LudgerTag V-tag Glycopeptide Labelling and Enrichment Kit- LT-VTAG-24

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

Product Name **LudgerClean A cartridges**

Product Catalogue Name **LC-A-24**

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
This product is not classified as dangerous according to Regulation (EC) No. 1272/2008

2.2 Label elements
This product is not classified as dangerous according to Regulation (EC) No. 1272/2008

Hazard Statement(s)
No data available.

Precautionary Statement(s)
No data available.

2.3 Other hazard information:
No data available.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3. 1 Substances
Synonyms: Synthetic amorphous silica gel
Formula: Information not available

Component		Concentration
Name	A cartridge resin	>95%
CAS-No.	None	
EC-No.	None	

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 your mouth with plenty of water if the person is conscious. Never give anything by mouth to an un-conscious person. Drink plenty of fluids afterwards.

If the skin is exposed
Wash the affected area(s) with plenty of soap and water.

If eyes are exposed
Flush eyes with plenty of water/ eye wash, making sure that the eye is rinsed well, paying attention to the areas around the eyelids.

If inhaled
Move the person into fresh air. If breathing has stopped give artificial respiration.

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

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Use a dry chemical, CO_2, water spray or alcohol foam media. Choose an extinguisher which is appropriate for the surrounding conditions.

5.2 Special hazards arising from the substance or mixture
No data available.

5.3 Advice for Firefighters
For extreme fires, wear self-contained breathing apparatus for firefighting.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Ventilate the affected area thoroughly and shut off any sources of ignition. Use PPE described in Section 8. Avoid causing dust when sweeping up the chemical. Avoid breathing in the dust.

6.2 Environmental Precautions
Do not let the chemical enter that drainage system.

6.3 Methods and material for containment and cleaning up
Collect the spilt chemical, creating as little dust as possible. Sweep up the chemical and shovel it into a suitable container with an air-tight lid. Arrange collection of the waste material.

6.4 Reference to other sections
Sections 8 and 13.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
To handle/ work with the product in a well-ventilated area and the user to wear PPE.

7.2 Conditions for Safe Storage
Keep the products in a dry and well-ventilated storage cupboard/cabinet, in original packaging or a container with a lid. Keep product away from direct sunlight. Store at Room temperature.

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 limit values.

8.2 Exposure controls
Appropriate engineering controls
General advice to the user is to wear PPE, and wash hands, avoid contact with skin. To follow good laboratory practice for safety and hygiene.

Personal Protective Equipment
Eye / face protection
Safety glasses with side shields conforming to EN 166. Use eye equipment for eye protection tested and approved under appropriated government standards such as NIOSH (US) or EN 166 (EU).

Skin protection
Wear gloves when handling the product. Gloves must conform to the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it. Inspect gloves before use for tears and holes, gloves must be removed using the proper removal technique (without touching the outer surface of the glove) to avoid skin contact with the product. To be disposed of as chemical waste.

Body Protection
Laboratory overcover such as a laboratory coat or any other similar coverings.

Respiratory protection
Product to be used under extraction or well-ventilated area, no further protection is required for the amount per cartridge.

Thermal hazards
No data available.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Form: Powder Colour: White
Odour	None
Odour threshold	None
pH	No data available
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
Relative Density	No data available

Solubility in water	Insoluble
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
Stable when stored under the recommended storage conditions in Section 7.

10.3 Possibility of Hazardous Reactions
No data available

10.4 Conditions to Avoid
Extreme temperatures, High or low.

10.5 Incompatible materials
Strong oxidising agents, strong acids and hydrogen fluoride.

10.6 Hazardous decomposition products
Formed under fire/ high temperatures – Silicon oxides.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
To the best of our knowledge, the toxicological properties of this product have not been fully investigated.

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
No data available

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
This product has no known adverse effect on human health.

Inhalation	May cause respiratory tract irritation.
Ingestion	No data available
Skin	May cause skin irritation.
Eyes	May cause eye irritation.

Signs and symptoms of exposure
No data available

SECTION 12. ECOLOGICAL INFORMATION

The eco-toxicological properties of this material have not been fully investigated.

12.1 Toxicity
No data available.

12.2 Persistence and Degradability
No data available.

12.3 Bio-accumulative potential
Does not bioaccumulate.

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
Contact a licensed professional waste disposal service to dispose of waste products. Do not send it as general waste for disposal.

