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<td>EC-No.</td>
<td>200-664-3</td>
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</table>
SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

General Advice
Consult a physician if exposure causes ill effects and if in any doubt. Show this safety data sheet to the physician/ first responder in attendance.

If Ingested
Do NOT induce vomiting. Rinse mouth well with water. Never give anything by mouth to an unconscious person.

If skin is exposed
Wash off with plenty of soap and water.

If eyes are exposed
Flush eyes with plenty of water/ eye wash solution as a precaution.

If inhaled
Move effect person to fresh air. If not breathing give artificial respiration.

4.2 Most important symptoms and effects, both acute and delayed
Effects due to ingestion may include: Nausea, Fatigue and Headache.

4.3 Indication of immediate medical attention and special treatment needed
No data available.

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Small fires: Use extinguishing media such as “alcohol” foam, dry chemical or carbon dioxide. Large fires: Use extinguishing media such as water, from a far away distance as possible. Use very large quantities of water as mist or spray to flood the fire and the combustible material. Cool all affected containers with large quantities of water.

5.2 Special hazards arising from the substance or mixture
Carbon oxides, Sulphur oxides

5.3 Advice for fire fighters
Wear self contained breathing apparatus fir fire fighting if necessary, to spray cool water on any unopened containers near the fire.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Avoid breathing vapours, gas or mist. Remove all sources of ignition. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

6.2 Environmental Precautions
Prevent further leakage or spillage if safe to do so, e.g. with spill mats. Do not let the product enter drains.

6.3 Methods and material for containment and cleaning up
Contain the spillage and put the collected material into a suitable container with a secure lid. Wash the area well, do not let run off into the drains, collect as waste.

6.4 Reference to other sections
See section 13 for disposal of waste material(s).

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

7.2 Conditions for safe storage, including any incompatibilities
Store in a cool place. Keep container closed in a dry well ventilated place.

7.3 Specific end uses
No data available

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
Components with workplace control parameters. Contains no substances with occupational exposure limit values.

8.2 Exposure controls
Appropriate engineering controls
Handle in accordance with good laboratory hygiene and safety practice. Wash hands before breaks and at the end of the day.

Personal Protective Equipment
Eye / face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Skin protection
Handle with gloves, which should be inspected before use. Use proper glove removal technique (removal without the outside of the glove touching the skin) to avoid contact with the skin/chemical. Dispose of contaminated gloves as Laboratory waste in accordance with applicable laws and good laboratory practices. Wash and dry hands. Gloves should be of the standard that will stratify the specifications of EU directive 89/696/EEC and the standard EN 374 derived from it.

Body Protection
The type of protective clothing must be selected according to the amount of substance at the specific workplace being used. Impervious coats or laboratory coats.

Respiratory protection
Use substance in an operation fume hood/ outside venting extraction cupboard. Wear full face respirator if appropriate to use, must be tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
Appearance
Form: Liquid, clear
Colour: Colourless

Odour
No data available

Odour threshold
No data available

pH
No data available

Freezing/Melting Point
Melting point/range: 16-19°C

Initial boiling point and boiling range
189°C

Flash Point
87°C – Closed cup

Evaporation rate
No data available

Flammability
No data available

Upper/lower flammability or explosive limits
Upper explosion limit: 42% (V)
Lower explosion limit: 3.5% (V)

Vapour Pressure, Pa at temperature degree C
0.55hPa at 20°C

Relative Density
1.1g/mL

Solubility in water and solvents
Completely miscible

Partition coefficient: n-octanol/water
log Pow: -2.03

Auto ignition temperature
No data available

Decomposition temperature
No data available

Viscosity
No data available

Explosive properties
No data available

Oxidising properties
No data available

9.2 Other information
No data available

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
No data available

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to Avoid
Heat, flames and sparks

10.5 Incompatible materials
Acid chlorides, Phosphorus halides, Strong acids, Strong oxidizing agents and strong reducing agents.

10.6 Hazardous decomposition products
Other decomposition products – No data available

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Acute toxicity
LD50 Oral – Rat – 14,500mg/kg
LC50 Inhalation – Rat – 4h – 40250ppm
LD50 Dermal – Rabbit - > 5,000mg/kg
**Skin corrosion/irritation**
Skin – Rabbit – No skin irritation – 4h

**Serious eye damage/irritation**
Eyes – Rabbit – Mild eye irritation

**Respiratory or skin sensitisation**
No data available

**Germ cell mutagenicity**
Genotoxicity in vitro – Mouse – lymphocyte  
Cytogenetic analysis
Genotoxicity in vitro – Mouse – lymphocyte  
Mutation in mammalian somatic cells
Genotoxicity in vivo – Rat – Intraperitoneal  
Cytogenetic analysis
Genotoxicity in vivo - Mouse – Intraperitoneal  
DNA damage

**Carcinogenicity**
Carcinogenicity – Rat – Oral  
Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Others: Tumors.
Carcinogenicity – Mouse – Oral  
Tumorigic: Equivocal tumorigenic agent by RTECS criteria. Lukaemia skin and appendages: Other: Tumors.
IARC: No component of this product presents at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**Reproductive toxicity**
Reproductive toxicity – Rat – Intraperitoneal  
Effects on fertility: Abortion
Reproductive toxicity – Rat – Intraperitoneal  
Effects on fertility: Post – implantation mortality (e.g. dead and/or resorbed implants per total number of implants).
Reproductive toxicity – Rat – Subcutaneous  
Effects on fertility: Post – implantation mortality (e.g. dead and/or resorbed implants per total number of implants). Effects on fertility: Litter size (e.g. # fetuses per litter; measured before birth).
Reproductive toxicity – Mouse – Oral  
Effects on fertility: Pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea). Effects on Embryo or fetus: Fetotoxicity (except death, e.g. stunted fetus). Specific developmental abnormalities: Musculoskeletal system.
Reproductive toxicity – Mouse – Intraperitoneal  
Effects on embryo or fetus: Fetotoxicity (except death, e.g. stunted fetus). Specific developmental abnormalities: Musculoskeletal system.

