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Company	GENEALL BIOTECHNOLOGY CO., LTD.
Technical Phone	82-2-407-0096
Fax	82-2-407-0779
E-mail Address	geneall@geneall.com

The following MSDS included following products:

Cat. No	Product description
122-006	Exgene™ Forensic SV mini [6prep]
122-101	Exgene™ Forensic SV mini [100prep]
122-152	Exgene™ Forensic SV mini [250prep]

MATERIAL SAFETY DATA SHEET

PRODUCT NAME	Buffer HL
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1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifiers

Trade name	Buffer HL
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1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Laboratory chemicals
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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

1.4 Emergency telephone number

	+82-2-407-0096
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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]

Acute oral toxicity	Category 4
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	
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Signal word	Warning
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	H302 Harmful if swallowed.
	H315 Causes skin irritation.
	H319 Causes serious eye irritation.
	H332 May cause respiratory irritation.

Precautionary statements	
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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 Use only outdoors or in a well-ventilated area. P280 Wear protective gloves/protective clothing/eye protection/face protection.
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MATERIAL SAFETY DATA SHEET

PRODUCT NAME	Buffer HL
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Response	<p>P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.</p> <p>P302+P352 IF ON SKIN: Wash with plenty of soap and water.</p> <p>P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</p> <p>P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>P312 – Call a POISON CENTER or doctor/physician if you feel unwell.</p> <p>P330 – Rinse mouth.</p> <p>P332+P313 If skin irritation occurs: Get medical advice/attention.</p> <p>P337+P313 If eye irritation persists: Get medical advice/attention.</p>
Storage	<p>P403 + P233 Store in a well-ventilated place. Keep container tightly closed.</p> <p>P405 Store locked up.</p>
Disposal	<p>P501 Dispose of contents/container to in accordance with all applicable environmental laws and regulations.</p>

2.3 Other Non-GHS Classification

NFPA SCALE (0-4) Health=1, Flammability=1, Reactivity=0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance name	CAS No. EC No.	Concentration (%)
Guanidine hydrochloride	50-01-1	30 - 40
Ethylenediaminetetraacetic acid	6381-92-6	1.0 - 5.0

4. FIRST AID MEASURES

4.1 Description of first aid measures

General information	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	<p>IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.</p> <p>Get medical advice/attention if you feel unwell.</p> <p>Wash contaminated clothing before reuse.</p>
Following inhalation	IF exposed or concerned: Get medical advice/attention.

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PRODUCT NAME	Buffer HL
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Following ingestion

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.

Do not use mouth-to-mouth resuscitation if victim ingested or inhaled. Use proper respiratory medical device.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Risks No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Special treatment No information available.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media Use powder fire extinguisher, dry sand or dirt or CO2

5.2 Special hazards arising from the substance or mixture

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

5.3 Precautions for fire-fighters

Special protective equipment for firefighters Wear appropriate protective apparatus.

Extinguish while maintaining safe distance away from fire areas.

5.4 Further information

No information 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

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.

6.3 Methods and material for containment and cleaning up

Method for cleaning up

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal as hazardous material.

In case of small spills, absorb with sand and non-combustible material and place in container

6.4 Reference to other sections

MATERIAL SAFETY DATA SHEET

PRODUCT NAME

Buffer HL

For personal protection, see Section 8 of the SDS.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Precautions for safe handling

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
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.
Avoid prolonged or repeated contact with skin.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Store in a well-ventilated place. Keep container tightly closed.
Keep away from food and drinks.

Specific end use(s)

Laboratory chemicals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

KOSHA exposure limits

No information available.

ACGIH exposure limits

No information available.

Biological Exposure Indices (BEIs)

No information available.

8.2 Exposure controls

Appropriate engineering controls

If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limits.

Storing or utilizing this material should be equipped with an eyewash facility and a safety shower

Personal protective equipment

Respiratory protection

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

Suitable eye protection

Wear chemical-resistant eye and face protection tested and approved under appropriate government standards such as KOSHA.

