

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
Product name : Buffer Solution for Nitrogen (Nitrate)
Product code : LC12576

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

Use of the substance/mixture : For laboratory and manufacturing use only.

1.3. Details of the supplier of the safety data sheet

LabChem Inc
Jackson's Pointe Commerce Park Building 1000, 1010 Jackson's Pointe Court
Zelienople, PA 16063 - USA
T 412-826-5230 - F 724-473-0647
info@labchem.com - www.labchem.com

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300 or 011-703-527-3887

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Repr. 1B H360
Aquatic Acute 2 H401
Aquatic Chronic 2 H411

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :



GHS08

GHS09

Signal word (GHS-US) :

Danger

Hazard statements (GHS-US) :

H360 - May damage fertility or the unborn child
H411 - Toxic to aquatic life with long lasting effects

Precautionary statements (GHS-US) :

P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P273 - Avoid release to the environment
P280 - Wear protective gloves, eye protection
P308+P313 - IF exposed or concerned: Get medical advice/attention
P391 - Collect spillage
P405 - Store locked up
P501 - Dispose of contents/container to comply with local, state and federal regulations

2.3. Other hazards

Other hazards not contributing to the classification : None under normal conditions.

2.4. Unknown acute toxicity (GHS-US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

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Name	Product identifier	%	GHS-US classification
Water	(CAS No) 7732-18-5	97.49	Not classified
Aluminum Sulfate, Octadecahydrate	(CAS No) 7784-31-8	1.73	Acute Tox. 4 (Oral), H302 Eye Irrit. 2A, H319
Silver Sulfate	(CAS No) 10294-26-5	0.34	Skin Irrit. 2, H315 Eye Dam. 1, H318 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Sulfamic Acid	(CAS No) 5329-14-6	0.25	Skin Corr. 1C, H314 Eye Dam. 1, H318 Aquatic Acute 2, H401
Boric Acid	(CAS No) 10043-35-3	0.13	Repr. 1B, H360
Sodium Hydroxide	(CAS No) 1310-73-2	0.06	Acute Tox. 4 (Dermal), H312 Skin Corr. 1A, H314 Eye Dam. 1, H318 Aquatic Acute 3, H402

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. IF exposed or concerned: Get medical advice/attention.
- First-aid measures after inhalation : Assure fresh air breathing. Allow the victim to rest.
- First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.
- First-aid measures after eye contact : Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries : May damage fertility or the unborn child.

4.3. Indication of any immediate medical attention and special treatment needed

Obtain medical assistance.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

- Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Protective equipment : Safety glasses. Gloves.
- Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
- Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters. Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

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6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour. Do not handle until all safety precautions have been read and understood. Obtain special instructions before use.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep container closed when not in use.
Incompatible products : Strong bases. Chlorides.
Incompatible materials : Sources of ignition. Direct sunlight.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Buffer Solution for Nitrogen (Nitrate)	
ACGIH	Not applicable
OSHA	Not applicable
Boric Acid (10043-35-3)	
OSHA	Not applicable
Sulfamic Acid (5329-14-6)	
ACGIH	Not applicable
OSHA	Not applicable
Aluminum Sulfate, Octadecahydrate (7784-31-8)	
ACGIH	Not applicable
OSHA	Not applicable
Water (7732-18-5)	
ACGIH	Not applicable
OSHA	Not applicable

8.2. Exposure controls

Appropriate engineering controls : Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation.

Personal protective equipment : Avoid all unnecessary exposure.

Hand protection : Wear protective gloves.

Eye protection : Chemical goggles or safety glasses.

Respiratory protection : Wear appropriate mask.

Other information : Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid
Colour : Colourless
Odour : None.
Odour threshold : No data available
pH : 3
Relative evaporation rate (butylacetate=1) : No data available
Melting point : No data available
Freezing point : No data available
Boiling point : No data available

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Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapour pressure	: No data available
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Soluble in water. Water: Solubility in water of component(s) of the mixture : • Boric Acid: 6.35 g/100ml • Sulfamic Acid: 18 g/100ml • Aluminum Sulfate, Octadecahydrate: 86.9 g/100ml • Sodium Hydroxide: 42 g/100ml
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Chlorides. Strong bases.