**STOT-single exposure**
No data available
STOT-repeated exposure
No data available

Aspiration hazard.
No data available

Potential Health Hazards

Inhalation  May be harmful if inhaled. May cause respiratory tract irritation.

Ingestion  May be harmful if swallowed.

Skin  May be harmful if absorbed through skin. May cause skin irritation.

Eyes  May cause eye irritation.

Aggravated Medical Condition

Avoid contact with DMSO solutions containing toxic materials or materials with unknown toxicological properties. Dimethyl sulfoxide is readily absorbed through the skin and may carry such materials into the body.

Signs and symptoms of exposure
Effects due to ingestion may include; Nausea, Fatigue, Headache.

Additional Information
RTECS: PV6210000

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity
Toxicity to Fish
LC50-Pimephales promelas (fathead minnow) – 34,000mg/l - 96h
LC50-Oncorhynchus mykiss (rainbow trout) – 34,000mg/l-96h

Toxicity to daphnia and other Aquatic invertebrates
EC50-Daphnia pulex (water fleas) – 27,500mg/l

Toxicity to algae
EC50-Lepomis macrochirus (bluegill) - >400,000mg/l-96h

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4. Mobility in soil
No data available

12.5. Results of PBT and vPvB assessment
No data available

12.6. Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber or to be disposed of by a licensed professional waste disposal company.

Contaminated packaging
Dispose of as the unused product.
SECTION 14. TRANSPORT INFORMATION

14.1 UN Number
ADR/RID: -  IMDG: -  IATA: -

14.2 UN Proper Shipping Name
ADR/RID: Not Dangerous Goods
IMDG: Not Dangerous Goods
IATA: Not Dangerous Goods

14.3 Transport hazard class (es)
ADR/RID: -  IMDG: -  IATA: -

14.4 Packing group
ADR/RID: -  IMDG: -  IATA: -

14.5 Environmental hazards
ADR/RID: No  IMDG Marine pollutant: No  IATA: No

14.6 Special precautions for user
No data available

SECTION 15. REGULATORY INFORMATION

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
No data available

15.2 Chemical Safety Assessment
No data available

Please note that the label elements that used to go in Section 15 are now in Section 2.

SECTION 16. OTHER INFORMATION

The advice offered is derived from the current available information on the hazardous materials in this product and it component(s). Consideration has been made regarding the quantities offered in the pre dispensed container. The advice offered is, therefore not all inclusive nor should it be taken as the descriptive of the compound generally.
SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY / UNDERTAKING

Product Name: Ammonium Acetate
Product Catalogue Name: LC-AA-BUFF-30
Company: Ludger Ltd
Culham Science Centre
Abingdon
Oxfordshire
OX14 3EB
Telephone: 01865 408554
Emergency Telephone: 01865 408554
Email: info@ludger.com

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]

Not a hazardous substance or mixture.
This substance is not classified as dangerous according to Directive 67/548/EEC

2.2 Label elements

The product does not need to be labelled in accordance with EC directives or respective national laws.

2.3 Other hazard information:
None.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

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<thead>
<tr>
<th>Component</th>
<th>Classification</th>
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For the full text of the H-statements mentioned in this section, see Section 16 or 2.
SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration.

In case of skin contact
Wash off with soap and plenty of water.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

4.3 Indication of immediate medical attention and special treatment needed
No data available.

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides, nitrogen oxides (NOx)

5.3 Advice for firefighters
If necessary wear self-contained breathing equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Avoid dust formation. Avoid breathing vapours, mist or gas.
For personal protection see section 8.

6.2 Environmental Precautions
Do not let the product enter the drainage system.

6.3 Methods and material for containment and cleaning up
Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For more information on disposal see Section 13.
SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic. Store under inert gas.

7.3 Specific end uses
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
This product contains no substances with occupational exposure limits values.

8.2 Exposure controls

Appropriate engineering controls
Handle the product in accordance to good laboratory and hygiene practice.

Personal Protective Equipment

Eye / face protection
Wear Safety glasses/ goggles with side shields, which conform to EN 166. Equipment used must conform to an appropriated and approved government standard such as NIOSH (US) or EN 166 (EU).

Skin protection
Handle the product wearing gloves; these are to be inspected before use. Remove used gloves using the proper removal technique so skin does not touch the outer layer of the gloves. Dispose of used gloves as contaminated solid waste; see section 13 for more information. Wash and dry hands. Gloves should be of the standard that will stratify the specifications of EU directive 89/696/EEC and the standard EN 374 derived from it.

Body Protection
Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific workplace. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Thermal hazards
No data available.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
Appearance
Form: clear, liquid
Colour: Colourless
Odour: No data available
Odour threshold: No data available
pH: 6.5-7.5 at 77.1g/l at 25 °C
Freezing/Melting Point: No data available
Initial boiling point and boiling range: No data available
Flash Point: No data available
Evaporation rate: No data available
Flammability: No data available
Upper/lower flammability or explosive limits: No data available
Vapour Pressure: No data available
Vapour density: No data available
Relative Density: No data available
Solubility in water and solvents: 77.1 g/l at 20°C-completely soluble
Partition coefficient: No data available
Autoignition temperature: No data available
Decomposition temperature: No data available
Viscosity: No data available
Explosive properties: No data available
Oxidising properties: No data available

9.2 Other information
No data available

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
No data available

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to Avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents, Strong acids.