Contaminated packaging
Dispose of it as an unused product, following the above advice.

SECTION 14. TRANSPORT INFORMATION

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

14.2 UN Proper Shipping Name
ADR/RID: Not classed as dangerous goods
IMDG: Not classed as dangerous goods
IATA: Not classed as 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 datasheet 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.

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	**Trifluoroacetic acid, 10%, solution**
Product Catalogue Name	**LC-TFA-10PC-01**
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 corrosion (Category 1A)
Chronic aquatic toxicity (Category 3)
Serious eye damage (Category 1)

2.2 Label elements

Signal Word: Danger

Hazard Statement(s)

H314	Causes severe skin burns and eye damage.
H332	Harmful if inhaled
H412	Harmful to aquatic life with long-lasting effects.

Precautionary Statement(s)

P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor
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:
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: TFA

Formula: TFA: $C_2HO_2F_3$
Water: H_2OH_2O

Molecular weight: TFA: 114.02 g/mol
Water: 18.02 g/mol

Component		Classification	Concentration
Name	Trifluoroacetic acid	Skin Corr.1A; Aquatic Chronic	10%
CAS-No.	76-05-1	3; Acute Tox, 4; Eye Dam.1	
EC-No.	200-929-3	H314, H412, H332	
Index-No	607-091-00-1		
2nd Name	Water	-	90%
CAS-No.	7732-18-5		
EC-No.	231-791-2		

For the full text of the H-Statements and R-Phrases mentioned in this Section please see Sections 3 and 16.

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 to a person if unconscious.

If the skin is exposed
Remove contaminated clothing and shoes. Wash the affected area well with plenty of soap and water.

If eyes are exposed
Rinse thoroughly for at least 15 minutes with plenty of water/ eye wash solution. Remove contacts if safe to do so and continue rinsing.

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

4.2 Most important symptoms and effects, both acute and delayed

The product can be destructive to tissue of the mucous membranes, upper respiratory tract, eyes and skin.

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 extinguishing materials for the product are Water spray, alcohol-resistant foam, dry chemical and carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon dioxides, Hydrogen fluoride.

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
Advice for non-emergency personnel: avoid breathing in vapours, mist or gas by ensuring adequate ventilation. Avoid substance contact. Move any unnecessary staff away from the spill.
For personal protection see section 8.

6.2 Environmental Precautions
Contain the spillage; prevent any product from entering the drainage system as discharge into the environment is to be avoided.

6.3 Methods and material for containment and cleaning up
Contain the spillage with a spill mat or inert material such as vermiculite. Carefully collect the contaminated material into a suitable container with a lid; arrange collection and disposal of the hazardous solid waste.

6.4 Reference to other sections
See Section 13 for more information on disposal.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Advice on safe handling
Work under hood. Do not inhale a substance/mixture. Avoid the generation of vapours/aerosols.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substances.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store the product in a cool, dry, 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 using good laboratory and safety practices, wearing gloves, safety glasses and a laboratory coat. Wash and dry hands before and after handling the product, even while wearing gloves.

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

Skin protection
Handle with gloves, check gloves before using for any tears/ holes. Remove used gloves using the proper glove removal technique, so that the outer side of the glove does not touch the skin, to avoid skin contact with the product. Dispose of used gloves as contaminated waste, see section 13 for information. Gloves must satisfy the specifications of the EU Directive 2016/425 and the standard EN 374 derived from it.

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

Respiratory protection
Handle the material under an extraction cabinet or fume hood, as part of the kit. If respirators are required, they should be 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	Slight
Odour threshold	No data available
pH	at 20°C strongly acid
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	Not Flammable
Upper/lower flammability or explosive limits	No data available
Vapour Pressure	No data available
Relative Density	No data available
Solubility in water and solvents	Yes
Partition coefficient	No data available
Autoignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Explosive properties	None
Oxidising properties	No data available

9.2 Other information
No data available

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity
See section 10.3

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature)

10.3 Possibility of Hazardous Reactions
Risk of explosion with lithium aluminium hydride
Exothermic reaction with alkalines
Generates dangerous gases or fumes in contact with acids

10.4 Conditions to Avoid
No data available

10.5 Incompatible materials
Strong bases, Metals, Oxidizing agents, Alcohols, Epoxides, Steel (all types and surface treatments), Aluminium, Reacts violently with Alkali metals.

