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Company	GENEALL BIOTECHNOLOGY CO., LTD.
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The following MSDS included following products:

Cat. No	Product description
109-101	Exgene™ Tissue SV Plus mini [100prep]
109-152	Exgene™ Tissue SV Plus mini [250prep]
109-106	Exgene™ Tissue SV Plus mini [6prep]
109-201	Exgene™ Tissue SV Plus midi [100prep]
109-204	Exgene™ Tissue SV Plus midi [4prep]
109-226	Exgene™ Tissue SV Plus midi [26prep]
109-302	Exgene™ Tissue SV Plus maxi [2prep]
109-310	Exgene™ Tissue SV Plus maxi [10prep]
109-326	Exgene™ Tissue SV Plus maxi [26prep]

MATERIAL SAFETY DATA SHEET

Product Name

Buffer RL

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name Buffer RL

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

Use of the substance or mixture Laboratory chemicals

1.3 Details of the supplier of the safety data sheet

Name GENEALL BIOTECHNOLOGY CO., LTD
 Address GeneAll Bldg., 303-7, Dongnam-ro, Songpa-gu, Seoul, 05729, Korea
 Information contact <+82-2-407-0096
 E-Mail (competent person) sales@geneall.com
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2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

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

Reproductive toxicity Category 2
 Specific Target Organ toxicity (repeated exposure) Category 2

2.2 Label elements

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

Hazard pictograms



Signal word Warning

Hazardous statements H361 Suspected to cause damage to fetal development or reproductive ability.
 H373 Long time or repeated exposures may cause damage on organ.

Precautionary statements

Prevention P201 Refer to User Manual before use.
 P202 Thoroughly understand all safety precautions before handling.
 P260 Do not breathing dust/fume/gas/mist/vapours/spray.
 P281 Wear appropriate personal protective equipment.

Response P308+P313 If exposed or concerned: Get medical advice/attention.
 P314 Get medical advice/attention, if you feel unwell.

Storage P405 Store locked up.

Disposal P501 Dispose containers in accordance with all applicable environmental laws and regulations.

2.3 Other Non-GHS Classification

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance name	CAS No.	Concentration (%)
Ammonium chloride	12125-02-9	1 - 10

MATERIAL SAFETY DATA SHEET

Product Name

Buffer RL

4. FIRST AID MEASURES

4.1 Description of first aid measures

General informations	Notify doctor/physician about the substance to take necessary actions.
Following eye contact	In case of contact with eyes, rinse cautiously with water for at least 15 minutes. Remove contact lense, if possible. Seek medical attention immediately.
Following skin contact	If on skin or hair: Take off immediately all contaminated clothing. Rinse skin with water [or shower]. Get medical advice/attention, if you feel unwell.
Following inhalation	Remove victim to fresh air.
Following ingestion	Do not give any food to an unconscious person. Rinse the mouth. Do not try vomiting.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	No data available
Risks	No data available

4.3 Indication of any immediate medical attention and special treatment needed

Special treatment	No data available
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5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	water spray, alcohol-resistant foam, dry chemicals or carbon dioxide
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5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting	No data available
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5.3 Precautions for fire-fighters

Wear self-contained breathing apparatus (SCBA), if necessary during fire fighting.

5.4 Further information

No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	Wear appropriate personal protective equipment. Ensure adequate ventilation. Do not inhale mist or gas. Evacuate people to safe areas.
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6.2 Environmental precautions

Environmental precautions	Avoid spread into waterway, sewers, drains, or confined areas. Do not release to the environment.
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6.3 Methods and material for containment and cleaning up

Method for cleaning up	Soak up with inert absorbent material(e.g. dry sand or soil), and place into the containers for chemical waste.
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7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling	Avoid contact with eyes and skin. Avoid formation of dust and aerosols. Install appropriate exhaust ventilation where dust is generated.
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7.2 Conditions for safe storage, including any incompatibilities

MATERIAL SAFETY DATA SHEET

Product Name	Buffer RL
Requirements for storage rooms and vessels	Store in a cool place. Keep container tightly closed and store in a well-ventilated place.

7.3 Specific end use(s)

Specific end use(s) Laboratory chemicals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Ammonium chloride

No.	Components (CAS No.)	Occupational Exposure Limit (OEL)	Legal Basis
1	Ammonium chloride (12125-02-9)	10 mg/m ³ (TWA)	KR OEL
2	Ammonium chloride (12125-02-9)	20 mg/m ³ (STEL)	KR OEL

8.2 Exposure controls

No data available

8.3 Personal protective equipment

Respiratory protection

Wear respiratory protective equipment certified by suitable government standards, appropriate for the physicochemical properties of the substance.

Suitable eye protection

Use tightly fitting safety goggles or face protection.
Use safety goggles or face shield certified by suitable government standards.

Hand protection

Wear suitable gloves tested and approved under appropriate government standards.
Check gloves before use.
Dispose of gloves after use according to relevant regulations and GLP standards.
Wash and dry hands.

Skin and body protection

Wear suitable chemical-resistant clothing.
Choose protective tools according to the concentration and amount of hazardous material in the work area

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	Liquid
Color	Colorless
Odor	Odorless
Odour Threshold	No data available
pH	No data available
Melting point/freezing point	No data available
Boiling point/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
Solubility (ies)	No data available
Vapour density	No data available
Specific gravity	No data available
Partial coefficient n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Molecular weight	No data available

MATERIAL SAFETY DATA SHEET

Product Name

Buffer RL

9.2 Other information

No data available

10. STABILITY AND REACTIVITY

10.1 Chemical stability and possibility of hazardous reactions

Stable under recommended storage conditions.

10.2 Conditions to avoid

Exposure to moisture may affect product quality.

10.3 Materials to avoid

strong oxidizers, strong bases, strong acids

10.4 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - nitrogen oxides (NOx), HCl

11. TOXICOLOGICAL INFORMATION

11.1 Routes of exposure

May cause irritation to the respiratory system, skin, and eyes.

11.2 Information on toxicological effects

Acute toxicity

Oral

LD50 - Rat - 1.650 mg/kg

Dermal

No data available

Inhalation

No data available

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory sensitisation

No data available

Skin sensitisation

No data available

Carcinogenicity

No data available

Genotoxicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

MATERIAL SAFETY DATA SHEET

Product Name	Buffer RL
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Other harmful effects

No data available

12. ECOLOGICAL INFORMATION

12.1 Toxicity

LC50 - Cyprinus carpio - 209,00 mg/l - 96 h
 LC50 - Oncorhynchus mykiss - 3,98 mg/l - 96 h
 NOEC - Oncorhynchus mykiss - 57 mg/l - 96 h
 LC50 - Daphnia magna - 161 mg/l - 48 h
 NOEC for growth inhibition - Daphnia magna - 0,1 mg/l - 216 h

12.2 Persistence and degradability

Persistence

No data available

Degradability

No data available

12.3 Bioaccumulative potential

Bioaccumulation

No data available

Biodegradability

No data available

12.4 Mobility in soil

No data available

12.5 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Dispose of residues and non-recyclable solutions through a government-approved waste disposal company.

13.2 Disposal considerations

Dispose of in accordance with all applicable environmental laws and regulations.