10.6 Hazardous decomposition products
Other decomposition products – No data available.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
No data available.

LD50 Intraperitoneal-mouse-736mg/kg

Skin corrosion/irritation
No data available.
Serious eye damage/irritation
No data available.

Respiratory or skin sensitisation
No data available.

Germ cell mutagenicity
No data available.

Carcinogenicity
IARC: No components of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
No data available.

STOT-single exposure
No data available.

STOT-repeated exposure
No data available.

Aspiration hazard.
No data available.

Additional Information
RTECS: AF3675000
Gastrointestinal disturbance, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity
Toxicity to fish LC50 - Cyprinus carpio (Carp) - 56 mg/l - 48 h

12.2 Persistence and degradability
Biodegradability Result: - Readily biodegradable.

12.3 Bioaccumulative potential
No data available.

12.4. Mobility in soil
No data available.

12.5. Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6. Other adverse effects
No data available.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

14.1 UN Number
ADR/RID: -  IMDG: -  IATA: -

14.2 UN Proper Shipping Name
ADR/RID: Not dangerous goods
IMDG: Not dangerous goods
IATA: Not dangerous goods

14.3 Transport hazard class(es)
ADR/RID: -  IMDG: -  IATA: -

14.4 Packing group
ADR/RID: -  IMDG: -  IATA: -

14.5 Environmental hazards
ADR/RID: No  IMDG Marine pollutant: No  IATA: No

14.6 Special precautions for user
No data available

SECTION 15. REGULATORY INFORMATION

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
No data available

15.2 Chemical Safety Assessment
No data available

Please note that the label elements that used to go in Section 15 are now in Section 2.

SECTION 16. OTHER INFORMATION

The advice offered is derived from the current available information on the hazardous materials in this product and its component(s). Consideration has been made regarding the quantities offered in the pre-dispersed container. The advice offered is, therefore not all inclusive nor should it be taken as the descriptive of the compound generally.
1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY / UNDERTAKING

Product Name: Vtag dye
Product Catalogue Name: LT-VTAG-02
Company: Ludger Ltd
           Culham Science Centre
           Abingdon
           Oxfordshire
           OX14 3EB
Telephone: 01865 408554
Emergency Telephone: 01865 408554
Email: info@ludger.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No. 1272/2008 [EU-GHS/CLP]
Serious eye damage/eye irritation (Category 2)

2.2 Label elements

Signal Word: Warning

Precautionary Statement(s)

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.
P264 Wash hands thoroughly after handling

2.3 Other hazard information:
None
3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
Synonyms: Velocity Ludger Tag
Vtag dye
Formula: \( C_{19}H_{18}N_2O_8S \)
Molecular Weight: 434.42 g/mol

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<tr>
<td>EC-No.</td>
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4. FIRST AID MEASURES

4.1 Description of first aid measures

General Advice
Consult a physician if exposure causes ill effects and if in any doubt. Show this safety data sheet to the physician/first responder in attendance.

If Ingested
Get medical advice/attention if you feel unwell. Rinse mouth.

If skin is exposed
Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation or rash occurs: Get medical advice/attention.

If eyes are exposed
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

If inhaled
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed
No data available

4.3 Indication of immediate medical attention and special treatment needed
No data available.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Dry chemical, foam, water spray, carbon dioxide.
5.2 Special hazards arising from the substance or mixture
Carbon oxides, nitrogen oxides (NOx), Sulphur oxides.

5.3 Advice for firefighters
When extinguishing fire, be sure to wear personal protective equipment.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Avoid dust formation. Avoid breathing vapors, mist or gas.

6.2 Environmental Precautions
Prevent product from entering drains.

6.3 Methods and material for containment and cleaning up
Sweep dust to collect it into an airtight container, taking care not to disperse it. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

6.4 Reference to other sections
No data available.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed. Store in a cool and dark place. Store away from incompatible materials such as oxidizing agents.

7.3 Specific end uses
No data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
Components with workplace control parameters.

8.2 Exposure controls

Appropriate engineering controls
Install a closed system or local exhaust as possible so that workers should not be exposed directly. Also install safety shower and eye bath.
Handle in accordance with good laboratory hygiene and safety practice. Wash hands before breaks and at the end of the day.

Personal Protective Equipment
Eye / face protection
Safety glasses. A face-shield, if the situation requires

Skin protection
Handle with gloves, which should be inspected before use. Use proper glove removal technique (removal without the outside of the glove touching the skin) to avoid contact with the skin/chemical. Dispose of contaminated gloves as Laboratory waste in accordance with applicable laws and good laboratory practices. Wash and dry hands. Gloves should be of the standard that will stratify the specifications of EU directive 89/696/EEC and the standard EN 374 derived from it.

Body Protection
The type of protective clothing must be selected according to the amount of substance at the specific workplace being used. Impervious coats or laboratory coats.