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 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

Light yellow

Odor

No odor

Odor threshold

No data available.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME

Buffer HL

pH	7~8
Melting point/freezing point	No data available.
Initial 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.
Vapor pressure	No data available.
Solubility(ies)	No data available.
Vapor 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 safety information

No data available.

10. STABILITY AND REACTIVITY
10.2 Chemical stability and possibility of hazardous reactions

No pyrolysis if stored and applied as directed.
 Non-flammable: This material does not burn but may evolve corrosive/toxic fumes when heated.

10.3 Conditions to avoid

Heat, spark, reducing substance.

10.4 Incompatible materials

Strong oxidizing agents, strong bases, strong acids, metals

10.5 Hazardous decomposition products

Guanidinium chloride

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

11. TOXICOLOGICAL INFORMATION
11.1 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/irritation	No data available.
Respiratory sensitisation	No data available.
Skin sensitisation	No data available.
Carcinogenicity	
IARC	No data available.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME

Buffer HL

OSHA	No data available.
ACGIH	No data available.
NTP	No data available.
EU CLP	No data available.
Germ cell mutagenicity	No data available.
Reproductive toxicity	
STOT (SE)	No data available.
STOT (RE)	No data available.
Aspiration hazard	No data available.

11.2 Routes of exposure

Routes of exposure May cause irritation.

12. ECOLOGICAL INFORMATION

12.1 Toxicity	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 Results of PBT and vPvB assessment	No data available.
12.6 Other adverse effects	No data available.

13. DISPOSAL CONSIDERATIONS
13.1 Waste treatment methods

Dispose 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

ARD/RID	Not regulated as a dangerous good
IMDG	Not regulated as a dangerous good
IATA	Not regulated as a dangerous good

14.2 UN proper shipping name

ARD/RID	Not applicable.
IMDG	Not applicable.
IATA	Not applicable.

14.3 Transport hazard class(es)

ARD/RID	Not applicable.
IMDG	Not applicable.
IATA	Not applicable.

14.4 Packing group

ARD/RID	Not applicable.
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MATERIAL SAFETY DATA SHEET

PRODUCT NAME	Buffer HL
IMDG	Not applicable.
IATA	Not applicable.
14.5 Environmental hazards	
ARD/RID	No data available.
IMDG	No data available.
IATA	No data available.
14.6 Special precautions for users	
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 Safety, health and environmental regulations/legislation specific for the substance or mixture	
The Industrial Safety and Health Law in Korea	No data available.
Toxic Chemical Control Act	No data available.
Dangerous Material Safety Control Act	No data available.
Wastes Management Act	Dispose or as hazardous waste in compliance with local and national regulations
Other requirements in domestic and other countries	Not applicable.
Domestic regulations	
Persistent Organic Pollutants Regulation	Not applicable.
International regulations	
US OSHA Hazards	Not applicable.
US CERCLA/Superfund	Not applicable.
US EPCRA Section 302	Not applicable.
US EPCRA Section 304	Not applicable.
US EPCRA Section 313	Not applicable.
US Rotterdam Convention (PICs)	Not applicable.
US Stockholm Convention (POPs)	Not applicable.
US Montreal Protocol (ODSs)	Not applicable.
16. OTHER INFORMATION	
Issued date	
2024-06-28	
Revision number	
0	
Revision date	
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)	

MATERIAL SAFETY DATA SHEET

PRODUCT NAME	Buffer HL
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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

IUCLID

ECHA, HSDB

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 BL

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

1.1 Product identifier

Product name Buffer BL

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
Chronic aquatic toxicity	Category 4

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.
 H413 May cause long lasting harmful effects to aquatic life.

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.
 P273 Do not release to the environment.
 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+P364 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.

