

1 PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name and number	Buffer-2	KT020586
	Buffer-2	KT021509

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

Identified uses In vitro diagnostic use, investigational use and for research use

1.3 Details of the supplier of the safety data sheet

Company	GenMark Diagnostics 5964 La Place Court Carlsbad, CA 92008
Telephone	+1 800-373-6767 +1 760-448-4300

1.4 Emergency telephone number

1-800-424-9300

2 HAZARD IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Oxidizing solids (Category 1)

Acute toxicity, Oral (Category 4)

2.2 GHS label elements

Pictogram



Signal Word

Danger

Hazard statement(s)

H271

May cause fire or explosion; strong oxidiser.

H302

Harmful if swallowed.

Precautionary statement(s)

P210

Keep away from heat.

P220

Keep/Store away from clothing/ combustible materials.

P221

Take precaution to avoid mixing with combustibles.

P264

Wash hands thoroughly after handling.

P270

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

P280

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

P283

Wear fire/ flame resistant/ retardant clothing.

P301 + P312

IF SWALLOWED: Call POISON CONTROL or doctor/physician if you feel unwell.

P330

Rinse mouth.

P306 + P360

IF ON CLOTHING: rinse immediately contaminated clothing and skin with plenty of water before removing clothes.

P370 + P378

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

P371 + P380 + P375

In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

P501

Dispose of contents/container to an approved waste disposal plant.

- 2.3 Hazards not otherwise classified or not covered by GHS**
Not applicable

3 COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

<u>Chemical Name</u>	<u>CAS-No</u>	<u>EC-No</u>	<u>Concentration</u>
Sodium Perchlorate	7601-89-0	231-511-9	30-60% *

**The exact percentage (concentration) of composition has been withheld as a trade secret.*

4 FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Show this safety data sheet to the doctor in attendance. Do not get in eyes, on skin, or on clothing.

If inhaled

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Consult a physician. If breathing is difficult, give oxygen. If not breathing, give artificial respiration.

In case of skin contact

Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical advice/ attention.

In case of eye contact

Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing. Get medical attention if irritation persists.

If swallowed

Call a POISON CENTER or doctor/physician if exposed or you feel unwell. Clean mouth with water and afterwards drink plenty of water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Consult a physician.

4.2 Most important symptoms and effects both acute and delayed

Eye irritation/reactions. Skin irritation. Effects observed upon exposure may include the following: Nausea. Tremors. Headaches. Hypoactivity. Dizziness. Vomiting. Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5 FIRE-FIGHTING MEASURES

5.1 Extinguishing media

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

5.2 Special hazards arising from the substance or mixture

Hydrogen chloride gas, Sodium oxides, carbon oxides, nitrogen oxides (NO_x)

5.3 Advice for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Use personal protective equipment. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Avoid dust formation. Avoid inhalation of dust. Refer to Section 8 for personal protective equipment.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system. Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and material for containment and cleaning up

Contain spillage, soak up with inert absorbent material or then collect by wetbrushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

7 HANDLING AND STORAGE

7.1 Precautions for safe handling

Keep away from open flames, hot surfaces and sources of ignition. Wear personal protective equipment. Do not eat, drink or smoke when using this product. Avoid dust formation. Avoid contact with skin, eyes and clothing. Remove and wash contaminated clothing before re-use.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Keep away from combustible material.

Incompatible with: Organic material. Powdered metals. Strong acids. Forms shock-sensitive mixtures with other materials including powdered metals and magnesium.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with limit values that require monitoring at the workplace

Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection

Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Form: solid Color: grayish-white
Odour	Stench
Odour Threshold	no data available
pH	no data available
Melting point/freezing point	no data available
Initial boiling point and boiling range	no data available
Flash point	no data available
Evaporation rate	no data available
Flammability (solid, gas)	no data available
Upper/lower flammability or explosive limits	no data available
Vapour pressure	no data available
Vapour density	no data available
Relative density	no data available
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available
Auto-ignition temperature	no data available
Decomposition temperature	no data available
Viscosity	no data available
Oxidizing properties	May cause fire or explosion; strong oxidiser.