10.6 Hazardous decomposition products
Other decomposition products – 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
Cause serious eye damage

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

Potential Health Hazards

Inhalation	May be harmful if inhaled. Material can be destructive to the tissue of the mucous membranes and the upper respiratory tract.
Ingestion	May be harmful if swallowed. Causes burns.
Skin	May be harmful if absorbed through the skin. Causes burns.
Eyes	Causes burns to the eyes.

Signs and symptoms of exposure
The product can be destructive to tissue of the mucous membranes, upper respiratory tract, eyes and skin.

11.2 Further information

Components: Trifluoroacetic acid

Acute inhalation toxicity LC50 rat: 10 mg/l; 4 h
Skin irritation rabbit Result: Causes burns.
Germ cell mutagenicity:
Ames test
Salmonella typhimurium
Result: negative
In vitro mammalian cell gene mutation test
mouse lymphoma cells
Result: negative
Chromosome aberration test in vitro

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Damage to:
Kidney
Other dangerous properties cannot be excluded.
Handle following good industrial hygiene and safety practices.
Liver - Irregularities - Based on Human Evidence

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
Harmful to aquatic life.

Components: trifluoroacetic acid

Toxicity

Toxicity to fish	static test LC50 - Danio rerio (zebra fish) - > 999 mg/l - 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - > 999 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	static test ErC50 - Pseudokirchneriella subcapitata - 237.07 mg/l - 72 h (OECD Test Guideline 201)
Toxicity to bacteria	EC50 - activated sludge - > 832 mg/l - 3 h (OECD Test Guideline 209)

Persistence and degradability

Biodegradability	aerobic - Exposure time 127 d Result: 11 % - Not inherently biodegradable. (OECD Test Guideline 301D)

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods
Contact waste professional waste disposal company that is licensed to carry such waste material, liquid and solids, for the disposal of waste products. This product cannot go into the drainage systems.

Contaminated packaging
Dispose of it as an unused product.

SECTION 14. TRANSPORT INFORMATION

14.1 UN Number
ADR/RID: 2699 IMDG: 2699 IATA: 2699

14.2 UN Proper Shipping Name
ADR/RID: TRIFLUOROACETIC ACID, SOLUTION
IMDG: TRIFLUOROACETIC ACID, SOLUTION
IATA: Trifluoroacetic acid, SOLUTION

14.3 Transport hazard class(es)
ADR/RID: 8 IMDG: 8 IATA: 8

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

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 H-codes and P-phrases mentioned in Section 3.

Acute Tox.	Acute Toxicity.
Aquatic Chronic	Chronic aquatic toxicity.
Skin Corr.	Skin corrosion.
Eye Dam	Serious eye damage
H314	Causes severe skin burns and eye damage.
H332	Harmful if inhaled.
H412	Harmful to aquatic life with long-lasting effects.

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

Product Name **Phosphate buffered saline tablet**

Product Catalogue Name **LT-PBS-TAB-0.01M**

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

Not a hazardous substance or mixture.
Not a hazardous substance or mixture.

2.2 Label elements

The product does not need to be labelled following EC directives or respective national laws.

2.3 Other hazards

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: PBS

Component		Concentration
Name	Phosphate buffered saline	99.0%; 0.01M Phosphate buffer, 0.0027M KCl, 0.14M NaCl
CAS-No.	None	
EC-No.	None	

SECTION 4. FIRST-AID MEASURES

4.1 Description of First Aid Measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

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

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

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

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

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 any immediate medical attention and special treatment needed
No data available

SECTION 5. FIRE-FIGHTING MEASURES

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

5.2 Special hazards arising from the substance or mixture
Oxides of phosphorus, Hydrogen chloride gas, Potassium oxides, Sodium oxides

5.3 Advice for Firefighters
Wear a self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

SECTION 6. ACCIDENTAL RELEASE MEASURES

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

6.2 Environmental precautions
Do not let the product enter drains.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid the formation of dust and aerosols.
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.
Storage class (TRGS 510): Non-Combustible Solids

7.3 Specific end use(s)
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
Components with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls
Appropriate engineering controls
Handle following good industrial hygiene and safety practices. Wash hands before breaks and at the end of the workday.

