

SAFETY DATA SHEET

SPA FROG® Bromine Cartridge

According to WHMIS 2015, in compliance with the Hazardous Product Act (HPA, as amended) and the requirements of the Hazardous Product Regulations (HPR)

1. Identification

Product identifier

Product name SPA FROG® Bromine Cartridge

Recommended use of the chemical and restrictions on use

Restriction on use For use as a spa and hot tub disinfectant/sanitizer. Not intended for direct application to humans or animals.

Uses advised against Use only for intended applications.

Details of the supplier of the safety data sheet

Manufacturer King Technology, Inc.
530 11th Ave S
Hopkins, MN 55343
United States
1+ (952) 933-6118
sdsinfo@kingtechnology.com

Emergency telephone number

Emergency telephone 1+ (703) 741-5970 - Chemtrec (24 hours)

2. Hazard identification

Classification of the substance or mixture

Physical hazards Ox. Sol. 2 - H272 Combustible Dusts - Category 1

Health hazards Acute Tox. 4 - H302 Acute Tox. 4 - H332 Skin Corr. 1B - H314 Eye Dam. 1 - H318 Skin Sens. 1 - H317

Environmental hazards Not Classified

Label elements

Hazard pictograms



Signal word

Danger

Hazard statements

H302+H332 Harmful if swallowed or if inhaled.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H272 May intensify fire; oxidizer.
May form combustible dust concentrations in air.

SPA FROG® Bromine Cartridge

Precautionary statements	<p>P101 If medical advice is needed, have product container or label at hand.</p> <p>P102 Keep out of reach of children.</p> <p>P103 Read label before use.</p> <p>P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.</p> <p>P220 Keep away from combustible materials.</p> <p>P260 Do not breathe dust.</p> <p>P261 Avoid breathing dust.</p> <p>P264 Wash contaminated skin thoroughly after handling.</p> <p>P270 Do not eat, drink or smoke when using this product.</p> <p>P271 Use only outdoors or in a well-ventilated area.</p> <p>P272 Contaminated work clothing should not be allowed out of the workplace.</p> <p>P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.</p> <p>P301+P312 IF SWALLOWED: Call a POISON CENTRE/doctor if you feel unwell.</p> <p>P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.</p> <p>P302+P352 IF ON SKIN: Wash with plenty of water.</p> <p>P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].</p> <p>P304+P340 IF INHALED: Remove person to fresh air and keep 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>P310 Immediately call a POISON CENTER/ doctor.</p> <p>P321 Specific treatment (see medical advice on this label).</p> <p>P333+P313 If skin irritation or rash occurs: Get medical advice/ attention.</p> <p>P362+P364 Take off contaminated clothing and wash it before reuse.</p> <p>P363 Wash contaminated clothing before reuse.</p> <p>P370+P378 In case of fire: Use foam, carbon dioxide, dry powder or water fog to extinguish.</p> <p>P405 Store locked up.</p> <p>P501 Dispose of contents/ container in accordance with national regulations.</p>
---------------------------------	---

Contains Bromochloro-5,5-dimethylhydantoin

Other hazards

Other May form combustible dust concentrations in air.

3. Composition/information on ingredients

Mixtures

Bromochloro-5,5-dimethylhydantoin	98%
CAS number: 32718-18-6	
M factor (acute) = 1	
Classification	
Ox. Sol. 2 - H272	
Combustible Dusts - Category 1	
Acute Tox. 4 - H302	
Acute Tox. 4 - H332	
Skin Corr. 1B - H314	
Eye Dam. 1 - H318	
Skin Sens. 1 - H317	

The full text for all hazard statements is displayed in Section 16.

4. First-aid measures

SPA FROG® Bromine Cartridge

Description of first aid measures

General information	Get medical attention if any discomfort continues. Show this Safety Data Sheet to the medical personnel. Chemical burns must be treated by a physician.
Inhalation	Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as collar, tie or belt. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Get medical attention. Place unconscious person on their side in the recovery position and ensure breathing can take place.
Ingestion	Get medical attention immediately. Rinse mouth thoroughly with water. Give a few small glasses of water or milk to drink. Stop if the affected person feels sick as vomiting may be dangerous. Never give anything by mouth to an unconscious person. Place unconscious person on their side in the recovery position and ensure breathing can take place. Keep affected person under observation.
Skin contact	It is important to remove the substance from the skin immediately. Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes and get medical attention. Chemical burns must be treated by a physician.
Eye contact	Rinse immediately with plenty of water. Do not rub eye. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes and get medical attention.
Protection of first aiders	It may be dangerous for first aid personnel to carry out mouth-to-mouth resuscitation.

