



MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name BUFFER SOLUTION, pH 1.00
Catalog # 2325
Version # 02
Revision date 27-Aug-2009
CAS # Mixture
Manufacturer information GFS Chemicals, Inc.
P.O. Box 245
Powell, OH 43065 US
www.gfschemicals.com
Fax 740-881-5989
Phone 740-881-5501
Toll Free 800-858-9682
Emergency Assistance Chemtrec 800-424-8300

2. Hazards Identification

Emergency overview May cause skin and eye irritation.
OSHA regulatory status This product is considered not hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects
Routes of exposure Not applicable.
Eyes Contact may cause eye irritation.
Skin May cause irritation.
Inhalation Health injuries are not known or expected under normal use.
Ingestion Health injuries are not known or expected under normal use.
Potential environmental effects The product is not expected to be hazardous to the environment.

3. Composition / Information on Ingredients

| Non-hazardous components | CAS # | Percent |
|--------------------------|-----------|----------|
| WATER | 7732-18-5 | 90 - 100 |
| HYDROGEN CHLORIDE | 7647-01-0 | 0.1 - 1 |
| POTASSIUM CHLORIDE | 7447-40-7 | 0.1 - 1 |

Composition comments

US OSHA Table Z-1-A: Ceiling Limit Value (mg/m³ & ppm)

HYDROGEN CHLORIDE 7647-01-0 PPM 5 MGM3 - 7

4. First Aid Measures

First aid procedures

Eye contact Flush eyes with water as a precaution. Get medical attention if irritation develops and persists.
Skin contact Rinse skin with water/shower. Get medical attention if irritation develops and persists.
Inhalation If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.
Ingestion Rinse mouth. If ingestion of a large amount does occur, call a poison control center immediately.

General advice If you feel unwell, seek medical advice (show the label where possible).

5. Fire Fighting Measures

Flammable properties No unusual fire or explosion hazards noted. The product is not flammable.

Extinguishing media

Suitable extinguishing media Water. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂).

Protection of firefighters

Protective equipment and precautions for firefighters In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers. Cool containers exposed to flames with water until well after the fire is out.

Specific methods In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers.

6. Accidental Release Measures

Personal precautions Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained.

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not contaminate water.

Methods for containment Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible.

Methods for cleaning up Should not be released into the environment. Dike far ahead of spill for later disposal. Neutralize small amounts with sodium bicarbonate or lime and flush to sewer with large amounts of water. Following product recovery, flush area with water.

Never return spills in original containers for re-use.

7. Handling and Storage

Handling Avoid release to the environment. Handle and open container with care.

Storage Store in original tightly closed container. Use care in handling/storage.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

| Components | CAS # | Type | Value | Form |
|-------------------|-----------|---------|-------|------|
| HYDROGEN CHLORIDE | 7647-01-0 | Ceiling | 2 ppm | |

U.S. - OSHA

| Components | CAS # | Type | Value | Form |
|-------------------|-----------|---------|------------------------------|------|
| HYDROGEN CHLORIDE | 7647-01-0 | Ceiling | 5 ppm 7 mg/m ³ | |

Personal protective equipment

Respiratory protection No personal respiratory protective equipment normally required.

Hand protection Not normally needed.

Eye / face protection Wear safety glasses with side shields (or goggles).

Skin protection No special protective equipment required.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice.

General Not normally needed.

9. Physical & Chemical Properties

Appearance Clear.

Color Colorless.

Odor Odorless.

Odor threshold Not available.

Physical state Liquid.

Form Liquid.

pH 1 @ 25 C

Melting point 32 °F (0 °C)

| | |
|---|---------------------|
| Freezing point | Not available. |
| Boiling point | 212 °F (100 °C) |
| Flash point | Not available. |
| Evaporation rate | Not available. |
| Flammability | Not available. |
| Flammability limits in air, upper, % by volume | Not available. |
| Flammability limits in air, lower, % by volume | Not available. |
| Vapor pressure | Not available. |
| Vapor density | Not available. |
| Specific gravity | 1 |
| Relative density | 1 g/cm ³ |
| Solubility (water) | Miscible |
| Partition coefficient (n-octanol/water) | Not available. |
| Auto-ignition temperature | Not available. |
| Decomposition temperature | Not available. |
| Percent volatile | > 99 % |

10. Chemical Stability & Reactivity Information

| | |
|---|--|
| Chemical stability | Material is stable under normal conditions. |
| Incompatible materials | None known. |
| Hazardous decomposition products | No hazardous decomposition products are known. |