Respiratory protection
Use substance in an operation fume hood/ outside venting extraction cupboard. Wear full face respirator if appropriate to use, must be tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

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<thead>
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<th>Value</th>
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<td>Colourless</td>
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<td>Odour</td>
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<td>pH</td>
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<td>Freezing/Melting Point</td>
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<td>Initial boiling point and boiling range</td>
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<td>Flash Point</td>
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<td>Flammability</td>
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<td>Upper/lower flammability or explosive limits</td>
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<td>Viscosity</td>
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<td>Explosive properties</td>
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<td>Oxidising properties</td>
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9.2 Other information
No data available

10. STABILITY AND REACTIVITY
10.1 Reactivity
No special reactivity has been reported.

10.2 Chemical stability
No data available

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to Avoid
Heat, flames and sparks

10.5 Incompatible materials
Oxidizing agents

10.6 Hazardous decomposition products
Other decomposition products – No data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral – Rat – 19,500mg/kg

Skin corrosion/irritation

Serious eye damage/irritation Eyes – Rabbit – mild eye irritation-24h

Respiratory or skin sensitisation No data available

Germ cell mutagenicity

Carcinogenicity
IARC: No component of this product presents at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity

STOT-single exposure
No data available

STOT-repeated exposure
No data available

Aspiration hazard.
No data available

Potential Health Hazards
Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion  May be harmful if swallowed.
Skin  May be harmful if absorbed through skin. May cause skin irritation.
Eyes  May cause eye irritation.

Additional Information
RTECS: PV6210000

12. ECOLOGICAL INFORMATION

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4. Mobility in soil
No data available

12.5. Results of PBT and vPvB assessment
No data available

12.6. Other adverse effects
No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber or to be disposed of by a licensed professional waste disposal company.

Contaminated packaging
Dispose of as the unused product.

14. TRANSPORT INFORMATION

14.1 UN Number
ADR/RID: -  IMDG: -  IATA: -

14.2 UN Proper Shipping Name
ADR/RID: Not Dangerous Goods
IMDG: Not Dangerous Goods
IATA: Not Dangerous Goods

14.3 Transport hazard class (es)
ADR/RID: -  IMDG: -  IATA: -
14.4 Packing group
ADR/RID: -  IMDG: -  IATA: -

14.5 Environmental hazards
ADR/RID: No  IMDG Marine pollutant: No  IATA: No

14.6 Special precautions for user
No data available

15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
Data not available

15.2 Chemical Safety Assessment
Indication of danger:
No data available.

Please note that the label elements that used to go in Section 15 are now in Section 2.

16. OTHER INFORMATION

The advice offered is derived from the current available information on the hazardous materials in this product and its component(s). Consideration has been made regarding the quantities offered in the pre-dispensed container. The advice offered is, therefore not all inclusive nor should it be taken as the descriptive of the compound generally.
SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY / UNDERTAKING

Product Name: Denaturation Solution (5% SDS, 400 mM Dithiothreitol)
Product Catalogue Name: 10X Glycoprotein Denaturing Buffer
Company: Ludger Ltd
Culham Science Centre
Abingdon
Oxford OX14 3EB
Telephone: 01865 408554
Emergency Telephone: 01865 408554
Email: info@ludger.com

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008
Chronic aquatic toxicity (Category 3), H412

2.2 Label elements
Product identifier
Hazard statements
H412 - Harmful to aquatic life with long lasting effects

2.3 Other hazard information
Other hazards
Harmful to aquatic life

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
Not applicable

3.2 Mixtures
Full text of H- and EUH-phrases: see section 16

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures
General advice
Immediate medical attention is required. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible). Remove from exposure, lie down. Do not breathe dust/fume/gas/mist/vapours/spray.

Eye contact
Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin contact
Wash skin with soap and water.

**Inhalation**
Remove to fresh air.

**Ingestion**
Clean mouth with water and drink afterwards plenty of water.

4.2 **Most important symptoms and effects, both acute and delayed**
No information available

4.3 **Indication of immediate medical attention and special treatment needed**

**Note to physicians**
Treat symptomatically.

### SECTION 5. FIRE-FIGHTING MEASURES

5.1 **Extinguishing media**
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable extinguishing media**
CAUTION: Use of water spray when fighting fire may be inefficient

5.2 **Special hazards arising from the substance or mixture**
No information available

5.3 **Advice for firefighters**
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 **Personal precautions, protective equipment and emergency procedures**

**Personal precautions**
Ensure adequate ventilation, especially in confined areas.

**For emergency responders**
Use personal protection recommended in Section 8.

6.2 **Environmental Precautions**
See Section 12 for additional Ecological Information.

6.3 **Methods and material for containment and cleaning up**

**Methods for containment**
Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up**
Soak up with inert absorbent material. Pick up and transfer to properly labelled containers. This material and its container must be disposed of as hazardous waste.

### SECTION 7. HANDLING AND STORAGE

7.1 **Precautions for safe handling**
Handle in accordance with good industrial hygiene and safety practice.

7.2 **Conditions for safe storage, including any incompatibilities**
Storage temperature
Refer to www.ludger.com for specific information.

Storage Conditions
Keep/store only in original container.

Incompatible materials
None known based on information supplied

7.3 Specific end uses
Risk management methods [RMM]
The information required is contained in this Safety Data Sheet.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Exposure Limits
This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Derived No Effect Level (DNEL)  No information available
Predicted No Effect Concentration (PNEC)  No information available

8.2 Exposure controls

Engineering controls
Showers. Eyewash stations.

Individual protection measures, such as personal protective equipment

Eye/face protection
Wear safety glasses with side shields (or goggles).

Skin and body protection
Wear suitable protective clothing and gloves.

Respiratory protection
Use in well ventilated areas.

General hygiene considerations
Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls
See Section 12: ECOLOGICAL INFORMATION.