9.2 Other safety information

no data available

10 STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

No data available

10.5 Incompatible materials

Organic materials, Powdered metals, Organic materials, Strong acids, Forms shock-sensitive mixtures with certain other materials., Powdered metals, Magnesium

10.6 Hazardous decomposition products

Other decomposition products - no data available
In the event of fire: see section 5

11 TOXICOLOGICAL INFORMATION

11.1 Information on likely routes of exposure

Product Information

Inhalation	May cause irritation of respiratory tract.
Eye Contact	Contact with eyes may cause serious eye irritation based on the components present within the product.
Skin Contact	Expected to be an irritant based on components
Ingestion	Harmful if swallowed.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium perchlorate	= 2100 mg/kg (Rat)	-	-

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Delayed and immediate effects and also chronic effects from short and long term exposure

Sensitization	Did not cause sensitization on laboratory animals.
Mutagenic Effects	In vitro tests did not show mutagenic effects.
Carcinogenicity	Contains no ingredients above reportable quantities listed as a carcinogen.
Reproductive Toxicity	No information available.
STOT - single exposure	No information available.
STOT - repeated exposure	No information available.
Chronic Toxicity	Avoid repeated exposure.
Target Organ Effects	Liver. Eyes. Skin. Blood. Gastrointestinal tract (GI).
Aspiration Hazard	No information available.

12 ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	static test LC50 - Danio rerio (zebra fish) - > 1,000 mg/l - 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - > 100 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	Toxicity to algae static test EC50 - Pseudokirchneriella subcapitata - > 435.7 mg/l - 72 h (OECD Test Guideline 201)

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

Bioaccumulation Bioaccumulation Danio rerio (zebra fish)
Bioconcentration factor (BCF): 0.06 - 0.14

- 12.4 Mobility in soil**
no data available
- 12.5 Results of PBT and vPvB assessment**
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted
- 12.6 Other adverse effects**
no data available

13 DISPOSAL CONSIDERATION

- 13.1 Disposal methods**
Dispose of contents/containers in accordance with applicable regional, national and local laws and regulations.

14 TRANSPORT INFORMATION

- IATA, ADR, DOT**
- 14.1 UN Number** 1502
- 14.2 UN Proper shipping name** Sodium perchlorate
- 14.3 Transport hazard class(es)** 5.1
- 14.4 Packing group** II
- 14.5 Additional information** When sold in quantities of less than or equal to 1 ml or 1 g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the requirements of the De Minimis Quantities exemption, per IATA 2.6.10, ADR 3.5.1.4 and DOT 49 CFR 173.4b. Therefore, this product is not subject to dangerous goods regulations.
- Quantity of sodium perchlorate per inner packaging:
<0.10 g

15 REGULATORY INFORMATION

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

International Inventories

TSCA – All components of this product are either listed or are exempt on the TSCA inventory.

DSL – Substances comply or are exempt

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

U.S. Federal Regulations

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

U.S. State Regulations**California Proposition 65**

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Illinois	Rhode Island
Sodium Perchlorate	X	X	X		X

U.S. EPA Label Information

EPA Pesticide Registration Number: Not applicable

16 OTHER INFORMATION**HMIS Rating**

Health hazard: 2
Flammability: 0
Physical Hazard: 2

NFPA Rating

Health hazard: 2
Fire Hazard: 0
Reactivity Hazard: 2
Special hazard.I: OX

General Disclaimer

The information provided herein is correct to the best of our knowledge, information and belief at the date of its publication. The information provided is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. We make no warranty, express or implied, with respect to such information and we assume no liability as a result of its use. Users should make their own investigation to determine the suitability of this information for their particular purposes and must make their own determination of the effects, properties, protections and disposal which pertain to their particular conditions. GenMark Diagnostics, Inc. shall not be held liable for any damage or losses resulting from the handling, use, storage or disposal of or contact with this product.

ePlex™, eSensor®, GenMark®, GenMark Dx® and XT-8™ are trademarks of GenMark Diagnostics, Inc.

End of Safety Data Sheet