MATERIAL SAFETY DATA SHEET

Product Name

Disposal

Buffer BL

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

2.3 Other Non-GHS Classification

Health=1, Flammability=1, Reactivity=0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance name	CAS No.	Concentration (%)
Guanidinium chloride	50-01-1	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	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 or concerned: Get medical advice/attention.
Following ingestion	Get medical advice/attention, if you feel unwell. Rinse the mouth. 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 information 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.
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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

MATERIAL SAFETY DATA SHEET

Product Name

Buffer BL

Method for cleaning up

Soak up with inert absorbent material and place into the containers for chemical waste.
In case of small spills, absorb with sand and non-combustible material and place in container.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
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.
Avoid prolonged or repeated contact with skin.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed and store in a well- ventilated place.
Keep away from food and drinks.

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

If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limits.
Install facilities for wash and shower to use the material.

8.3 Personal protective equipment

Respiratory protection

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

Suitable eye protection

Use tightly fitting safety goggles or face 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.
Inspect gloves before use.
After use, dispose of contaminated gloves in accordance with relevant regulations and guidelines.
Wash and dry hands thoroughly.

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	Light yellow
Odor	No data available
Odour Threshold	No data available
pH	7.0-8.0
Melting point/freezing point	No data available

MATERIAL SAFETY DATA SHEET

Product Name	Buffer BL
Boiling point/boiling range	No data available
Flash point	No data available
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	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

No pyrolysis, if stored and handled as directed.

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

10.2 Conditions to avoid

Heat, spark, flame

10.3 Materials to avoid

Strong oxidizing agents, strong bases, strong acids, metals

10.4 Hazardous decomposition products

Highly toxic gases can be generated by pyrolysis or combustion during burning.

11. TOXICOLOGICAL INFORMATION

11.1 Routes of exposure

May cause irritation.

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

MATERIAL SAFETY DATA SHEET

Product Name	Buffer BL
	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>	May cause respiratory irritation.
<u>Specific target organ toxicity - repeated exposure</u>	No data available
	No data available
<u>Other harmful effects</u>	May cause long lasting harmful effects to aquatic life.
12. ECOLOGICAL INFORMATION	
12.1 Toxicity	
	May cause long lasting harmful effects to aquatic life.
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	
12.5 Other adverse effects	
	Avoid release to the environment.
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 classified as dangerous good
14.2 UN Proper shipping name	
	Not applicable
14.3 Transport hazard class(es)	
	Not applicable
14.4 Packing group	
	Not applicable

MATERIAL SAFETY DATA SHEET

Product Name

Buffer BL

14.5 Environmental hazards

No data available

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**

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

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

2023-08-23

ReferenceCorporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)ECB- ESIS(European chemical Substances Information System)(<http://ecb.jrc.it/esis>)ECOTOX Database, EPA(<http://cfpub.epa.gov/ecotox>)

IUCLID Chemical Data Sheet, EC- ECB

International Chemical Safety Cards(ICSC)(<http://www.nihs.go.jp/ICSC>)TOXNET, U.S. National Library of Medicine(<http://toxnet.nlm.nih.gov>)The Chemical Database, The Department of Chemistry at the University of Akron(<http://ull.chemistry.uakron.edu/erd>)

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 HW1

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

1.1 Product identifier

Product name Buffer HW1

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

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.

Precautionary statements

Prevention
 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.
 P330 Rinse mouth.
 P302+P352 IF ON SKIN: Wash with soap and water.
 P305+P351+P338 IF IN EYES: Rinse with water attentively for several minutes.
 Remove contact lenses, if possible. Keep washing.
 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

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

MATERIAL SAFETY DATA SHEET

Product Name	Buffer HW1		
Substance name	CAS No.	Concentration (%)	
Guanidinium chloride	50-01-1	20 - 30	
EGTA	67-42-5	0.01 – 0.05	

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 several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Get medical attention if irritation persists.
Following skin contact	Wash immediately with plenty of soap and water. If skin irritation occurs, get medical advice/attention.
Following inhalation	Move person to fresh air. If symptoms occur, obtain medical attention.
Following ingestion	Rinse mouth. Do not induce vomiting unless directed by medical personnel. Call a POISON CENTER/doctor if unwell.