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>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>Colourless</td>
</tr>
<tr>
<td>Odour</td>
<td>Mild</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>Refer to <a href="http://www.ludger.com">www.ludger.com</a> for specific information</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>No data available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour density</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
</tbody>
</table>
## SECTION 10. STABILITY AND REACTIVITY

### 10.1 Reactivity
No data available.

### 10.2 Chemical stability
Stable under normal conditions.

### 10.3 Possibility of hazardous reactions
Can react briskly with oxidizers - danger of explosion.

### 10.4 Conditions to avoid

### 10.5 Incompatible materials
Strong oxidizing agents.

### 10.6 Hazardous decomposition products
Thermal decomposition can lead to release of irritating and toxic gases and vapours. Carbon monoxide. Carbon dioxide (CO2).

## SECTION 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### Acute toxicity

**Product information**
Product does not present an acute toxicity hazard based on known or supplied information.

**Inhalation**
Avoid breathing vapours or mists. May cause irritation of respiratory tract.

**Eye contact**
Redness. May cause slight irritation.

**Skin contact**
Prolonged contact may cause redness and irritation. Repeated exposure may cause skin dryness or cracking.

**Ingestion**
May cause drowsiness or dizziness. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Symptoms include burning sensation, coughing, wheezing, shortness of breath, headache, nausea, and vomiting.

**Unknown acute toxicity**
11.2 % of the mixture consists of ingredient(s) of unknown toxicity
The following values are calculated based on chapter 3.1 of the GHS document

<table>
<thead>
<tr>
<th>ATEmix (oral)</th>
<th>25,760.00 mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATEmix (dermal)</td>
<td>11,600.00 mg/kg</td>
</tr>
<tr>
<td>ATEmix (inhalation-dust/mist)</td>
<td>19.50 mg/l</td>
</tr>
<tr>
<td>ATEmix (inhalation-vapour)</td>
<td>78,000.00 mg/l</td>
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</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50 Water</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
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</thead>
<tbody>
<tr>
<td>Sodium Dodecy/Sulfate</td>
<td>&gt; 90 mL/kg (Rat)</td>
<td>-</td>
<td>&gt; 3900 mg/m³ (Rat) 1 h</td>
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</tbody>
</table>

Skin corrosion/irritation Mild
Serious eye damage/eye irritation Mild
Sensitization Not applicable
Germ cell mutagenicity Not applicable
Carcinogenicity No information available
Reproductive toxicity No information available
Developmental toxicity No information available
Teratogenicity No information available
STOT - single exposure No information available
STOT - repeated exposure No information available
Neurological effects No information available
Target organ effects Kidneys, Respiratory system, Eyes, Skin.
Other adverse effects No information available
Symptoms No information available
Aspiration hazard No information available

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity
Ecotoxicity
Harmful to aquatic life with long lasting effects
6.2 % of the mixture consists of component(s) of unknown hazards to the aquatic environment

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
No data available

12.6 Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Relevant Information
Keep out of drains, sewers, ditches and waterways.
Waste from Residues/Unused Products

Ludger 180511
Disposal should be in accordance with applicable regional, national and local laws and regulations. Send to a licensed recycler, reclainer or incinerator.

**Contaminated packaging**
Empty containers must be tripled rinsed prior to disposal.

### SECTION 14. TRANSPORT INFORMATION

#### IMDG

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>14.1 UN/ID No</td>
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</tr>
<tr>
<td>14.2 Proper shipping name</td>
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</tr>
<tr>
<td>14.3 Hazard class</td>
<td>Not regulated</td>
</tr>
<tr>
<td>14.4 Packing group</td>
<td>Not regulated</td>
</tr>
<tr>
<td>14.5 Marine pollutant</td>
<td>Not applicable</td>
</tr>
<tr>
<td>14.6 Special Provisions</td>
<td>None</td>
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<tr>
<td>14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</td>
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#### RID

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<tr>
<td>14.3 Hazard class</td>
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<td>14.4 Packing group</td>
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<td>14.5 Environmental hazard</td>
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<td>14.6 Special Provisions</td>
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#### ADR

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<tr>
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<td>Not regulated</td>
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<tr>
<td>14.4 Packing group</td>
<td>Not regulated</td>
</tr>
<tr>
<td>14.5 Environmental hazard</td>
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<td>14.6 Special Provisions</td>
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</table>

#### ICAO (air)

<p>| | |</p>
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<td>14.1 UN/ID No</td>
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<tr>
<td>14.4 Packing group</td>
<td>Not regulated</td>
</tr>
<tr>
<td>14.5 Environmental hazard</td>
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</tr>
<tr>
<td>14.6 Special Provisions</td>
<td>None</td>
</tr>
</tbody>
</table>

#### IATA

<p>| | |</p>
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<tr>
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</thead>
<tbody>
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<td>14.1 UN/ID No</td>
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</tr>
<tr>
<td>14.2 Proper shipping name</td>
<td>Not regulated</td>
</tr>
<tr>
<td>14.3 Hazard class</td>
<td>Not regulated</td>
</tr>
<tr>
<td>14.4 Packing group</td>
<td>Not regulated</td>
</tr>
<tr>
<td>14.5 Environmental hazard</td>
<td>Not applicable</td>
</tr>
<tr>
<td>14.6 Special Provisions</td>
<td>None</td>
</tr>
</tbody>
</table>
SECTION 15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

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

National Regulations

Occupational Illnesses (R-463-3, France)
European Union
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

International Inventories
All of the components in the product are on the following Inventory lists TSCA (United States), Canada (DSL/NDSL), Europe (EINECS/ELINCS), Australia (AICS), China (IECSC), Philippines (PICCS).