14. TRANSPORT INFORMATION

14.1 UN number

Not regulated as a dangerous good

14.2 UN Proper shipping name

Not applicable

14.3 Transport hazard class(es)

Not applicable

14.4 Packing group

Not applicable

14.5 Environmental hazards

No data available

14.6 Special precautions for user

Emergency measures in case of fire

Not applicable

Emergency measures in case of spill

Not applicable

MATERIAL SAFETY DATA SHEET

Product Name

Buffer RL

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

15. REGULATORY INFORMATION**15.1 Industrial Safety and Health Act**

No data available

15.2 Toxic Chemicals Control Act

No data available

15.3 Safety Control of Dangerous Substances Act

No data available

15.4 Wastes Control Act

In accordance with all applicable wastes management laws and regulations.

15.5 Other requirements in domestic and other countries

No data available

16. OTHER INFORMATION**Issued date**

2016-05-17

Revision number

2

Revision date

2024-03-06

Reference

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- END OF SAFETY DATA SHEET -

MATERIAL SAFETY DATA SHEET

Product Name

Buffer TL

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name Buffer TL

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

Use of the substance or mixture Laboratory chemicals

1.3 Details of the supplier of the safety data sheet

Name GENEALL BIOTECHNOLOGY CO., LTD
 Address GeneAll Bldg., 303-7, Dongnam-ro, Songpa-gu, Seoul, 05729, Korea
 Information contact <+82-2-407-0096
 E-Mail (competent person) sales@geneall.com
 Emergency Telephone Number <+82-2-407-0096

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

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

Acute inhalation toxicity Category 4
 Serious eye damage/eye irritation Category 2
 Chronic aquatic toxicity Category 3

2.2 Label elements

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

Hazard pictograms



Signal word Warning

Hazardous statements
 H332 Harmful if inhaled.
 H335 May cause respiratory irritation.
 H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention
 P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
 P264 Wash skin/hands thoroughly after handling.
 P271 Handle it only outdoors or in a well-ventilated area.
 P273 Do not release to the environment.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response
 P304+P340 IF INHALED: Move patients into fresh air and help them to get rest.
 P305+P351+P338 IF IN EYES: Rinse with water attentively for several minutes. Remove contact lenses, if possible. Keep washing.
 P312 Consult with doctor if you feel unwell.
 P337 + P313 – If eye irritation persists: Get medical advice/ attention.

Storage

Disposal P501 Dispose of contents/container to in accordance with all applicable environmental laws and regulations.

2.3 Other Non-GHS Classification

No data available

MATERIAL SAFETY DATA SHEET

Product Name	Buffer TL
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3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture	Mixture		
	Substance name	CAS No.	Concentration (%)
	N-Lauroyl sarcosine, sodium salt	137-16-6	1 - 10
	Triton X-100	9002-93-1	0.1 - 1.0

4. FIRST AID MEASURES

4.1 Description of first aid measures

General informations	Notify doctor/physician about the substance to take necessary actions.
Following eye contact	Rinse cautiously with water for at least 15 minutes. Remove contact lenses. Get medical advice/attention.
Following skin contact	In the case of contact with skin (or hair), remove immediately all contaminated clothing. Rinse skin with water/shower. Immediately seek medical advice/attention, if you feel unwell. Wash contaminated clothing before reuse.
Following inhalation	If exposed or concerned: Get medical advice/attention.
Following ingestion	Do not perform resuscitation; use appropriate respiratory medical equipment instead.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	No data available
Risks	No data available

4.3 Indication of any immediate medical attention and special treatment needed

Special treatment	No data available
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5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	water spray, alcohol-resistant foam, dry chemicals or carbon dioxide
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5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting	No data available
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5.3 Precautions for fire-fighters

Special protective equipment for firefighters	Wear self-contained breathing apparatus for firefighting if necessary.
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5.4 Further information

No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	Wear personal protective equipment. Ensure adequate ventilation. Avoid breathing gas / mist. Evacuate personnel to safe areas.
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6.2 Environmental precautions

Environmental precautions	Avoid dispersal of spill material and runoff into waterway, sewers, drainage, or contained areas. Avoid release to the environment.
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6.3 Methods and material for containment and cleaning up

Method for cleaning up	Soak up with inert absorbent material(e.g. dry sand or soil), and place into the containers for chemical waste.
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7. HANDLING AND STORAGE

7.1 Precautions for safe handling

MATERIAL SAFETY DATA SHEET

Product Name	Buffer TL
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Advice on safe handling

Avoid contact with skin and eyes.
Avoid inhalation of vapors or mists.
Avoid formation of dust and aerosols.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

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

7.3 Specific end use(s)

Specific end use(s)

Laboratory chemicals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Does not contain any substances with established exposure limits.

8.2 Exposure controls

No data available

8.3 Personal protective equipment

Respiratory protection

Wear respiratory protection according to the physical and chemical properties of the exposed material tested and approved under appropriate government standard.

Suitable eye protection

Wear tightly fitting safety goggles and a face shield.
Use eye protection such as shaded face shields or safety goggles certified under the standards.

Hand protection

Wear suitable gloves tested and approved under appropriate government standard.
Check gloves before use.
Dispose of gloves after use according to relevant regulations and GLP standards.
Wash and dry hands.

Skin and body protection

Wear chemical-resistant full protective clothing.
The type of protective gear should be selected based on the concentration and quantity of hazardous substances in the specific work environment.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	Liquid
Color	Colorless
Odor	Odorless
Odour Threshold	No data available
pH	No data available
Melting point/freezing point	No data available
Boiling point/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
Solubility (ies)	No data available
Vapour density	No data available
Specific gravity	No data available
Partial coefficient n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available

MATERIAL SAFETY DATA SHEET

Product Name	Buffer TL
Viscosity	No data available
Molecular weight	No data available

9.2 Other information

No data available

10. STABILITY AND REACTIVITY

10.1 Chemical stability and possibility of hazardous reactions

Stable under recommended conditions

10.2 Conditions to avoid

No data available

10.3 Materials to avoid

strong oxidizers, strong bases, and strong acids

10.4 Hazardous decomposition products

Hazardous decomposition generated from a fire : carbon oxides, nitrogen oxides(NOx), sodium oxide

11. TOXICOLOGICAL INFORMATION

11.1 Routes of exposure

Causes respiratory irritation and eye burn.

11.2 Information on toxicological effects

Acute toxicity

Oral

LD50: Rat - > 5.000 mg/kg

Dermal

No data available

Inhalation

LC50: Rat - 4 h - 0,05 - 0,5 mg/l

Skin corrosion/irritation

Skin irritation - Rabbit

Serious eye damage/eye irritation

Cause serious eye damage

Respiratory sensitisation

No data available

Skin sensitisation

No data available

Carcinogenicity

Not classified as cancer-causing agents (IARC)

Genotoxicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Other harmful effects

No data available

12. ECOLOGICAL INFORMATION

MATERIAL SAFETY DATA SHEET

Product Name	Buffer TL
12.1 Toxicity <u>Toxicity to Crustacean</u> <u>Toxicity to Algae</u>	EC50 (median effective concentration) – Danio rerio (zebrafish) – 107 mg/L – 96 hours LC50 (median lethal concentration) – Daphnia magna (water flea) – 29.7 mg/L – 48 hours EC50 (median effective concentration) – Desmodesmus subspicatus (green algae) – 79 mg/L – 72 hours NOEC (No Observed Effect Concentration) for respiratory inhibition – sludge treatment – 100 mg/L – 3 hours No data available No data available
12.2 Persistence and degradability <u>Persistence</u> <u>Degradability</u>	No data available No data available Aerobic test – exposure time: 28 days, result: 82% – readily biodegradable.
12.3 Bioaccumulative potential <u>Bioaccumulation</u> <u>Biodegradability</u>	No data available No data available
12.4 Mobility in soil 12.5 Other adverse effects	No data available Harmful to aquatic life with long lasting effects.
13. DISPOSAL CONSIDERATIONS	
13.1 Waste treatment methods Dispose of residues and non-recyclable solutions through a government-approved waste disposal company. 13.2 Disposal considerations Dispose of contents/container in accordance with all applicable environmental laws and regulations.	
14. TRANSPORT INFORMATION	
14.1 UN number 14.2 UN Proper shipping name 14.3 Transport hazard class(es) 14.4 Packing group 14.5 Environmental hazards 14.6 Special precautions for user 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable for product as supplied.	Not regulated as a dangerous good Not applicable Not applicable Not applicable Not applicable No data available Not applicable
15. REGULATORY INFORMATION	
15.1 Industrial Safety and Health Act Not applicable	

MATERIAL SAFETY DATA SHEET

Product Name

Buffer TL

15.2 Toxic Chemicals Control Act

Not applicable

15.3 Safety Control of Dangerous Substances Act

Not applicable

15.4 Wastes Control Act

In accordance with international laws and regulations of country.