4.2 Most important symptoms and effects, both acute and delayed

May cause skin irritation, serious eye irritation, and harmful effects if swallowed. These effects are consistent with guanidinium chloride hazard information

4.3 Indication of any immediate medical attention and special treatment needed

Special treatment	Treat symptomatically.
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5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	Suitable extinguishing media: Water spray, dry chemical, carbon dioxide, foam.
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5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting	Thermal decomposition may produce irritating and/or toxic fumes. Guanidinium chloride SDS identifies possible decomposition/combustion products including nitrogen oxides, carbon monoxide, carbon dioxide, and hydrogen chloride gas
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5.3 Precautions for fire-fighters

Special protective equipment for firefighters	Wear self-contained breathing apparatus and full protective equipment.
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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	Ensure adequate ventilation. Avoid contact with skin, eyes, and clothing. Wear appropriate PPE.
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6.2 Environmental precautions

Environmental precautions	Do not allow large quantities to enter drains, sewers, or waterways.
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6.3 Methods and material for containment and cleaning up

Method for cleaning up	Absorb with inert material and collect in suitable containers for disposal. Wash spill area with water after pickup if appropriate.
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7. HANDLING AND STORAGE

7.1 Precautions for safe handling

MATERIAL SAFETY DATA SHEET

Product Name	Buffer HW1
Advice on safe handling	Use only in well-ventilated areas. Avoid contact with eyes, skin, and clothing. Do not eat, drink, or smoke when using this product. Wash thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels	Keep container tightly closed in a cool, dry, well-ventilated place. Store away from incompatible materials, especially strong oxidizing agents. This incompatibility is listed in guanidinium chloride SDS data
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7.3 Specific end use(s)

Specific end use(s)	Laboratory chemicals.
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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

No occupational exposure limits were identified in the consulted guanidinium chloride SDS, and EGTA SDS reviewed did not indicate established exposure limits

8.2 Exposure controls

Engineering controls	Use process enclosure, local exhaust ventilation, or other engineering controls to keep worker exposure as low as reasonably practicable.
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8.3 Personal protective equipment

Respiratory protection	Normally not required under adequate ventilation; use suitable respiratory protection if mist/aerosol is generated
Suitable eye protection	Safety goggles or chemical splash goggles
Hand protection	Chemical-resistant gloves
Skin and body protection	Lab coat or protective clothing

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	7.0-8.0
Melting point/freezing point	Not available
Boiling point/boiling range	Not available
Flash point	Not available
Evaporation rate	No data available
Flammability (solid, gas)	Not classified as flammable
Upper/lower flammability or explosive limits	Not available
Vapour pressure	Not available
Solubility (ies)	Not available
Vapour density	Not available
Specific gravity	Not available
Partial coefficient n-octanol/water	Not available

MATERIAL SAFETY DATA SHEET

Product Name	Buffer HW1
Auto-ignition temperature	Not available
Decomposition temperature	Not available
Viscosity	Not available
Molecular weight	Not 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

Excess heat, contamination, and incompatible materials.

10.3 Materials to avoid

Strong oxidizing agents, strong bases, strong acids, metals

10.4 Hazardous decomposition products

Under fire or thermal decomposition: nitrogen oxides (NOx), carbon monoxide, carbon dioxide, hydrogen chloride, and other irritating/toxic fumes may be generated.

11. TOXICOLOGICAL INFORMATION

11.1 Routes of exposure

May cause irritation.