<table>
<thead>
<tr>
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<th>Compliance</th>
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<tbody>
<tr>
<td>TSCA</td>
<td>Complies</td>
</tr>
<tr>
<td>EINECS</td>
<td>Complies</td>
</tr>
<tr>
<td>ELINCS</td>
<td>-</td>
</tr>
<tr>
<td>DSL</td>
<td>Complies</td>
</tr>
<tr>
<td>NDSL</td>
<td>Complies</td>
</tr>
<tr>
<td>PICCS</td>
<td>Complies</td>
</tr>
<tr>
<td>ENCS</td>
<td>-</td>
</tr>
<tr>
<td>IECSC</td>
<td>Complies</td>
</tr>
<tr>
<td>AICS</td>
<td>Complies</td>
</tr>
<tr>
<td>KECL</td>
<td>-</td>
</tr>
</tbody>
</table>

15.2 Chemical Safety Assessment
No information available

SECTION 16. OTHER INFORMATION

The safety data sheet contains information that is the copyright of New England Biolabs® and was reproduced with their permission.

The information in this SDS is provided in good faith based on our knowledge as of the issue date (or subsequent revision date, if any), and is to be used only as a guide. This SDS does not constitute a guarantee (express or implied) of any kind and we make no warranties or merchantability or fitness for a particular purpose. This information relates only to the designated product as shipped and may not be valid if the product is used in combination with any other materials or is not used in accordance with our instructions. It is the responsibility of the buyer/user to ensure that its activities comply with all applicable governmental requirements. Since conditions of use of the product are not under the control of Ludger, it is the duty of the buyer/user to determine the necessary conditions for the safe use of the product. Ludger will not be liable for any damages resulting from handling or contact with the product.
SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY / UNDERTAKING

Product Name: 10X Glyco Buffer (500mM sodium phosphate pH 7.5)
Product Catalogue Name: 10X Glyco Buffer 2
Company: Ludger Ltd
Culham Science Centre
Abingdon
Oxford OX14 3EB
Telephone: 01865 408554
Emergency Telephone: 01865 408554
Email: info@ludger.com

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Regulation (EC) No 1272/2008
This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [GHS].

2.2 Label elements
Product identifier
This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [GHS]
Signal word
None

2.3 Other hazard information:
None

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
Not applicable
3.2 Mixtures
Full text of H- and EUH-phrases: see section 16

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures
General advice
Immediate medical attention is required. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible). Remove from exposure, lie down. Do not breathe dust/fume/gas/mist/vapours/spray.
Eye contact
Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.
Skin contact
Wash skin with soap and water.
Inhalation
Remove to fresh air.

Ingestion
Clean mouth with water and drink afterwards plenty of water.

4.2 Most important symptoms and effects, both acute and delayed
No information available

4.3 Indication of immediate medical attention and special treatment needed
Note to physicians
Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
CAUTION: Use of water spray when fighting fire may be inefficient.

5.2 Special hazards arising from the substance or mixture
No information available

5.3 Advice for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Personal precautions
Ensure adequate ventilation, especially in confined areas.

For emergency responders
Use personal protection recommended in Section 8.

6.2 Environmental Precautions
See Section 12 for additional Ecological Information.

6.3 Methods and material for containment and cleaning up
Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Soak up with inert absorbent material. Pick up and transfer to properly labelled containers. This material and its container must be disposed of as hazardous waste.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Handle in accordance with good industrial hygiene and safety practice.

7.2 Conditions for safe storage, including any incompatibilities
Storage temperature

Ludger 180511
Refer to www.ludger.com for specific information.

Storage Conditions
Keep/store only in original container.

Incompatible materials
None known based on information supplied.

7.3 Specific end uses
Risk management methods [RMM]
The information required is contained in this Safety Data Sheet.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
Exposure Limits This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies
Derived No Effect Level (DNEL) No information available
Predicted No Effect Concentration (PNEC) No information available

8.2 Exposure controls
Engineering controls
Showers. Eyewash stations.
Individual protection measures, such as personal protective equipment
Eye/face protection
Wear safety glasses with side shields (or goggles).
Skin and body protection
Wear suitable protective clothing and gloves.
Respiratory protection
Use in well ventilated areas.
General hygiene considerations
Handle in accordance with good industrial hygiene and safety practice.
Environmental exposure controls
See Section 12: ECOLOGICAL INFORMATION.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
Appearance Liquid
Colour Colourless
Odour Mild
pH Refer to www.ludger.com for specific information
Odour threshold No data available
Melting point/freezing point No data available
Initial boiling point and boiling range No data available
Flash point No data available
Evaporation rate No data available
Flammability (solid, gas) No data available
Upper/lower flammability or explosive limits No data available
Vapour pressure No data available
Vapour density No data available
Relative density No data available
Water solubility Soluble
SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available.

10.2 Chemical stability
Stable under normal conditions.

10.3 Possibility of hazardous reactions
Can react briskly with oxidizers - danger of explosion.

10.4 Conditions to avoid

10.5 Incompatible materials
Strong oxidizing agents.

10.6 Hazardous decomposition products
Thermal decomposition can lead to release of irritating and toxic gases and vapours. Carbon monoxide. Carbon dioxide (CO2).

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
Product information
Product does not present an acute toxicity hazard based on known or supplied information.

Inhalation
Avoid breathing vapours or mists. May cause irritation of respiratory tract.

Eye contact
Redness. May cause slight irritation.

Skin contact
Prolonged contact may cause redness and irritation. Repeated exposure may cause skin dryness or cracking.