10.6. Hazardous decomposition products

Aluminium oxides. Sulfur compounds. boron.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Buffer Solution for Nitrogen (Nitrate)	
LD50 oral rat	20395 mg/kg
ATE US (oral)	20395.000 mg/kg bodyweight
Boric Acid (10043-35-3)	
LD50 oral rat	2660 mg/kg
LD50 dermal rabbit	2000 mg/kg
Sulfamic Acid (5329-14-6)	
LD50 oral rat	3160 mg/kg bw/day (Rat; Literature study)
LD50 dermal rat	> 2000 mg/kg bodyweight (Rat; Experimental value; OECD 402: Acute Dermal Toxicity)
Aluminum Sulfate, Octadecahydrate (7784-31-8)	
LD50 oral rat	370 mg/kg
ATE US (oral)	370.000 mg/kg bodyweight
Sodium Hydroxide (1310-73-2)	
LD50 dermal rabbit	1350 mg/kg (Rabbit; Literature)

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Boric Acid (10043-35-3)	
ATE US (dermal)	1350.000 mg/kg bodyweight
Water (7732-18-5)	
LD50 oral rat	≥ 90000 mg/kg
ATE US (oral)	90000.000 mg/kg bodyweight
Skin corrosion/irritation	: Not classified pH: 3
Serious eye damage/irritation	: Not classified pH: 3
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: May damage fertility or the unborn child.
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Potential adverse human health effects and symptoms	: Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - water : Toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Buffer Solution for Nitrogen (Nitrate)	
EC50 Daphnia 1	1.17 mg/l
Boric Acid (10043-35-3)	
LC50 fishes 1	5600 mg/l <i>Gambusia affinis</i>
EC50 Daphnia 1	115 mg/l
EC50 Daphnia 2	658 - 875 mg/l
Sulfamic Acid (5329-14-6)	
LC50 fishes 1	> 14.2 mg/l (96 h; <i>Pimephales promelas</i>)
EC50 Daphnia 1	1.6 mg/l (48 h; <i>Daphnia magna</i> ; GLP)
EC50 other aquatic organisms 1	>= 1000 mg/l (16 h; <i>Pseudomonas putida</i>)
LC50 fish 2	70.3 mg/l (96 h; <i>Pimephales promelas</i>)
Threshold limit algae 1	48 mg/l (72 h; <i>Desmodesmus subspicatus</i> ; GLP)
Silver Sulfate (10294-26-5)	
EC50 Daphnia 1	0.004 mg/l
Sodium Hydroxide (1310-73-2)	
LC50 fishes 1	45.4 mg/l (96 h; <i>Salmo gairdneri</i> (<i>Oncorhynchus mykiss</i>); Solution >=50%)
EC50 Daphnia 1	40.4 mg/l (48 h; <i>Ceriodaphnia</i> sp.; Nominal concentration)
LC50 fish 2	189 mg/l (48 h; <i>Leuciscus idus</i>)
TLM fish 1	99 mg/l (48 h; <i>Lepomis macrochirus</i>)
TLM fish 2	125 ppm (96 h; <i>Gambusia affinis</i>)

12.2. Persistence and degradability

Buffer Solution for Nitrogen (Nitrate)	
Persistence and degradability	May cause long-term adverse effects in the environment.
Boric Acid (10043-35-3)	
Persistence and degradability	Not established.
Sulfamic Acid (5329-14-6)	
Persistence and degradability	Biodegradability: not applicable. Biodegradability in soil: not applicable. No (test)data on mobility of the substance available.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable

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Boric Acid (10043-35-3)	
ThOD	Not applicable
BOD (% of ThOD)	Not applicable
Silver Sulfate (10294-26-5)	
Persistence and degradability	Not established.
Sodium Hydroxide (1310-73-2)	
Persistence and degradability	Biodegradability: not applicable. No (test)data on mobility of the substance available.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable
Water (7732-18-5)	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Buffer Solution for Nitrogen (Nitrate)	
Bioaccumulative potential	Not established.
Boric Acid (10043-35-3)	
Log Pow	-0.757
Bioaccumulative potential	Not established.
Sulfamic Acid (5329-14-6)	
Log Pow	0.10 (Experimental value)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).
Silver Sulfate (10294-26-5)	
BCF fish 1	2.5 Oncorhynchus mykiss- 8 d at 25°C
Bioaccumulative potential	Not established.
Sodium Hydroxide (1310-73-2)	
Bioaccumulative potential	Bioaccumulation: not applicable.
Water (7732-18-5)	
Bioaccumulative potential	Not established.