11.2 Information on toxicological effects

Acute toxicity

Harmful if swallowed. Guanidinium chloride SDS reports oral LD50 (rat) 475 mg/kg and inhalation LC50 (rat, 4 h) 3.2 mg/L for the pure substance

Skin corrosion/irritation

Causes skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Respiratory sensitisation

Based on available component data, classification criteria are not met for guanidinium chloride; EGTA SDS likewise does not classify for sensitization

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

MATERIAL SAFETY DATA SHEET

Product Name	Buffer HW1
	No data available
<u>Toxicity to Crustacean</u>	No data available
<u>Toxicity to Algae</u>	No data available
12.2 Persistnece and degradability	No data available
<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
14.3 Transport hazard class(es)	
	Not applicable
14.4 Packing group	
	Not applicable
14.5 Enviromental 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 Industiral Satefy and Health Act	
	No data available
15.2 Toxic Chemicals Control Act	
	No data available
15.3 Safety Control of Dangerous Substances Act	

MATERIAL SAFETY DATA SHEET

Product Name

Buffer HW1

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**

2024-06-28

Revision number**Revision date****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 HW2

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

1.1 Product identifier

Product name Buffer HW2

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

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.

Precautionary statements

Prevention P264 Wash skin/hands thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.

Response P301+P312 IF SWALLOWED: Consult with doctor if you feel unwell.
 P330 Rinse mouth.

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance name	CAS No.	Concentration (%)
Sodium Azide	26628-22-8	0.01 - 0.03
Sodium Chloride	7647-14-5	1 - 6

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 several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek medical advice if irritation persists.

MATERIAL SAFETY DATA SHEET

Product Name	Buffer HW2
Following skin contact	Wash with soap and plenty of water. Remove contaminated clothing.
Following inhalation	Move to fresh air. Get medical attention if irritation or symptoms develop.
Following ingestion	Rinse mouth with water. Do not induce vomiting unless directed by medical personnel. Seek medical advice if unwell.

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	In case of fire involving this substance, use alcohol-resistant foam, carbon dioxide, or water spray for extinguishing. For smothering/extinguishing, use dry sand or earth.
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5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting	Not combustible as supplied under normal conditions. Thermal decomposition may produce nitrogen oxides and sodium oxide or other irritating/toxic fumes.
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5.3 Precautions for fire-fighters

Special protective equipment for firefighters	Wear self-contained breathing apparatus and suitable protective equipment. Component SDSs for sodium azide identify hazardous decomposition and serious hazards for the neat substance; mixture hazards are expected to be substantially lower because of dilution
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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	Wipe up spills immediately and follow the precautions under protective equipment. Isolate the contaminated area. Keep unnecessary or unprotected personnel away. Eliminate all sources of ignition. Stop the leak if it can be done without risk. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Prevent water from entering containers. Cover with plastic sheeting to prevent spreading. Avoid generating dust. Pay attention to incompatible materials and conditions to avoid. Do not breathe dust, fumes, gas, mist, vapors, or spray. Avoid contact with eyes, skin, and clothing.
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6.2 Environmental precautions

Environmental precautions	The spilled material may be corrosive/toxic and may cause contamination. Prevent entry into waterways, sewers, basements, or confined spaces. Do not release to the environment.
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6.3 Methods and material for containment and cleaning up

Method for cleaning up	Absorb spilled material with an inert substance (for example, dry sand or earth) and place it in a chemical waste container. Absorb the liquid and wash the contaminated area with detergent and water. In case of a large spill, dike far ahead of the liquid spill for later disposal. Using a clean shovel, place the spilled material into a clean, dry container and close it loosely, then move the container away from the spill area. In case of a powder spill, cover with plastic sheeting to prevent spreading and keep dry. In case of a small spill, absorb with sand or other non-combustible material and place into a container. Collect spilled material.
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MATERIAL SAFETY DATA SHEET

Product Name

Buffer HW2

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling

Use only in well-ventilated areas.
 Even after the container has been emptied, product residue may remain; follow all precautions in the MSDS and on the label.
 Handle and store with care.
 Open the cap carefully before use.
 Avoid prolonged or repeated skin contact.
 Do not breathe vapors generated from heated material.
 Do not enter storage areas unless adequate ventilation is provided.
 Pay attention to materials and conditions to avoid.
 Refer to engineering controls and personal protective equipment when handling.
 Beware of high temperatures.
 Do not handle until all safety precaution statements have been read and understood.
 Avoid contact with eyes, skin, and clothing.
 Wash thoroughly after handling.
 Do not eat, drink, or smoke when using this product.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner or properly placed/disposed of.
 Keep away from food and beverages.
 Pay attention to materials and conditions to avoid.
 Store in a locked place.