Ingestion
May cause drowsiness or dizziness. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Symptoms include burning sensation, coughing, wheezing, shortness of breath, headache, nausea, and vomiting.

Unknown acute toxicity
7.1% of the mixture consists of ingredient(s) of unknown toxicity.
The following values are calculated based on chapter 3.1 of the GHS document mg/kg

**Skin corrosion/irritation**  
Mild

**Serious eye damage/eye irritation**  
Mild

**Sensitization**  
Not applicable

**Germ cell mutagenicity**  
Not applicable

**Carcinogenicity**  
No information available

**Reproductive toxicity**  
No information available

**Developmental toxicity**  
No information available

**Teratogenicity**  
No information available

**STOT - single exposure**  
No information available

**STOT - repeated exposure**  
No information available

**Neurological effects**  
No information available

**Target organ effects**  
Kidneys, Respiratory system, Eyes, Skin.

**Other adverse effects**  
No information available

**Symptoms**  
No information available

**Aspiration hazard**  
No information available

### SECTION 12. ECOLOGICAL INFORMATION

12.1 **Toxicity**  
7.1 % of the mixture consists of component(s) of unknown hazards to the aquatic environment.

12.2 **Persistence and degradability**  
No data available.

12.3 **Bioaccumulative potential**  
No data available.

12.4 **Mobility in soil**  
No data available.

12.5 **Results of PBT and vPvB assessment**  
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6 **Other adverse effects**  
No further relevant information available.

### SECTION 13. DISPOSAL CONSIDERATIONS

13.1 **Waste treatment methods**

**Relevant Information**
Keep out of drains, sewers, ditches and waterways.

**Waste from Residues/Unused Products**
Disposal should be in accordance with applicable regional, national and local laws and regulations. Send to a licensed recycler, reclaimer or incinerator.

**Contaminated packaging**
Empty containers must be tripled rinsed prior to disposal.

### SECTION 14. TRANSPORT INFORMATION

**IMDG**
SAFETY DATA SHEET

14.1 UN/ID No  Not regulated
14.2 Proper shipping name  Not regulated
14.3 Hazard class  Not regulated
14.4 Packing group  Not regulated
14.5 Marine pollutant  Not applicable
14.6 Special Provisions  None
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code  No information available

RID
14.1 UN/ID No  Not regulated
14.2 Proper shipping name  Not regulated
14.3 Hazard class  Not regulated
14.4 Packing group  Not regulated
14.5 Environmental hazard  Not applicable
14.6 Special Provisions  None

ADR
14.1 UN/ID No  Not regulated
14.2 Proper shipping name  Not regulated
14.3 Hazard class  Not regulated
14.4 Packing group  Not regulated
14.5 Environmental hazard  Not applicable
14.6 Special Provisions  None

ICAO (air)
14.1 UN/ID No  Not regulated
14.2 Proper shipping name  Not regulated
14.3 Hazard class  Not regulated
14.4 Packing group  Not regulated
14.5 Environmental hazard  Not applicable
14.6 Special Provisions  None

IATA
14.1 UN/ID No  Not regulated
14.2 Proper shipping name  Not regulated
14.3 Hazard class  Not regulated
14.4 Packing group  Not regulated
14.5 Environmental hazard  Not applicable
14.6 Special Provisions  None

SECTION 15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
National Regulations
Occupational Illnesses (R-463-3, France)
European Union
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at Work

International Inventories
All of the components in the product are on the following Inventory lists TSCA (United States), Canada (DSL/NDSL), Europe (EINECS/ELINCS), Australia (AICS), South Korea (KECL), China (IECSC), Philippines (PICCS).

TSCA  Complies
EINECS  Complies
ELINCS  -
DSL  Complies
NDSL  Complies
PICCS  Complies
ENCS  -
IECSC  Complies
AICS  Complies
KECL  Complies

15.2 Chemical Safety Assessment
No information available.

SECTION 16. OTHER INFORMATION

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The information in this SDS is provided in good faith based on our knowledge as of the issue date (or subsequent revision date, if any), and is to be used only as a guide. This SDS does not constitute a guarantee (express or implied) of any kind and we make no warranties or merchantability or fitness for a particular purpose. This information relates only to the designated product as shipped and may not be valid if the product is used in combination with any other materials or is not used in accordance with our instructions. It is the responsibility of the buyer/user to ensure that its activities comply with all applicable governmental requirements. Since conditions of use of the product are not under the control of Ludger, it is the duty of the buyer/user to determine the necessary conditions for the safe use of the product. Ludger will not be liable for any damages resulting from handling or contact with the product.
SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY / UNDERTAKING

Product Name: NP-40 10% solution
Product Catalogue Name: NP-40 10% solution
Company: Ludger Ltd
Culham Science Centre
Abingdon
Oxford OX14 3EB
Telephone: 01865 408554
Emergency Telephone: 01865 408554
Email: info@ludger.com

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Regulation (EC) No 1272/2008
This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [GHS].

2.2 Label elements
Product identifier
This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [GHS].
Signal word
None

2.3 Other hazard information

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
Not applicable

3.2 Mixtures
Full text of H- and EUH-phrases: see section 16.

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures
General advice
No hazards which require special first aid measures.
Eye contact
None under normal use conditions.
Skin contact
None under normal use conditions.
Inhalation
None under normal use conditions.
Ingestion
None under normal use conditions.

4.2 Most important symptoms and effects, both acute and delayed
None known

4.3 Indication of immediate medical attention and special treatment needed
Note to physicians
Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
None

5.2 Special hazards arising from the substance or mixture
None in particular.

5.3 Advice for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions
No information available.

For emergency responders
Use personal protection recommended in Section 8.