11. Toxicological Information

Acute effects

Acute Dermal: LD 50

| | | |
|-------------------|-----------|------------------|
| HYDROGEN CHLORIDE | 7647-01-0 | Mouse 1449 mg/kg |
|-------------------|-----------|------------------|

Acute Inhalation: LC 50

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|-------------------|-----------|---------------------|
| HYDROGEN CHLORIDE | 7647-01-0 | Mouse 1108 mg/l 1 h |
| HYDROGEN CHLORIDE | 7647-01-0 | Rat 3124 mg/l 1 h |

Acute Oral: LD 50

| | | |
|--------------------|-----------|-----------------------|
| HYDROGEN CHLORIDE | 7647-01-0 | Rabbit 900 mg/kg |
| POTASSIUM CHLORIDE | 7447-40-7 | Rat 2600 mg/kg |
| POTASSIUM CHLORIDE | 7447-40-7 | Guinea pig 2500 mg/kg |
| POTASSIUM CHLORIDE | 7447-40-7 | Mouse 383 mg/kg |

Acute Toxicity other routes: LD 50

| | | |
|--------------------|-----------|----------------------------------|
| HYDROGEN CHLORIDE | 7647-01-0 | Mouse 1449 mg/kg Intraperitoneal |
| POTASSIUM CHLORIDE | 7447-40-7 | Mouse 117 mg/kg Intravenous |
| POTASSIUM CHLORIDE | 7447-40-7 | Rat 39 mg/kg Intravenous |

Toxicology data for the preparation

Acute LD50: 95750 mg/kg, Mouse, Oral, estimated
 Acute LD50: 28197 mg/kg, Mouse, Other, estimated

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs: Evidence of carcinogenicity in humans

| | | |
|-------------------|-----------|------------------|
| HYDROGEN CHLORIDE | 7647-01-0 | Inadequate data. |
|-------------------|-----------|------------------|

US ACGIH Threshold Limit Values: A4 carcinogen

| | | |
|-------------------|-----------|--|
| HYDROGEN CHLORIDE | 7647-01-0 | Group A4 Not classifiable as a human carcinogen. |
|-------------------|-----------|--|

Further information This product has no known adverse effect on human health.

12. Ecological Information

Ecotoxicity

Contains a substance which causes risk of hazardous effects to the environment.

Invertebrate Toxicity: EC 50

| | | |
|--------------------|-----------|--|
| POTASSIUM CHLORIDE | 7447-40-7 | Tubificid worm (<i>Tubifex tubifex</i>) 2000 mg/l 24 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 2440 - 4020 mg/l 12 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Water flea (<i>Daphnia magna</i>) 149 mg/l 48 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Water flea (<i>Daphnia magna</i>) 166 mg/l 48 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 1020 - 1685 mg/l 6 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Water flea (<i>Daphnia magna</i>) 95.3 - 170.7 mg/l 48 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Water flea (<i>Daphnia magna</i>) 248.6 - 407.2 mg/l 24 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Water flea (<i>Daphnia magna</i>) 78 - 97 mg/l 21 d Renewal Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Water flea (<i>Daphnia magna</i>) 83 mg/l 48 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Water flea (<i>Daphnia magna</i>) 87 - 108 mg/l 21 d Renewal Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Water flea (<i>Daphnia magna</i>) 204 mg/l 64 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 290 - 480 mg/l 24 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Tubificid worm (<i>Tubifex tubifex</i>) 1026 - 1671 mg/l 48 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 2770 - 4340 mg/l 24 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 155 - 280 mg/l 24 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 1690 - 2810 mg/l 6 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 1890 - 3080 mg/l 6 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 1980 - 3060 mg/l 24 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 2100 - 3330 mg/l 3 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 2250 - 3490 mg/l 6 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 2250 - 3490 mg/l 6 h Static Mortality |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 236 - 3880 mg/l 3 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 2400 - 4444 mg/l 6 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Water flea (<i>Daphnia magna</i>) 93 mg/l 48 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Tubificid worm (<i>Tubifex tubifex</i>) 738 - 937 mg/l 96 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 300 - 510 mg/l 24 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Water flea (<i>Daphnia magna</i>) 228 mg/l 64 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 2880 - 4370 mg/l 3 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 1340 - 2240 mg/l 12 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 300 - 530 mg/l 24 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 3060 - 4765 mg/l 3 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 3060 - 4765 mg/l 3 h Static Mortality |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 3390 - 5480 mg/l 12 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 3800 - 7190 mg/l 6 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 400 - 690 mg/l 12 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 4260 - 7456 mg/l 12 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 4260 - 7465 mg/l 12 h Static Mortality |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 500 - 920 mg/l 24 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 5010 - 7010 mg/l 3 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 5765 - 9585 mg/l 3 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 6380 - 11690 mg/l 6 h Static Mortality |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 6380 - 11960 mg/l 6 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 650 - 1470 mg/l 3 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 7100 - 15930 mg/l 3 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 7100 - 15930 mg/l 3 h Static Mortality |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 720 - 1150 mg/l 12 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 770 - 1300 mg/l 12 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 800 - 1400 mg/l 12 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 840 - 1440 mg/l 6 h Static Intoxication |
| POTASSIUM CHLORIDE | 7447-40-7 | Zebra mussel (<i>Dreissena polymorpha</i>) 2420 - 3410 mg/l 24 h Static Intoxication |