15.5 Other requirements in domestic and other countries

Not applicable

16. OTHER INFORMATION**Issued date**

2016-05-17

Revision number

2

Revision date

2024-12-15

Reference

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- END OF SAFETY DATA SHEET -

SAFETY DATA SHEET

Product Name

Buffer TB

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name Buffer TB

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

Use of the substance or mixture Laboratory chemicals

1.3 Details of the supplier of the safety data sheet

Name GENEALL BIOTECHNOLOGY CO., LTD
 Address Geneall B/D, 303-7, Dongnam-ro, Songpa-gu, Seoul, Korea
 Information contact <+82-2-407-0096
 E-Mail (competent person) sales@geneall.com
 Emergency Telephone Number <+82-2-407-0096

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

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

Acute toxicity/oral Category 4
 Acute toxicity/inhalation Category 4
 Acute toxicity/skin Category 4
 Skin corrosion/irritation Category 1
 Serious eye damage/eye irritation Category 1

2.2 Label elements

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

Hazard pictograms



Signal word

Danger

Hazard statements

H302 Harmful if swallowed

H312 Harmful in contact with skin

H314 Causes severe skin burns and eye damage.

H332 Harmful if inhaled

Precautionary statements

Prevention

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P280 Wear protective gloves/protective clothing/eye protection/face protection

Response

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P301 + P312 If swallowed and feeling unwell, seek medical attention (consult a doctor). Rinse mouth

P301+P330+P331 If swallowed, rinse mouth. Do not induce vomiting.

P304+P340+P310: If inhaled, move to fresh air and rest in a position that is comfortable for breathing. Seek immediate medical attention (consult a doctor).

P305+P351+P338+P310: If in eyes, rinse cautiously with water for several minutes. Remove contact lenses if possible. Continue rinsing. Seek immediate medical attention (consult a doctor).

P363 Wash contaminated clothing before reuse.

Storage

P405 Store locked up.

Disposal

P501 Dispose of contents/container in accordance with all applicable environmental laws and regulations.

2.3 Other Non-GHS Classification

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture

Mixture

Substance name

CAS No.

Concentration (%)

GUANIDINE THIOCYANATE

593-84-0

50-60

4. FIRST AID MEASURES

4.1 Description of first aid measures

General informations

Notify doctor/physician about the substance to take necessary actions.

Following eye contact

Rinse cautiously with water for at least 15 minutes.
Remove contact lenses. Get medical advice/attention.

Following skin contact

If on skin (or hair), remove all contaminated clothing. Rinse skin with water/shower.
Seek medical attention (consult a doctor).

Following inhalation

If inhaled and breathing becomes difficult, move to fresh air and rest in a position that is comfortable for breathing.

Following ingestion

If not breathing, perform artificial respiration. Seek medical attention (consult a doctor).
If you feel unwell, seek medical advice/attention.
Do not induce vomiting. Rinse the mouth with water.
Never give anything to eat to an unconscious person.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

For this substance, use alcohol foam, carbon dioxide, or water spray for extinguishing.
For suffocation fires, use dry sand or soil.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting

No data available

5.3 Precautions for fire-fighters

Special protective equipment for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

No information available.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions

Avoid inhaling dust, fumes, gas, mist, vapor, or spray
Ensure proper ventilation
If safe to do so, stop the leak
Evacuate people to a safe area

6.2 Environmental precautions

Environmental precautions

Avoid dispersal of spill material and run off into waterway, sewers, drainage, or contained areas. Discharge into the environment must be avoided.

6.3 Methods and material for containment and cleaning up

Method for cleaning up

Absorb spills with an inert material (e.g., dry sand or soil), collect it in a chemical waste container, and dispose of it as hazardous waste
Do not wash away with water

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling

Avoid contact with eyes or skin
Avoid inhaling dust, fumes, gas, mist, vapor, or spray
Do not eat, drink, or smoke while using this product
Use only in well-ventilated areas
Follow all MSDS/label precautionary measures as the product may still leave residues even after the container is emptied
Handle and store with care
Open the container carefully before use

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Store in a dark, cool place.
Keep the container tightly sealed and store in a dry, well-ventilated area.
Carefully reseal opened containers and prevent them from tipping to avoid leakage.
Keep away from food and beverages.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Exposure standards

Does not contain substances with established exposure limits.

8.2 Exposure controls

No data available

8.3 Personal protective equipment

Respiratory protection

Wear respiratory protective equipment certified by the Korean Occupational Safety and Health Agency (KOSHA) that matches the physicochemical properties of the substance to which you are exposed.

Suitable eye protection

Use tightly fitting safety glasses or face shields. Use shaded lenses or safety goggles certified under KOSHA standards.

Hand protection

Use protective gloves certified by KOSHA. Inspect gloves before use. Dispose of contaminated gloves according to legal requirements and Good Laboratory Practice (GLP), then wash and dry hands.

Skin and body protection

Use chemical-resistant full-body protective clothing. Choose the type of protective gear based on the concentration and amount of hazardous substances in the specific work environment.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state

liquid

Color

Colorless

Odor

Characteristic

Odour Threshold

No data available

pH

7 – 8

Melting point/freezing point

No data available

Boiling point/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
Solubility (ies)	No data available
Vapour density	No data available
Specific gravity	No data available
Partial coefficient n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Molecular weight	No data available
Explosive properties	No data available
Oxidizing properties	No data available

9.2 Other information

No data available

10. STABILITY AND REACTIVITY

10.1 Chemical stability and possibility of hazardous reactions

Stable under recommended conditions.
Hazardous decomposition generated from a fire.

10.2 Conditions to avoid

No data available

10.3 Materials to avoid

No data available

10.4 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions.
– Carbon oxides, Nitrogen Oxides, Sulfur Oxides, Hydrogen cyanide, Ammonia

11. TOXICOLOGICAL INFORMATION

11.1 Information on the likely routes of exposure

Inhalation	Harmful if inhaled. The substance is very harmful to mucous membranes and the upper respiratory tract.
Ingestion	Harmful if swallowed. Causes burns.
Skin	Harmful if absorbed through the skin. Causes skin burns.
Eyes	Causes eye burns.
Worsened medical conditions	May cause neurological effects.