6.2 Environmental Precautions
See Section 12 for additional Ecological Information.

6.3 Methods and material for containment and cleaning up

Methods for containment
Not applicable.

Methods for cleaning up
Collect spillage.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Handle in accordance with good industrial hygiene and safety practice.

7.2 Conditions for safe storage, including any incompatibilities

Storage temperature
No information available.

Storage Conditions
Keep/store only in original container.
Incompatible materials
None known based on information supplied.

7.3 Specific end uses
Risk management methods [RMM]
The information required is contained in this Safety Data Sheet.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
Exposure Limits This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies
Derived No Effect Level (DNEL) No information available
Predicted No Effect Concentration (PNEC) No information available

8.2 Exposure controls
Engineering controls
Showers. Eyewash stations.

Individual protection measures, such as personal protective equipment
Eye/face protection
Wear safety glasses with side shields (or goggles).

Skin and body protection
Wear suitable protective clothing and gloves.

Respiratory protection
Not applicable.

General hygiene considerations
Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls
See Section 12: ECOLOGICAL INFORMATION.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
Appearance Liquid
Colour Colourless
Odour Mild
Odour Threshold No data available
pH Not applicable
Melting point/freezing point No data available
Initial boiling point and boiling range No data available
Flash point No data available
Evaporation rate No data available
Flammability (solid, gas) No data available
Upper/lower flammability or explosive limits No data available
Vapour pressure No data available
Vapour density No data available
Relative density No data available
Water solubility Soluble
Partition coefficient: noctanol/water No data available
Auto-ignition temperature No data available
Decomposition temperature No data available
SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available.

10.2 Chemical stability
Stable under normal conditions.

10.3 Possibility of hazardous reactions
None under normal processing.

10.4 Conditions to avoid
None known based on information supplied.

10.5 Incompatible materials
None known based on information supplied.

10.6 Hazardous decomposition products
None known based on information supplied.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Acute toxicity
Product information
Product does not present an acute toxicity hazard based on known or supplied information.

Inhalation
No known effect

Eye contact
No known effect based on information supplied

Skin contact
No known hazard in contact with skin

Ingestion
No known effect based on information supplied

Unknown acute toxicity
10% of the mixture consists of ingredient(s) of unknown toxicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>&gt; 90 mL/kg (Rat)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4-Nonylphenyl-polyethylene glycol</td>
<td>1310 mg/kg (Rat) = 2590 mg/kg (Rat)</td>
<td>1750 μL/kg (Rabbit) = 2 mL/kg (Rabbit)</td>
<td>-</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation
Not applicable

Serious eye damage/eye irritation
Not applicable

Sensitization
Not applicable

Germ cell mutagenicity
Not applicable

Carcinogenicity
No information available
Reproductive toxicity  
No information available
Developmental toxicity  
No information available
Teratogenicity  
No information available
STOT - single exposure  
No information available
STOT - repeated exposure  
No information available
Neurological effects  
No information available
Target organ effects  
None known
Other adverse effects  
No information available
Symptoms  
No information available
Aspiration hazard  
No information available

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity
10 % of the mixture consists of component(s) of unknown hazards to the aquatic environment.

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
No data available

12.6 Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Waste from Residues/Unused Products
Disposal should be in accordance with applicable regional, national and local laws and regulations. Send to a licensed recycler, reclamer or incinerator.
Contaminated packaging
Empty containers must be tripled rinsed prior to disposal.

SECTION 14. TRANSPORT INFORMATION

IMDG
14.1 UN/ID No  
Not regulated
14.2 Proper shipping name  
Not regulated
14.3 Hazard class  
Not regulated
14.4 Packing group  
Not regulated
14.5 Marine pollutant  
Not applicable
14.6 Special Provisions  
None
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code  
No information available
RID
14.1 UN/ID No
14.2 Proper shipping name
14.3 Hazard class
14.4 Packing group
14.5 Environmental hazard
14.6 Special Provisions

Not regulated
Not regulated
Not regulated
Not regulated
Not applicable
None

ADR
14.1 UN/ID No
14.2 Proper shipping name
14.3 Hazard class
14.4 Packing group
14.5 Environmental hazard
14.6 Special Provisions

Not regulated
Not regulated
Not regulated
Not regulated
Not applicable
Done

ICAO (air)
14.1 UN/ID No
14.2 Proper shipping name
14.3 Hazard class
14.4 Packing group
14.5 Environmental hazard
14.6 Special Provisions

Not regulated
Not regulated
Not regulated
Not regulated
Not applicable
None

IATA
14.1 UN/ID No
14.2 Proper shipping name
14.3 Hazard class
14.4 Packing group
14.5 Environmental hazard
14.6 Special Provisions

Not regulated
Not regulated
Not regulated
Not regulated
Not applicable
None

SECTION 15. REGULATORY INFORMATION
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
National Regulations
Occupational Illnesses (R-463-3, France)
European Union
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related
to chemical agents at work.
International Inventories
All of the components in the product are on the following Inventory lists TSCA (United States),
Canada (DSL/NDSL), Europe (EINECS/ELINCS), Australia (AICS), South Korea (KECL); China (IECSC),
Philippines (PICCS).
TSCA
EINECS
ELINCS
DSL
NDSL
PICCS
ENCS
Complies
- 
- 
Complies
Complies
Complies
- 

Ludger 180511
15.2 Chemical Safety Assessment
For this product a chemical safety assessment was not carried out.

SECTION 16. OTHER INFORMATION

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