12.4. Mobility in soil

Sulfamic Acid (5329-14-6)	
Ecology - soil	Toxic to flora.

12.5. Other adverse effects

Effect on ozone layer	:
Effect on the global warming	: No known ecological damage caused by this product.
Other information	: Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations	: Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to comply with local, state and federal regulations.
Ecology - waste materials	: Avoid release to the environment.

SECTION 14: Transport information

In accordance with DOT
Not regulated for transport

Additional information

Other information	: No supplementary information available.
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ADR

No additional information available

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Transport by sea

No additional information available

Air transport

No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

Buffer Solution for Nitrogen (Nitrate)	
SARA Section 311/312 Hazard Classes	Delayed (chronic) health hazard
This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.	
Boric acid (10043-35-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Sulfamic Acid (5329-14-6)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
Aluminum Sulfate, Octadecahydrate (7784-31-8)	
Not listed on the United States TSCA (Toxic Substances Control Act) inventory	
Silver Sulfate (10294-26-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
Sodium Hydroxide (1310-73-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	1000 lb
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
Water (7732-18-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

15.2. International regulations

CANADA

Buffer Solution for Nitrogen (Nitrate)	
WHMIS Classification	Class D Division 2 Subdivision A - Very toxic material causing other toxic effects
Boric acid (10043-35-3)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class D Division 2 Subdivision A - Very toxic material causing other toxic effects
Sulfamic Acid (5329-14-6)	
WHMIS Classification	Class E - Corrosive Material
Aluminum Sulfate, Octadecahydrate (7784-31-8)	
Not listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class D Division 2 Subdivision B - Toxic material causing other toxic effects
Silver Sulfate (10294-26-5)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class E - Corrosive Material
Sodium Hydroxide (1310-73-2)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class E - Corrosive Material
Water (7732-18-5)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Uncontrolled product according to WHMIS classification criteria

EU-Regulations

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

Classification according to Directive 67/548/EEC or 1999/45/EC

Not classified

15.2.2. National regulations

Boric acid (10043-35-3)
Listed on the Canadian IDL (Ingredient Disclosure List)
Aluminum Sulfate, Octadecahydrate (7784-31-8)
Not listed on the Canadian IDL (Ingredient Disclosure List)
Silver Sulfate (10294-26-5)
Listed on the Canadian IDL (Ingredient Disclosure List)
Sodium Hydroxide (1310-73-2)
Listed on the Canadian IDL (Ingredient Disclosure List)
Water (7732-18-5)
Not listed on the Canadian IDL (Ingredient Disclosure List)

15.3. US State regulations

SECTION 16: Other information

Other information : None.

Full text of H-phrases: see section 16:

Acute Tox. 4 (Dermal)	Acute toxicity (dermal), Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment — Acute Hazard, Category 1
Aquatic Acute 2	Hazardous to the aquatic environment — Acute Hazard, Category 2
Aquatic Acute 3	Hazardous to the aquatic environment — Acute Hazard, Category 3
Aquatic Chronic 1	Hazardous to the aquatic environment — Chronic Hazard, Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment — Chronic Hazard, Category 2
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2A	Serious eye damage/eye irritation, Category 2A
Repr. 1B	Reproductive toxicity, Category 1B
Skin Corr. 1A	Skin corrosion/irritation, Category 1A
Skin Corr. 1C	Skin corrosion/irritation, Category 1C
Skin Irrit. 2	Skin corrosion/irritation, Category 2
H302	Harmful if swallowed
H312	Harmful in contact with skin
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H318	Causes serious eye damage
H319	Causes serious eye irritation
H360	May damage fertility or the unborn child
H400	Very toxic to aquatic life
H401	Toxic to aquatic life
H402	Harmful to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects

NFPA health hazard

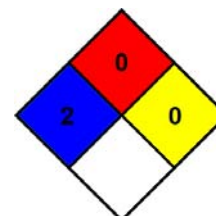
: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard

: 0 - Materials that will not burn.

NFPA reactivity

: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



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HMIS III Rating

Health	:	* Chronic Hazard - Chronic (long-term) health effects may result from repeated overexposure
Flammability	:	0 Minimal Hazard
Physical	:	0 Minimal Hazard
Personal Protection	:	B

SDS US (GHS HazCom 2012)

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