VTAG Glycan Release & Labelling Kit - LT-VTAG-C30

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 according to Regulation (EC) No 1272/2008.

2.2 Label elements
Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.

2.3 Other hazard information:
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3. 1 Substances
Synonyms: None
Formula: $C_2H_7NO_2$
Molecular Weight 77.08 g/mol

Component		Classification	Concentration
Name	Ammonium Acetate		31%
CAS-No.	631-61-8		
EC-No.	211-162-9		
Index-No.	607-001-00-0		
2nd Name	Water	-	>75%
CAS-No.	7732-18-5		
EC-No.	231-791-2		

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 the 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 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
Collect the spillage with an absorbent material, such as a paper towel, vermiculite, or sand. Collect and store the spillage/waste material in an appropriately labelled container, and arrange collection for disposal. Wash the spillage area with water.

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 a cool place. Keep the container tightly closed in a dry and well-ventilated place.

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 following good laboratory and hygiene practices.

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 the 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 Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Body Protection
Choose body protection based on its type, the concentration and amount of dangerous substances, and 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 dust is 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
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides (NOx)
Other decomposition products - No data available
In the event of fire: see section 5

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% are 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 daphnia and other aquatic invertebrates static test - Daphnia magna (Water flea) - > 919 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae EC50 - Skeletonema costatum - > 1,000 mg/l - 72 h (ISO 10253)

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
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

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 it as an 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 to 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 currently 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 **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: CH_5NO_2

Component		Classification	Concentration
Name	Ammonium Formate	Skin Irrit. 2; Eye Irrit. 2; STOT SE 3;	> 10%
CAS-No.	540-69-2	H315, H319, H335	
EC-No.	208-753-9		
Name	Formic Acid	Skin Corr. 1A; H314	<15%
CAS-No.	64-18-6		
EC-No.	200-579-1		
Index-No.	607-001-00-0		
2nd Name	Water	-	>75%
CAS-No.	7732-18-5		
EC-No.	231-791-2		

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 if the person is unconscious. Consult a physician.

If the skin is exposed
Wash the 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 the 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 the 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 and 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 it in a suitable container with a lid, in a 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/PERSONAL PROTECTION

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

8.2 Exposure controls

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

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 the 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

Appearance	Form: clear, liquid Colour: Colourless
Odour	No data available
Odour threshold	No data available
pH	4.4 at 22°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	No data available
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.

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 the 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 to 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 currently 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.

Text of the H-codes mentioned in Section 3.

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

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

Product Name	**dimethyl sulfoxide**
Product Catalogue Name	**LT-DMSO-01/02**
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 is not required to be labelled following EC directives or respective national laws.
Signal Word: None
Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.

Hazard Statement(s)
None

Precautionary Statement(s)
None

2.3 Other hazard information:
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher. Rapidly absorbed through the skin.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms:	DMSO methyl sulfoxide dimethyl sulfoxide
Formula:	C_2H_6OS
Molecular Weight:	78.13g/mol

Component		Concentration
Name	Dimethyl Sulfoxide	< = 100%

CAS-No.	67-68-5	
EC-No.	200-664-3	

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
After swallowing: make the victim drink water (two glasses at most). Consult a doctor if feeling unwell

If the 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 chemicals 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 Firefighters
Wear self-contained breathing apparatus for 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 the 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 following good laboratory hygiene and safety practices. 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

Forms explosive mixtures with air on intense heating. A range from approx. 15 Kelvin below the flash point is to be rated as critical.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

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 - male and female - 28,300 mg/kg (OECD Test Guideline 401)

LC0 Inhalation - Rat - male and female - 4 h - > 5.33 mg/l (OECD Test Guideline 403)

LD50 Dermal - Rat - male and female - 40,000 mg/kg Remarks: (ECHA)

Skin corrosion/irritation
Skin - Rabbit Result: slight irritation - 4 h (OECD Test Guideline 404)

Serious eye damage/irritation
Eyes - Rabbit Result: slight irritation - 24 h (OECD Test Guideline 405)

Respiratory or skin sensitisation
Maximization Test - Guinea pig Result: negative (OECD Test Guideline 406)
Local lymph node assay (LLNA) - Mouse Result: negative (OECD Test Guideline 429)

Germ cell mutagenicity
Ames test Salmonella typhimurium Result: negative sister chromatid exchange assay
Chinese hamster ovary cells Result: negative Mutagenicity (mammal cell test): chromosome aberration.
Chinese hamster ovary cells Result: negative OECD Test Guideline 474 Rat - male and female Result: negative

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: Fetoxicity (except death, e.g. stunted fetus). Specific developmental abnormalities: Musculoskeletal system.

Reproductive toxicity – Mouse – Intraperitoneal
Effects on embryo or fetus: Fetoxicity (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 be disposed of by a licensed professional waste disposal company.