11.2 Health hazard information

Acute toxicity	Harmful if swallowed, in contact with skin, or if inhaled
Skin corrosion/irritation	Causes severe skin burns (corrosive).
Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory or skin sensitisation	No data available
Skin sensitiation	No data available
Carcinogenicity	According to IARC, no component of this product present at 0.1% or more is classified as a probable, possible, or confirmed human carcinogen.
Germ cell mutagenicity	No data available
Reproductive toxicity	No data available
STOT – single exposure	May cause irritation to respiratory tract (based on corrosive properties).

STOT – repeated exposure	No data available
Aspiration hazard	No data available

12. ECOLOGICAL INFORMATION

12.1 Ecotoxicity

Toxicity to fish	No data available
Toxicity to algae/aquatic plants	No data available
Toxicity to microorganisms	No data available

12.2 Persistence and degradability

<u>Persistence</u>	No data available
<u>Degradability</u>	No data available

12.3 Bioaccumulative potential

<u>Bioaccumulation</u>	No data available
<u>Biodegradability</u>	No data available

12.4 Mobility in soil No data available

12.5 Other adverse effects No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Dispose of in accordance with all applicable environmental laws and regulations.

13.2 Disposal considerations

Dispose of in accordance with all applicable environmental laws and regulations.

14. TRANSPORT INFORMATION

14.1 UN number Not applicable

14.2 UN Proper shipping name Not applicable

14.3 Transport hazard class(es) Not applicable

14.4 Packing group Not applicable

14.5 Environmental hazards Not applicable

14.6 Special precautions for user Not applicable

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

15. REGULATORY INFORMATION

15.1 Regulations under the Occupational Safety and Health Act

Hazardous Substances Requiring Permission	Not applicable
Prohibited Hazardous Substances for Manufacturing:	Not applicable
Carcinogenic Substances	Not applicable
Factors Subject to Workplace Environment Measurement	Not applicable
Hazardous Factors Requiring Special Health Examinations	Not applicable
Controlled Substances	Not applicable

15.2 Regulations under the Chemical Substances Control Act

Toxic Substances	Not applicable
Observation Substances	Not applicable
Restricted Substances	Not applicable
Prohibited Substances	Not applicable
Emergency Response Substances	Not applicable

15.3 Regulations under the Dangerous Substances Safety Management Act

Not classified as dangerous substances

15.4 Regulations under the Waste Management Act

Must be handled according to Article 13 of the Waste Management Act on waste disposal

15.5 Other requirements in domestic and other countries Not applicable for product as supplied.

16. OTHER INFORMATION

Issued date

2016-10-31

Revision number

2

Revision date

2024-06-30

Reference

Sigma Aldrich Korea (www.sial.co.kr)

National Emergency Management Agency(<http://hazmat.nema.go.kr/index.jsp>)

lookchem

National Emergency Management Agency(<http://hazmat.nema.go.kr/index.jsp>)

Quantitative Structure Activity Relation(QSAR)

Registry of Toxic Effects of Chemical Substances

Quantitative Structure Activity Relation(QSAR)

Quantitative Structure Activity Relation(QSAR)(

EPI Suite

Quantitative Structure Activity Relation(QSAR)

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- END OF SAFETY DATA SHEET-

MATERIAL SAFETY DATA SHEET

Product Name

Buffer TW

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name Buffer TW

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

Use of the substance or mixture Laboratory chemicals

1.3 Details of the supplier of the safety data sheet

Name GENEALL BIOTECHNOLOGY CO., LTD
 Address GeneAll Bldg., 303-7, Dongnam-ro, Songpa-gu, Seoul, 05729, Korea
 Information contact <+82-2-407-0096
 E-Mail (competent person) sales@geneall.com
 Emergency Telephone Number <+82-2-407-0096

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

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

This product is NOT classified as regulated substance and NOT subject to label elements.

2.2 Label elements

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

Hazard pictograms No data available
 Signal word No data available
 Hazardous statements No data available
 Precautionary statements
 Prevention No data available
 Response No data available
 Storage No data available
 Disposal No data available

2.3 Other Non-GHS Classification

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance name

CAS No.

Concentration (%)

No hazard substance

4. FIRST AID MEASURES

4.1 Description of first aid measures

General informations Notify doctor/physician about the substance to take necessary actions.
 Following eye contact Immediately flush the eyes with water over 20 minutes.
 Immediately get medical advice/attention.
 Following skin contact In case of contact with substance, flush the skin immediately with water for at least 20 minutes.
 Remove contaminated clothing and footwear and isolate contaminated areas.
 Following inhalation Move in fresh air.
 Get medical advice/attention, if you feel unwell.
 Following ingestion Rinse the mouth. Do not try vomiting.
 Get medical advice/attention, if you feel unwell.

MATERIAL SAFETY DATA SHEET

Product Name	Buffer TW
Skin and body protection	Wear suitable chemical-resistant clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	liquid
Color	colorless
Odor	No data available
Odour Threshold	No data available
pH	7-8
Melting point/freezing point	No data available
Boiling point/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	-/-
Vapour pressure	No data available
Solubility (ies)	No data available
Vapour density	No data available
Specific gravity	No data available
Partial coefficient n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Molecular weight	No data available

9.2 Other information

No data available

10. STABILITY AND REACTIVITY

10.1 Chemical stability and possibility of hazardous reactions

Stable in the recommended storage conditions.
 Stable under normal pressure and room temperature condition.
 Non- flammable : this material does not burn but may evolve corrosive/toxic fumes when heated.

10.2 Conditions to avoid

No data available

10.3 Materials to avoid

No data available

10.4 Hazardous decomposition products

No data available

11. TOXICOLOGICAL INFORMATION

11.1 Routes of exposure

No data available

11.2 Information on toxicological effects

MATERIAL SAFETY DATA SHEET

Product Name	Buffer TW
<u>Acute toxicity</u>	
Oral	No data available.
Dermal	No data available.
Inhalation	No data available.
<u>Skin corrosion/irritation</u>	No data available.
<u>Serious eye damage/eye irritation</u>	No data available.
<u>Respiratory sensitisation</u>	No data available.
<u>Skin sensitisation</u>	No data available.
<u>Carcinogenicity</u>	No data available.
<u>Genotoxicity</u>	No data available.
<u>Reproductive toxicity</u>	No data available.
<u>Specific target organ toxicity - single exposure</u>	No data available.
<u>Specific target organ toxicity - repeated exposure</u>	No data available.
<u>Other harmful effects</u>	No data available.
12. ECOLOGICAL INFORMATION	
12.1 Toxicity	
<u>Toxicity to Fish</u>	No data available.
<u>Toxicity to Crustacean</u>	No data available.
<u>Toxicity to Algae</u>	No data available.
12.2 Persistnece and degradability	
<u>Persistence</u>	No data available.
<u>Degradability</u>	No data available
12.3 Bioaccumulative potential	
<u>Bioaccumulation</u>	No data available
<u>Biodegradability</u>	No data available
12.4 Mobility in soil	No data available

MATERIAL SAFETY DATA SHEET

Product Name	Buffer TW
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12.5 Other adverse effects No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Dispose of in accordance with all applicable environmental laws and regulations.

13.2 Disposal considerations

Dispose of in accordance with all applicable environmental laws and regulations.