Personal protective equipment
Eye/face protection
Safety glasses with side shields conforming to EN166 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. Gloves must be inspected before use. Use proper glove removal technique (without touching the gloves' outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use following applicable laws and good laboratory practices.
Wash and dry hands. The selected protective gloves must satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Body Protection
Impervious clothing and the type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection uses type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges.
Use respirators and components tested and approved under appropriate government standards.
such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Do not let the product enter drains.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance Form	solid
Odour	No data available
Odour Threshold	No data available
pH	7.2 - 7.6 at 25 °C
Melting point/freezing point	No data available
Initial boiling point and boiling range	No data available
Flashpoint	Not applicable
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	No data available
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 safety information
No data available

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

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
In the event of fire: see section 5

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
No data available
Dermal: No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
IARC: No component 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

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: Not available

Vomiting, Diarrhoea, Dehydration and congestion may occur in internal organs. Hypertonic salt solutions can produce inflammatory reactions in the gastrointestinal tract., 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
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. Dissolve or mix the material with a combustible solvent and burn it in a chemical incinerator equipped with an afterburner and scrubber.

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 datasheet 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

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 solution in DMSO**

Product Catalogue Name **LT-VTAG-01**

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

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:

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

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

Component	**Concentration**
Name **Vtag dye**	5mg/ml (<1 %)
CAS-No. -	-
EC-No. -	-
2nd Name **Dimethyl sulfoxide**	>99%
CAS-No. 67-68-5	

EC-No. 200-644-3	
Index-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
Effects due to ingestion may include: Nausea, Fatigue and Headache

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.
Vapors are heavier than air and may spread along floors.
Forms explosive mixtures with air on intense heating.
Forms explosive mixtures with air on intense heating.
Development of hazardous combustion gases or vapours is possible in the event of a fire.

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
Use personal protective equipment. Keep people away from and upwind of spill/leak. Entry to non-involved personnel should be controlled around the leakage area by roping off, etc.
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 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

Technical measures: Handling is performed in a well-ventilated place. Wear suitable protective equipment. Wash hands and face thoroughly after handling.
Advice on safe handling: Avoid contact with skin, eyes and clothing.

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
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 work-

place 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: 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
Evaporation rate	No data available
Flammability	No data available
Upper/lower flammability or explosive limits	Upper explosion limit: 28.5 %(V) Lower explosion limit: 2.6 %(V)
Vapour Pressure, Pa at temperature °C	0.55 hPa at 20 °C Relative Density
Solubility in water and solvents (mg/l)	No data available
Partition coefficient	No data available
Autoignition temperature	300 - 302 °C at 1,013 hPa
Decomposition temperature	> 190 °C -
Viscosity	No data available
Explosive properties	
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
Carbon monoxide, Carbon dioxide, Nitrogen oxides (NOx), Sulphur oxides

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 – No skin irritation – 4h
Serious eye damage/irritation Eyes – Rabbit – 500 mg/24H MLD
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
Tumorigenic: 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
No data available

STOT-single exposure
No data available

STOT-repeated exposure
No data available

Aspiration hazard.

No data available

Additional Information
Repeated dose toxicity - Rat - male and female - Oral - 18 Months - NOAEL (No observed adverse effect level) - 3,300 mg/kg - LOAEL (Lowest observed adverse effect level) - 9,900 mg/kg
Repeated dose toxicity - Monkey - male and female - Dermal - 18 Months - NOAEL (No observed adverse effect level) - >= 8,910 mg/kg - LOAEL (Lowest observed adverse effect level) - 990 mg/kg
RTECS: PV6210000
Exposure to large amounts can cause: redness of the skin, Itching, burning, sedation, Headache, Nausea, Dizziness
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish static test LC50 - Danio rerio (zebra fish) - > 25,000 mg/l - 96 h
(OECD Test Guideline 203)
Toxicity to daphnia
and other aquatic
invertebrates
static test EC50 - Daphnia magna (Water flea) - 24,600 mg/l - 48 h
(OECD Test Guideline 202)
Toxicity to algae static test ErC50 - Pseudokirchneriella subcapitata (green algae) - 17,000 mg/l - 72 h
(OECD Test Guideline 201)
Toxicity to bacteria EC50 - activated sludge - 10 - 100 mg/l - 30 min

12.2 Persistence and Degradability
Biodegradability aerobic - Exposure time 28 d
Result: 31 % - Not readily biodegradable.
(OECD Test Guideline 301D)

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
Water Hazard Classes (WGK): Class 1 - Slightly water-polluting substance

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.