Micro-organisms Toxicity: LC 50

| | | |
|--------------------|-----------|---|
| POTASSIUM CHLORIDE | 7447-40-7 | Nematode (<i>Caenorhabditis elegans</i>) 43609 mg/l 24 h Static Mortality |
| POTASSIUM CHLORIDE | 7447-40-7 | Nematode (<i>Caenorhabditis elegans</i>) 41560 mg/l 48 h Static Mortality |
| POTASSIUM CHLORIDE | 7447-40-7 | Nematode (<i>Caenorhabditis elegans</i>) 41200 mg/l 24 h Static Mortality |
| POTASSIUM CHLORIDE | 7447-40-7 | Nematode (<i>Caenorhabditis elegans</i>) 40830 mg/l 24 h Static Mortality |
| POTASSIUM CHLORIDE | 7447-40-7 | Nematode (<i>Caenorhabditis elegans</i>) 39130 mg/l 48 h Static Mortality |
| POTASSIUM CHLORIDE | 7447-40-7 | Nematode (<i>Caenorhabditis elegans</i>) 29960 mg/l 48 h Static Mortality |
| POTASSIUM CHLORIDE | 7447-40-7 | Nematode (<i>Caenorhabditis elegans</i>) 29854 mg/l 24 h Static Mortality |
| POTASSIUM CHLORIDE | 7447-40-7 | Nematode (<i>Caenorhabditis elegans</i>) 42049 mg/l 24 h Static Mortality |
| POTASSIUM CHLORIDE | 7447-40-7 | Nematode (<i>Caenorhabditis elegans</i>) 29839 mg/l 24 h Static Mortality |
| POTASSIUM CHLORIDE | 7447-40-7 | Diatom (<i>Nitzschia linearis</i>) 1337 mg/l 5 d Static Mortality |

Environmental effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Persistence and degradability

Not available.

13. Disposal Considerations

Disposal instructions Do not allow this material to drain into sewers/water supplies. Neutralize with soda ash/slaked lime and discharge to sewer with lots of water. Dispose in accordance with all applicable regulations.

Waste from residues / unused products Not applicable.

14. Transport Information

DOT

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Spill: Reportable quantity

HYDROGEN CHLORIDE 7647-01-0 5000 LBS

US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Substance: Threshold Planning Quantity

HYDROGEN CHLORIDE 7647-01-0 500 LBS

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

HYDROGEN CHLORIDE 7647-01-0 1.0 %

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Inventory status

| Country(s) or region | Inventory name | On inventory (yes/no)* |
|-----------------------------|---|------------------------|
| Australia | Australian Inventory of Chemical Substances (AICS) | Yes |
| Canada | Domestic Substances List (DSL) | Yes |
| Canada | Non-Domestic Substances List (NDSL) | No |
| China | Inventory of Existing Chemical Substances in China (IECSC) | Yes |
| Europe | European Inventory of New and Existing Chemicals (EINECS) | Yes |
| Europe | European List of Notified Chemical Substances (ELINCS) | No |
| Japan | Inventory of Existing and New Chemical Substances (ENCS) | Yes |
| Korea | Existing Chemicals List (ECL) | Yes |
| New Zealand | New Zealand Inventory | No |
| Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes |
| United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes |

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US - New Jersey Community RTK (EHS Survey): Reportable threshold

HYDROGEN CHLORIDE 7647-01-0 500 LBS

US - Pennsylvania RTK - Hazardous Substances: Listed substance

HYDROGEN CHLORIDE 7647-01-0 Listed.

16. Other Information

Further information

HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings

Health: 1
Flammability: 0
Physical hazard: 0

NFPA ratings

Health: 1
Flammability: 0
Instability: 0

Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given 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. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Issue date

27-Aug-2009

This data sheet contains changes from the previous version in section(s):

This document has undergone significant changes and should be reviewed in its entirety.