14. TRANSPORT INFORMATION

14.1 UN number

This product is NOT categorized under UN number

14.2 UN Proper shipping name

Not applicable

14.3 Transport hazard class(es)

Not applicable

14.4 Packing group

Not applicable

14.5 Environmental hazards

Not applicable

14.6 Special precautions for user

Not applicable

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

15. REGULATORY INFORMATION

15.1 Industrial Safety and Health Act

No data available

15.2 Toxic Chemicals Control Act

No data available

15.3 Safety Control of Dangerous Substances Act

No data available

15.4 Wastes Control Act

Designated waste

15.5 Other requirements in domestic and other countries

Not applicable

16. OTHER INFORMATION

Issued date

2016-10-31

Revision number

1

Revision date

2023-08-22

Reference

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

MATERIAL SAFETY DATA SHEET

Product Name

Buffer BW

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name Buffer BW

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

Use of the substance or mixture Laboratory chemicals

1.3 Details of the supplier of the safety data sheet

Name GENEALL BIOTECHNOLOGY CO., LTD
 Address GeneAll Bldg., 303-7, Dongnam-ro, Songpa-gu, Seoul, 05729, Korea
 Information contact <+82-2-407-0096
 E-Mail (competent person) sales@geneall.com
 Emergency Telephone Number <+82-2-407-0096

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

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

Acute oral toxicity	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Specific Target Organ toxicity (single exposure)	Category 3

2.2 Label elements

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

Hazard pictograms



Signal word

Warning

Hazardous statements

H302 Harmful if swallowed.
 H315 Causes skin irritation.
 H319 Causes serious eye irritation.
 H335 May cause respiratory irritation.

Precautionary statements

Prevention

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
 P264 Wash skin/hands thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P271 Handle it only outdoors or in a well-ventilated area.
 P280 Wear protective gloves/protective clothing/eye protection/face protection

Response

P301+P312 IF SWALLOWED: Consult with doctor if you feel unwell.
 P302+P352 IF ON SKIN: Wash with soap and water.
 P304+P340 IF INHALED: Move patients into fresh air and help them to get rest.
 P305+P351+P338 IF IN EYES: Rinse with water attentively for several minutes.
 Remove contact lenses, if possible. Keep washing.
 P312 Consult with doctor if you feel unwell.
 P330 Rinse mouth.
 P332+P313 If skin irritation occurs: Get medical advice/attention.
 P337+P313 If eye irritation persists: Get medical advice/attention.
 P362 Take off contaminated clothing and wash before reuse.

Storage

P403 + P233 Keep container tightly closed and store in a well-ventilated place.
 P405 Store it being locked up.

Disposal

P501 Dispose of contents/container to in accordance with all applicable environmental laws and regulations.

2.3 Other Non-GHS Classification

MATERIAL SAFETY DATA SHEET

Product Name

Buffer BW

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance name	CAS No.	Concentration (%)
Guanidinium chloride	50-01-1	70 - 80

4. FIRST AID MEASURES

4.1 Description of first aid measures

General informations	Notify doctor/physician about the substance to take necessary actions.
Following eye contact	Immediately flush the eyes with water for minutes. Remove contact lenses, if possible. Keep washing. Get medical advice/attention, if symptom persists.
Following skin contact	Immediately flush the eyes and skin with water for more than 20 minutes. Get medical advice/attention. Take off contaminated clothing and wash before reuse.
Following inhalation	If exposed to excessive dust or fumes, remove them with clean air. Seek medical attention if you experience coughing or other symptoms.
Following ingestion	Rinse your mouth immediately. Call a POISON CENTER or doctor/physician if you feel unwell. Use proper respiratory medical device and do not try artificial respiration.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	No data available
Risks	No data available

4.3 Indication of any immediate medical attention and special treatment needed

Special treatment	No data available
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5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	powder fire extinguisher, dry sand or dirt
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5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting	No data available
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5.3 Precautions for fire-fighters

Special protective equipment for firefighters	Wear appropriate protective apparatus. Extinguish while maintaining safe distance away from fire areas.
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5.4 Further information

No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. Immediately clean spills and see section 5.3. Note the substances and conditions to avoid. If not dangerous, stop the leak. Note the substances and conditions to avoid.
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6.2 Environmental precautions

Environmental precautions	Avoid spread into waterway, sewers, drains, or confined areas.
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6.3 Methods and material for containment and cleaning up

MATERIAL SAFETY DATA SHEET

Product Name

Buffer BW

Method for cleaning up

Soak up with inert absorbent material and place into the containers for chemical waste.
Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling

Do NOT eat, drink or smoke when using this product.
Empty containers may retain product residue and can be hazardous.
Observe all precautionary measures on SDS and product labels.
Take caution in handling and storage.
Carefully remove the cap.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Store in a well-ventilated area. Keep the container tightly sealed.

7.3 Specific end use(s)

Specific end use(s)

Laboratory chemicals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

KOSHA exposure limits

No data available

ACGIH exposure limits

No data available

Biological Exposure Indices (BEIs)

No data available

8.2 Exposure controls

Use appropriate engineering controls such as process enclosure, local exhaust ventilation, or maintaining airborne concentrations below recommended exposure limits.
Emergency eye wash stations and safety showers should be readily available near the area of use.

8.3 Personal protective equipment

Respiratory protection

Wear suitable protection for respiration tested and approved under appropriate government standards.
Select protective gear according to the physical and chemical properties of the exposed material.

Suitable eye protection

Wear suitable protection for eyes tested and approved under appropriate government standards.

Hand protection

Wear suitable gloves tested and approved under appropriate government standards.
Wash and dry hands. Check gloves before use.
Dispose of gloves after use according to relevant regulations and GLP standards.
Wash and dry hands.

Skin and body protection

Wear suitable chemical-resistant clothing.
Choose protective tools according to the concentration and amount of material in the work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	liquid
Color	Colorless
Odor	No data available
Odour Threshold	No data available
pH	7.0-8.0
Melting point/freezing point	No data available
Boiling point/boiling range	No data available
Flash point	No data available

MATERIAL SAFETY DATA SHEET

Product Name	Buffer BW
Evaporation rate	No data available
Flammability (soild, gas)	No data available
Upper/lower flammability or explosive limits	No data available
Vapour pressure	No data available
Solubility (ies)	No data available
Vapour density	No data available
Specific gravity	No data available
Partial coefficient n-octanol/water	No data available
Auto-ignition temperature	Not determined
Decomposition temperature	No data available
Viscosity	No data available
Molecular weight	No data available

9.2 Other information

No data available

10. STABILITY AND REACTIVITY

10.1 Chemical stability and possibility of hazardous reactions

Stable under recommended storage conditions

10.2 Conditions to avoid

Heat, spark, reducing substance

10.3 Materials to avoid

Strong oxidizing agents, strong bases, strong acids, metals

10.4 Hazardous decomposition products

Can burn in fire, releasing irritating and toxic gases due to thermal decomposition or combustion.

11. TOXICOLOGICAL INFORMATION

11.1 Routes of exposure

No data available

11.2 Information on toxicological effects

Acute toxicity

Oral

Harmful if swallowed.

Dermal

No data available

Inhalation

No data available

Skin corrosion/irritation

Causes skin irritation.

Serious eye damage/eye irritation

Causes serious eye irritation.