7.3 Specific end use(s)

Specific end use(s)

Laboratory chemicals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

STEL - C 0.29mg/m3

8.2 Exposure controls

Use process enclosure, local exhaust ventilation, or other engineering controls to keep airborne levels below the exposure limits.

8.3 Personal protective equipment

Respiratory protection

Wear respiratory protective equipment certified by the Korea Occupational Safety and Health Agency (KOSHA) that is appropriate for the physicochemical properties of the substance to which exposure may occur.

Suitable eye protection

Wear vented safety goggles to protect the eyes against particulate matter that may cause eye irritation or other health hazards.

Hand protection

Wear protective gloves made of an appropriate material, taking into account the physical and chemical properties of the substance.

Skin and body protection

Wear protective clothing made of an appropriate material, taking into account the physical and chemical properties of the substance.

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

MATERIAL SAFETY DATA SHEET

Product Name	Buffer HW2
Flash point	Not applicable/ expected not flammable in aqueous form
Evaporation rate	No data available
Flammability (solid, gas)	Not expected to be flammable
Upper/lower flammability or explosive limits	No data available
Vapour pressure	No data available
Solubility (ies)	Miscible/soluble in water
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, incompatible materials, acidification, evaporation to dryness on reactive metal surfaces.

10.3 Materials to avoid

Acids; copper; lead; brass; silver; heavy-metal salts.

10.4 Hazardous decomposition products

Nitrogen oxides, hydrazoic acid, sodium oxides

11. TOXICOLOGICAL INFORMATION

11.1 Routes of exposure

Eye contact, skin contact, ingestion, inhalation of mist.

11.2 Information on toxicological effects

Acute toxicity

The mixture is not expected to be acutely toxic at the stated sodium azide concentration, but sodium azide itself is highly toxic as a substance

Skin corrosion/irritation

No mixture-specific data available; prolonged contact may cause mild irritation.

Serious eye damage/eye irritation

May cause irritation.

Respiratory sensitisation

No data available

Skin sensitisation

No data available

Germ cell mutagenicity

No mixture-specific data available.

MATERIAL SAFETY DATA SHEET

Product Name	Buffer HW2
<u>Carcinogenicity</u>	No mixture-specific data available.
<u>Genotoxicity</u>	No mixture-specific data available.
<u>Reproductive toxicity</u>	No mixture-specific data available.
<u>Specific target organ toxicity - single exposure</u>	No mixture-specific data available.
<u>Specific target organ toxicity - repeated exposure</u>	No mixture-specific data available.
<u>Other harmful effects</u>	No data available
12. ECOLOGICAL INFORMATION	
12.1 Ecotoxicity	No mixture-specific test data available. Sodium azide is hazardous to aquatic life as a substance, but the concentration in this mixture is low. Prevent unnecessary environmental release
12.2 Persistence and degradability	No mixture-specific data available.
12.3 Bioaccumulative potential	No mixture-specific data available.
12.4 Mobility in soil	Product is water-soluble.
12.5 Other adverse effects	None known for the mixture at normal use concentrations.
13. DISPOSAL CONSIDERATIONS	
13.1 Waste treatment methods	Dispose of contents/container in accordance with local, regional, national, and international regulations.
13.2 Disposal considerations	Do not dispose of concentrated waste or residues into drains containing copper, lead, brass, or solder, because sodium azide can form explosive metal azides. Avoid acidification of waste
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	For personal protection see section 8.

MATERIAL SAFETY DATA SHEET

Product Name

Buffer HW2

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**

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

In accordance with wastes control act

15.5 Other requirements in domestic and other countries

Not applicable

16. OTHER INFORMATION**Issued date**

2024-06-29

Revision number**Revision date****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.
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5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting	Nature of decomposition products not known.
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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.
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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.
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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.
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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.
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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
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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

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 -