Contaminated packaging
Dispose of it as an 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 to 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 currently 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.

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

Component	Concentration
Name **Vtag dye**	-
CAS-No. -	-

EC-No. -	-

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 the 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 the 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 vapours, 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, following 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 the 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 soon as possible so that workers should not be exposed directly. Also, install a safety shower and eye bath.
Handle following good laboratory hygiene and safety practices. 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 following 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

Appearance	Form: white powder
Colour:	Colourless
Odour	No data available
Odour threshold	No data available
pH	No data available
Freezing/Melting Point	No data available
Initial boiling point and boiling range	No data available
Evaporation rate	No data available
Flammability	No data available
Upper/lower flammability or explosive limits	No data available
Vapour Pressure, Pa at temperature °C	No data available
Solubility in water and solvents (mg/l)	No data available
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

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 be disposed of by a licensed professional waste disposal company.

Contaminated packaging
Dispose of it as an 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 to 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 currently 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(s)	**10X Glyco Buffer (500mM sodium phosphate pH 7.5)** **10X Reaction Buffer (500mM sodium phosphate pH 7.5)**
Product Catalogue Name	**10X Glyco Buffer 2, LZ-10X-REACT-01, LZ-10X-REACT-50**
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 your 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 following good industrial hygiene and safety practices.

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 the original container.
Incompatible materials
None is known based on the 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 following good industrial hygiene and safety practices.
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
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

9.2 Other information
No further relevant information is 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 - the danger of explosion.

10.4 Conditions to avoid
Incompatible materials. Ignition sources. Heat.

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 irritate 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 is not available as chemical safety assessment not required/not conducted.

12.6 Other adverse effects
No further relevant information is 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 follow applicable regional, national and local laws and regulations. Send to a licensed recycler, reclaimer or incinerator.
Contaminated packaging
Empty containers must be triple-rinsed before 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).

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 for 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 following our instructions. It is the responsibility of the buyer/user to ensure that its activities comply with all applicable governmental requirements. Since the conditions of use of the product are not under the control of Ludger, the buyer/user must 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, LZ-NP40SOL-01, LZ-NP40SOL-50**
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: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available

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
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

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Water	> 90 mL/kg (Rat)	-	-
4-Nonylphenyl-polyethylene glycol	= 1310 mg/kg (Rat) = 2590 mg/kg (Rat)	= 1780 µL/kg (Rabbit) = 2 mL/kg (Rabbit)	-

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, reclaimer, 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	Done

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

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.

SECTION 16. OTHER INFORMATION

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	**LudgerZyme recombinant Peptide N-glycosidase F (Elizabethkingia miricola) supplied in 50mM NaCl 5mM EDTA 20mM Tris-HCl pH 7.5**
Product Catalogue Name	**rPNGase F, LZ-PNGF-150, LZ-rPNGaseF-30**
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 non-hazardous 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, and lie down. Do not breathe dust/fumes/gas/mist/vapours/spray.

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

If the 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 following good industrial hygiene and safety practices.

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 the original container.
Incompatible materials
None is known based on the 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 following good industrial hygiene and safety practices.
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 value at 20°C	Refer to www.ludger.com for specific information

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
Ignition temperature	No data available
Decomposition temperature	No data available
Self-igniting	No data available
Lower	No data available
Upper	No data available
Vapour pressure	No data available
Density	No data available
Relative density	No data available
Vapour density	No data available
Evaporation rate	No data available
Solubility in / Miscibility with Water	Fully miscible.
Partition coefficient (n-octanol/water)	No data available
Viscosity	
Dynamic	No data available
Kinematic	No data available

9.2 Other information
No further relevant information is 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 - the danger of explosion.

10.4 Conditions to avoid
Incompatible materials. Ignition sources. Heat.

10.5 Incompatible materials
Strong oxidizing agents.

10.6 Hazardous decomposition products
Thermal decomposition can lead to the 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
The product does not present an acute toxicity hazard based on known or supplied information.
Inhalation
Avoid breathing vapours or mists. May irritate the 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 a 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

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Water	> 90 mL/kg (Rat)	-	-
Sodium Chloride	= 3 g/kg (Rat)	> 10 g/kg (Rabbit)	> 42 g/m³ (Rat) 1 h
Ethylenediamine tetraacetic acid	= 1700 mg/kg (Rat)	-	-

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, and 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 is 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 follow applicable regional, national and local laws and regulations. Send to a licensed recycler, reclaimer, or incinerator.

Contaminated packaging
Empty containers must be tripled and rinsed before 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

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NDSL	Complies
PICCS	Complies
ENCS	-
IECSC	Complies
AICS	Complies
KECL	Complies

15.2 Chemical Safety Assessment

No information is available.

SECTION 16. OTHER INFORMATION

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