Respiratory sensitisation

No data available

Skin sensitisation

MATERIAL SAFETY DATA SHEET

Product Name	Buffer BW
	No data available
<u>Carcinogenicity</u>	No data available
<u>Genotoxicity</u>	No data available
<u>Reproductive toxicity</u>	No data available
<u>Specific target organ toxicity - single exposure</u>	No data available
<u>Specific target organ toxicity - repeated exposure</u>	May cause respiratory irritation.
<u>Other harmful effects</u>	No data available
	No data available
12. ECOLOGICAL INFORMATION	
12.1 Toxicity	
<u>Toxicity to Fish</u>	No data available
<u>Toxicity to Crustacean</u>	No data available
<u>Toxicity to Algae</u>	No data available
12.2 Persistence and degradability	
<u>Persistence</u>	No data available
<u>Degradability</u>	No data available
12.3 Bioaccumulative potential	
<u>Bioaccumulation</u>	No data available
<u>Biodegradability</u>	No data available
12.4 Mobility in soil	No data available
12.5 Other adverse effects	No data available
13. DISPOSAL CONSIDERATIONS	
13.1 Waste treatment methods	
Dispose of in accordance with all applicable environmental laws and regulations.	
13.2 Disposal considerations	
Dispose of in accordance with all applicable environmental laws and regulations.	
14. TRANSPORT INFORMATION	
14.1 UN number	
Not regulated as a dangerous good	
14.2 UN Proper shipping name	
Not applicable	

MATERIAL SAFETY DATA SHEET

Product Name

Buffer BW

14.3 Transport hazard class(es)

Not applicable

14.4 Packing group

Not applicable

14.5 Environmental hazards

No data available

14.6 Special precautions for user

For personal protection see section 8.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

15. REGULATORY INFORMATION

15.1 Industrial Safety and Health Act

No data available

15.2 Toxic Chemicals Control Act

No data available

15.3 Safety Control of Dangerous Substances Act

No data available

15.4 Wastes Control Act

In accordance with international laws and regulations of country.

15.5 Other requirements in domestic and other countries

Not applicable

16. OTHER INFORMATION

Issued date

2015-01-07

Revision number

3

Revision date

2023-05-27

Reference

Corporate Solution From Thomson Micromedex
 ECB-ESIS (European Chemical Substances Information System)
 ECOTOX Database, EPA
 IUCLID Chemical Data Sheet
 International Chemical Safety Cards (ICSC)
 TOXNET, U.S. National Library of Medicine
 The Chemical Database, The Department of Chemistry at the University of Akron
 Industrial poisoning handbook, Shin Kwang Publishing Co.
 Hazardous materials information management system, National Emergency Management
 Chemicals information system, National Institute of Environmental Research

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- END OF SAFETY DATA SHEET -

MATERIAL SAFETY DATA SHEET

Product Name

Buffer AE

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name Buffer AE

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

Use of the substance or mixture Laboratory chemicals

1.3 Details of the supplier of the safety data sheet

Name GENEALL BIOTECHNOLOGY CO., LTD
 Address GeneAll Bldg., 303-7, Dongnam-ro, Songpa-gu, Seoul, 05729, Korea
 Information contact <+82-2-407-0096
 E-Mail (competent person) sales@geneall.com
 Emergency Telephone Number <+82-2-407-0096

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

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

This product is NOT classified as regulated substance and NOT subject to label elements.

2.2 Label elements

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

Hazard pictograms No data available
 Signal word No data available
 Hazardous statements No data available
 Precautionary statements
 Prevention No data available
 Response No data available
 Storage No data available
 Disposal No data available

2.3 Other Non-GHS Classification

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance name	CAS No.	Concentration (%)
No hazard substance		

4. FIRST AID MEASURES

4.1 Description of first aid measures

General informations Notify doctor/physician about the substance to take necessary actions.
 Following eye contact Immediately flush the eyes with water over 20 minutes.
 Immediately get medical advcie/attention.
 Following skin contact In case of contact with substance, flush the skin immediately with water for at least 20 minutes.
 Remove contaminated clothing and footwear and isolate contaminated areas.
 Following inhalation Move in fresh air.
 Get medical advice/attention, if you feel unwell.
 Following ingestion Rinse the mouth. Do not try vomiting.
 Get medical advice/attention, if you feel unwell.

MATERIAL SAFETY DATA SHEET

Product Name

Buffer AE

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Small fire: dry sand, dry chemical, alcohol- resistant foam, water spray, regular foam, carbon dioxide

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting

Inhalation or vapor or contact with substance may cause contamination and result in hazardous effects.

5.3 Precautions for fire-fighters

Special protective equipment for firefighters

Wear appropriate protective apparatus. Leak may cause contamination. Move the containers from fire, if not dangerous.

5.4 Further information

No information available.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions

Avoid contact without proper protective apparatus.
Avoid contact with eyes, skin, clothing.

6.2 Environmental precautions

Environmental precautions

Avoid release to the environment.

6.3 Methods and material for containment and cleaning up

Method for cleaning up

Dispose it after store in proper sealed containers.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling

Avoid prolonged or repeated contact with skin.
Avoid contact with eyes, skin and clothing.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Store sealed.
Maintain at low temperatures and avoid direct sunlight.

7.3 Specific end use(s)

Specific end use(s)

Laboratory chemicals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

KOSHA exposure limits

No data available

ACGIH exposure limits

No data available

Biological Exposure Indices (BEIs)

No data available

8.2 Exposure controls

No information available.

MATERIAL SAFETY DATA SHEET

Product Name

Buffer AE

8.3 Personal protective equipment

Respiratory protection	No information available.
Suitable eye protection	Wear suitable protection for eyes.
Hand protection	Wear suitable chemical-resistant gloves.
Skin and body protection	Wear suitable chemical-resistant clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	liquid
Color	colorless
Odor	Distinctive odor
Odour Threshold	No data available
pH	8-9
Melting point/freezing point	No data available
Boiling point/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	-/-
Vapour pressure	No data available
Solubility (ies)	No data available
Vapour density	No data available
Specific gravity	No data available
Partial coefficient n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Molecular weight	No data available

9.2 Other information

No data available

MATERIAL SAFETY DATA SHEET

Product Name

Buffer AE

10. STABILITY AND REACTIVITY

10.1 Chemical stability and possibility of hazardous reactions

Stable in the recommended storage conditions.

Stable under normal pressure and room temperature condition.

Non- flammable : this material does not burn but may evolve corrosive/toxic fumes when heated.

10.2 Conditions to avoid

No data available

10.3 Materials to avoid

No data available

10.4 Hazardous decomposition products

No data available

11. TOXICOLOGICAL INFORMATION

11.1 Routes of exposure

No data available

11.2 Information on toxicological effects

Acute toxicity

Oral

No data available.

Dermal

No data available.

Inhalation

No data available.

Skin corrosion/irritation

No data available.

Serious eye damage/eye irritation

No data available.

Respiratory sensitisation

No data available.

Skin sensitisation

No data available.

Carcinogenicity

No data available.

Genotoxicity

No data available.

Reproductive toxicity

No data available.

Specific target organ toxicity - single exposure

No data available.

Specific target organ toxicity - repeated exposure

No data available.

Other harmful effects

No data available.

MATERIAL SAFETY DATA SHEET

Product Name

Buffer AE

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to Fish

No data available.

Toxicity to Crustacean

No data available.

Toxicity to Algae

No data available.

12.2 Persistence and degradability

Persistence

No data available.

Degradability

No data available

12.3 Bioaccumulative potential

Bioaccumulation

No data available

Biodegradability

No data available

12.4 Mobility in soil

No data available

12.5 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Dispose of in accordance with all applicable environmental laws and regulations.

13.2 Disposal considerations

Dispose of in accordance with all applicable environmental laws and regulations.

14. TRANSPORT INFORMATION

14.1 UN number

This product is NOT categorized under UN number

14.2 UN Proper shipping name

Not applicable

14.3 Transport hazard class(es)

Not applicable

14.4 Packing group

Not applicable

14.5 Environmental hazards

Not applicable

14.6 Special precautions for user

Not applicable

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

MATERIAL SAFETY DATA SHEET

Product Name

Buffer AE

15. REGULATORY INFORMATION

15.1 Industrial Safety and Health Act

Not applicable

15.2 Toxic Chemicals Control Act

Not applicable

15.3 Safety Control of Dangerous Substances Act

Not applicable

15.4 Wastes Control Act

Designated waste

15.5 Other requirements in domestic and other countries

Not applicable

16. OTHER INFORMATION

Issued date

2016-10-28

Revision number

1

Revision date

2023-08-21

Reference

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- END OF SAFETY DATA SHEET -

MATERIAL SAFETY DATA SHEET

Product Name

Proteinase K

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name Proteinase K

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

Use of the substance or mixture Laboratory chemicals

1.3 Details of the supplier of the safety data sheet

Name GENEALL BIOTECHNOLOGY CO., LTD
 Address GeneAll Bldg., 303-7, Dongnam-ro, Songpa-gu, Seoul, 05729, Korea
 Information contact <+82-2-407-0096
 E-Mail (competent person) sales@geneall.com
 Emergency Telephone Number <+82-2-407-0096

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

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

Respiratory sensitization Category 1
 Skin corrosion/irritation Category 2
 Serious eye damage/eye irritation Category 2

2.2 Label elements

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

Hazard pictograms



Signal word

Warning

Hazardous statements

H315 Causes skin irritation.
 H319 Causes serious eye irritation.
 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Precautionary statements

Prevention

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
 P264 Wash skin/hands thoroughly after handling.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P284 Wear respiratory protection.

Response

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 P332+P313 If skin irritation occurs: Get medical advice/ attention.
 P337+P313 If eye irritation persists: Get medical advice/ attention.
 P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER/ doctor.
 P362+P364 Take off contaminated clothing and wash before reuse.

Storage

No data available.

Disposal

P501 Dispose of contents/container to in accordance with all applicable environmental laws and regulations.

2.3 Other Non-GHS Classification

None

3. COMPOSITION/INFORMATION ON INGREDIENTS

MATERIAL SAFETY DATA SHEET

Product Name	Proteinase K		
Substance name	CAS No.	Concentration (%)	
Proteinase K	39450-01-6	100	

4. FIRST AID MEASURES

4.1 Description of first aid measures

General informations	Notify doctor/physician about the substance to take necessary actions.
Following eye contact	Immediately flush the eyes with water for at least 15 minutes. Remove contact lenses. Continue rinsing. If present and easy to do, get immediate medical advice/attention.
Following skin contact	In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.
Following inhalation	After inhalation: fresh air. Call in physician.
Following ingestion	After swallowing: immediately make victim drink water (two glasses at most). Consult with physician.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

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

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting Nature of decomposition products not known.

5.3 Precautions for fire-fighters

Special protective equipment for firefighters Stay in danger area only with self-contained breathing apparatus.
Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information

No information available.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation.
Evacuate the danger area, observe emergency procedures, consult with an expert.

6.2 Environmental precautions

Environmental precautions Prevent the leak.

6.3 Methods and material for containment and cleaning up

Method for cleaning up Cover drains. Collect, bind, and pump off spills.
Observe possible material restrictions (see sections 7 and 10).
Take up carefully. Dispose of properly. Clean up affected area.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling Do not inhale substance/mixture. Immediately change contaminated clothing.
Take caution in handling and storage. Apply preventive skin protection.

7.2 Conditions for safe storage, including any incompatibilities

MATERIAL SAFETY DATA SHEET

Product Name	Proteinase K
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Requirements for storage rooms and vessels

Tightly closed.
Keep locked up or in an area accessible only to those qualified or authorized.
Store at +2°C to +8°C.

7.3 Specific end use(s)

Specific end use(s)

Laboratory chemicals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

KOSHA exposure limits

No data available

ACGIH exposure limits

No data available

Biological Exposure Indices (BEIs)

No data available

8.2 Exposure controls

Immediately change contaminated clothing.
Apply preventive skin protection. Wash hands and face after working with substance.

8.3 Personal protective equipment

Respiratory protection

For nuisance exposures, use type P95 (US) or type P1 (EU EN 143) particle respirator.
For higher level protection, use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges.
Use respirators and components tested and approved.

Suitable eye protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Hand protection

Wear suitable gloves tested and approved under appropriate government standards such as KOSHA.
Check gloves before use.
Dispose of gloves after use according to relevant regulations. Wash and dry hands.

Skin and body protection

Wear suitable chemical-resistant clothing.
Choose protective tools according to the concentration and amount of material in the work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	liquid
Color	white or clear
Odor	No odor
Odour Threshold	No data available
pH	No data available
Melting point/freezing point	No data available
Boiling point/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
Solubility (ies)	No data available
Vapour density	No data available
Specific gravity	No data available

MATERIAL SAFETY DATA SHEET

Product Name	Proteinase K
Partial coefficient n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Molecular weight	No data available

9.2 Other information

No data available

10. STABILITY AND REACTIVITY

10.1 Chemical stability and possibility of hazardous reactions

Stable under recommended storage conditions.
Stable under normal pressure and room temperature condition.

10.2 Conditions to avoid

No data available.

10.3 Materials to avoid

Strong oxidizing agents.

10.4 Hazardous decomposition products

In the event of fire: see section 5.

11. TOXICOLOGICAL INFORMATION

11.1 Routes of exposure

No data available

11.2 Information on toxicological effects

Acute toxicity

Oral

No data available.

Dermal

No data available.

Inhalation

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin corrosion/irritation

No data available.

Serious eye damage/eye irritation

Causes serious eye irritation.

Respiratory sensitisation

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin sensitisation

Causes skin irritation.

Carcinogenicity

IARC

identified as probable, possible or confirmed human carcinogen by IARC.

OSHA

No data available.

ACGIH

MATERIAL SAFETY DATA SHEET

Product Name	Proteinase K
	No data available.
NTP	No data available.
EU CLP	No data available.
<u>Genotoxicity</u>	No data available.
<u>Reproductive toxicity</u>	No data available.
<u>Specific target organ toxicity - single exposure</u>	No data available.
<u>Specific target organ toxicity - repeated exposure</u>	No data available.
<u>Other harmful effects</u>	No data available.
12. ECOLOGICAL INFORMATION	
12.1 Toxicity	
<u>Toxicity to Fish</u>	No data available.
<u>Toxicity to Crustacean</u>	No data available.
<u>Toxicity to Algae</u>	No data available.
12.2 Persistnece and degradability	
<u>Persistence</u>	No data available.
<u>Degradability</u>	No data available
12.3 Bioaccumulative potential	
<u>Bioaccumulation</u>	No data available
<u>Biodegradability</u>	No data available
12.4 Mobility in soil	No data available
12.5 Other adverse effects	No data available
13. DISPOSAL CONSIDERATIONS	
13.1 Waste treatment methods	
Dispose of in accordance with all applicable environmental laws and regulations.	
13.2 Disposal considerations	
Dispose of contents/container in accordance with all applicable environmental laws and regulations.	
14. TRANSPORT INFORMATION	
14.1 UN number	
Not regulated as a dangerous good	
14.2 UN Proper shipping name	

MATERIAL SAFETY DATA SHEET

Product Name	Proteinase K
	Not applicable
14.3 Transport hazard class(es)	Not applicable
14.4 Packing group	Not applicable
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	Not applicable
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable for product as supplied.

15. REGULATORY INFORMATION

15.1 Industrial Safety and Health Act

No data available

15.2 Toxic Chemicals Control Act

No data available

15.3 Safety Control of Dangerous Substances Act

No data available

15.4 Wastes Control Act

No data available

15.5 Other requirements in domestic and other countries

In accordance with international laws and regulations of country.

16. OTHER INFORMATION

Issued date

2015-05-24

Revision number

2

Revision date

2024-06-07

Reference

Corporate Solution From Thomson Micromedex
 ECB-ESIS
 ECOTOX
 IUCLID Chemical Data Sheet
 International Chemical Safety Cards (ICSC)
 TOXNET, U.S. National Library of Medicine
 The Chemical Database, The Department of Chemistry at the University of Akron
 Industrial poisoning handbook, Shin Kwang Publishing Co.
 Hazardous materials information management system, National Emergency Management
 Chemicals information system, National Institute of Environmental Research

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- END OF SAFETY DATA SHEET -

MATERIAL SAFETY DATA SHEET

Product Name

PK Storage Buffer

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name PK Storage Buffer

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

Use of the substance or mixture Laboratory chemicals

1.3 Details of the supplier of the safety data sheet

Name GENEALL BIOTECHNOLOGY CO., LTD
 Address GeneAll Bldg., 303-7, Dongnam-ro, Songpa-gu, Seoul, 05729, Korea
 Information contact <+82-2-407-0096
 E-Mail (competent person) sales@geneall.com
 Emergency Telephone Number <+82-2-407-0096

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

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

This product is NOT classified as regulated substance and NOT subject to label elements.

2.2 Label elements

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

Hazard pictograms No information available.
 Signal word No information available.
 Hazardous statements No information available.
 Precautionary statements
 Prevention No information available.
 Response No information available.
 Storage No information available.
 Disposal No information available.

2.3 Other Non-GHS Classification

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance name	CAS No.	Concentration (%)
Glycerol	56-81-5	20-55

4. FIRST AID MEASURES

4.1 Description of first aid measures

General informations Notify doctor/physician about the substance to take necessary actions.
 Following eye contact In case of contact with substance, flush the eyes immediately with water for at least 20 minutes. Immediately seek medical advice/attention.
 Following skin contact In case of contact with substance, flush the skin immediately with water for at least 20 minutes. Remove contaminated clothing and footwear and isolate contaminated areas.
 Following inhalation Remove the person into fresh air. If experiencing symptoms, get medical advice/attention.
 Following ingestion In case of ingestion, rinse mouth. Do NOT induce vomiting. If exposed or concerned, get medical advice/attention.

MATERIAL SAFETY DATA SHEET

Product Name	PK Storage Buffer
5. FIRE FIGHTING MEASURES	
5.1 Extinguishing media	
Suitable extinguishing media	Small fire: dry sand, dry chemical, alcohol-resistant foam, water spray, regular foam, carbon dioxide (suitable extinguishing media)
5.2 Special hazards arising from the substance or mixture	
Specific hazards during firefighting	Inhalation or vapor or contact with substance may cause contamination and result in hazardous effects. Inhalation of substance may be hazardous.
5.3 Precautions for fire-fighters	
Special protective equipment for firefighters	Wear self-contained breathing apparatus when fighting fire. Spills may cause contamination. If safe to do, remove container from fire area.
5.4 Further information	
No information available.	
6. ACCIDENTAL RELEASE MEASURES	
6.1 Personal precautions, protective equipment and emergency procedures	
Personal precautions	Do NOT handle damaged containers or spill without appropriate protection. Avoid contact with the eyes, skin, and clothing.
6.2 Environmental precautions	
Environmental precautions	Do NOT directly release into the environment.
6.3 Methods and material for containment and cleaning up	
Method for cleaning up	Keep in suitable, closed containers for disposal.
7. HANDLING AND STORAGE	
7.1 Precautions for safe handling	
Advice on safe handling	Avoid prolonged or repeated contact with skin. Avoid contact with the eyes, skin, and clothing.
7.2 Conditions for safe storage, including any incompatibilities	
Requirements for storage rooms and vessels	Keep the container tightly sealed. Keep cool. Protect from sunlight.
7.3 Specific end use(s)	
Specific end use(s)	Laboratory chemicals.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION	
8.1 Control parameters	
KOSHA exposure limits	No data available
ACGIH exposure limits	No data available
Biological Exposure Indices (BEIs)	No data available
8.2 Exposure controls	
	No information available.
8.3 Personal protective equipment	
Respiratory protection	No information available.

MATERIAL SAFETY DATA SHEET

Product Name	PK Storage Buffer
Suitable eye protection	Wear chemical-resistant eye and face protection.
Hand protection	Wear suitable chemical-resistant gloves.
Skin and body protection	Wear suitable chemical-resistant clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	liquid
Color	colorless
Odor	No data available
Odour Threshold	No data available
pH	7-8
Melting point/freezing point	No data available
Boiling point/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	-/-
Vapour pressure	No data available
Solubility (ies)	No data available
Vapour density	No data available
Specific gravity	No data available
Partial coefficient n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Viscosity	No data available
Molecular weight	No data available

9.2 Other information

No data available

10. STABILITY AND REACTIVITY

10.1 Chemical stability and possibility of hazardous reactions

Stable under recommended storage conditions.
Stable under normal pressure and room temperature condition.

10.2 Conditions to avoid

Heat/Spark/Flame - no smoking

10.3 Materials to avoid

No data available

10.4 Hazardous decomposition products

No data available

11. TOXICOLOGICAL INFORMATION

11.1 Routes of exposure

No data available

MATERIAL SAFETY DATA SHEET

Product Name	PK Storage Buffer
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11.2 Information on toxicological effects

Acute toxicity

Oral

No data available.

Dermal

No data available.

Inhalation

No data available.

Skin corrosion/irritation

No data available.

Serious eye damage/eye irritation

No data available.

Respiratory sensitisation

No data available.

Skin sensitisation

No data available.

Carcinogenicity

No data available.

Genotoxicity

No data available.

Reproductive toxicity

No data available.

Specific target organ toxicity - single exposure

No data available.

Specific target organ toxicity - repeated exposure

No data available.

Other harmful effects

No data available.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to Fish

No data available.

Toxicity to Crustacean

No data available.

Toxicity to Algae

No data available.

12.2 Persistence and degradability

Persistence

No data available.

Degradability

No data available.

12.3 Bioaccumulative potential

Bioaccumulation

No data available.

Biodegradability

No data available.

MATERIAL SAFETY DATA SHEET

Product Name	PK Storage Buffer
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12.4 Mobility in soil No data available

12.5 Other adverse effects No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Dispose of in accordance with all applicable environmental laws and regulations.

13.2 Disposal considerations

Dispose of in accordance with all applicable environmental laws and regulations.

14. TRANSPORT INFORMATION

14.1 UN number

This product is NOT categorized under UN number

14.2 UN Proper shipping name

Not applicable

14.3 Transport hazard class(es)

Not applicable

14.4 Packing group

Not applicable

14.5 Environmental hazards

Not applicable

14.6 Special precautions for user

Not applicable

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

15. REGULATORY INFORMATION

15.1 Industrial Safety and Health Act

No data available

15.2 Toxic Chemicals Control Act

No data available

15.3 Safety Control of Dangerous Substances Act

No data available

15.4 Wastes Control Act

Not applicable

15.5 Other requirements in domestic and other countries

In accordance with international laws and regulations of country.

16. OTHER INFORMATION

Issued date

2016-10-28

Revision number

1

Revision date

2024-06-08

Reference

MATERIAL SAFETY DATA SHEET

Product Name	PK Storage Buffer
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This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- END OF SAFETY DATA SHEET -