Most important symptoms and effects, both acute and delayed

General information	The severity of the symptoms described will vary dependent on the concentration and the length of exposure.
Inhalation	A single exposure may cause the following adverse effects: Severe irritation of nose and throat. Shortness of breath. Headache. Symptoms following overexposure may include the following: Corrosive to the respiratory tract.
Ingestion	May cause sensitization or allergic reactions in sensitive individuals. May cause chemical burns in mouth, esophagus and stomach. Symptoms following overexposure may include the following: Severe stomach pain. Nausea, vomiting.
Skin contact	May cause skin sensitization or allergic reactions in sensitive individuals. Causes severe burns. Symptoms following overexposure may include the following: Pain or irritation. Redness. Blistering may occur.
Eye contact	Causes serious eye damage. Symptoms following overexposure may include the following: Pain. Profuse watering of the eyes. Redness.

Indication of any immediate medical attention and special treatment needed

Notes for the doctor	Treat symptomatically. May cause sensitization or allergic reactions in sensitive individuals.
-----------------------------	--

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the hazardous product

SPA FROG® Bromine Cartridge

Specific hazards	Dust may form explosive mixture with air. May cause or intensify fire; oxidizer. This product is toxic. Severe corrosive hazard. Thermal decomposition or combustion products may include the following substances: Very toxic or corrosive gases or vapours. Water used for fire extinguishing, which has been in contact with the product, may be corrosive.
Hazardous combustion products	Thermal decomposition or combustion products may include the following substances: Very toxic or corrosive gases or vapours.
<u>Advice for firefighters</u>	
Protective actions during firefighting	Avoid breathing fire gases or vapours. Evacuate area. Keep upwind to avoid inhalation of gases, vapours, fumes and smoke. Ventilate closed spaces before entering them. May cause or intensify fire; oxidizer. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Avoid discharge to the aquatic environment. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.
Special protective equipment for firefighters	Regular protection may not be safe. Wear chemical protective suit. Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Firefighter's clothing that provides a basic level of protection during chemical incidents is defined by the Canada Occupational Health and Safety Regulations, by provincial guidelines on occupational health and safety or by NFPA standards if applicable.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions	Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. Do not touch or walk into spilled material. Avoid inhalation of dust. Use suitable respiratory protection if ventilation is inadequate. Avoid contact with skin and eyes.
-----------------------------	---

Environmental precautions

Environmental precautions	Avoid discharge into drains or watercourses or onto the ground. Avoid discharge to the aquatic environment.
----------------------------------	---

Methods and material for containment and cleaning up

Methods for cleaning up	Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Do not use sawdust or other combustible material. This product is corrosive. Provide adequate ventilation. Collect spillage with a shovel and broom, or similar and reuse, if possible. Collect and place in suitable waste disposal containers and seal securely. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. Dangerous for the environment. Do not empty into drains. For waste disposal, see Section 13.
--------------------------------	---

Reference to other sections

Reference to other sections	For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.
------------------------------------	---

7. Handling and storage

Precautions for safe handling

SPA FROG® Bromine Cartridge

Usage precautions Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Keep container tightly sealed when not in use. This product is corrosive. Immediate first aid is imperative. Avoid discharge to the aquatic environment. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment. Do not reuse empty containers.

Advice on general occupational hygiene Wash promptly if skin becomes contaminated. Take off contaminated clothing. Wash contaminated clothing before reuse.

Conditions for safe storage, including any incompatibilities

Storage precautions Store away from incompatible materials (see Section 10). Store at temperatures not exceeding 30°C/86°F. Store locked up. Keep away from flammable and combustible materials. Keep only in the original container. Keep container tightly closed, in a cool, well ventilated place. Keep containers upright. Protect containers from damage.

Storage class Oxidizer storage.

Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.

8. Exposure controls/Personal protection

Control parameters

Occupational exposure limits

Manufacturer's recommendation: 0.1 mg/m³ (8-hour TWA)

ACGIH-TLV:
Not determined.

OSHA-PEL:
Not determined.

Exposure controls

Protective equipment



Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Ensure the ventilation system is regularly maintained and tested. Good general ventilation should be adequate to control worker exposure to airborne contaminants. Observe any occupational exposure limits for the product or ingredients.

Eye/face protection

Wear tight-fitting, chemical splash goggles or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Hand protection

Wear protective gloves. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with the Canadian regulation on health and safety at work, SOR/86-304, Part XII (12.9), and any relevant provincial regulation relating to health and safety at work. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. Frequent changes are recommended.

SPA FROG® Bromine Cartridge

Other skin and body protection	Wear appropriate clothing to prevent any possibility of skin contact.
Hygiene measures	Wash after use and before eating, smoking and using the toilet. Do not eat, drink or smoke when using this product.
Respiratory protection	Ensure all respiratory protective equipment is suitable for its intended use and is NIOSH approved. Check that the respirator fits tightly and the filter is changed regularly. Gas and combination filter cartridges should comply with the Canadian regulation on health and safety at work, SOR/86-304, Part XII (12.7), and any relevant provincial regulation relating to health and safety at work. Full face mask respirators with replaceable filter cartridges should comply with the Canadian regulation on health and safety at work, SOR/86-304, Part XII (12.7), and any relevant provincial regulation relating to health and safety at work. Half mask and quarter mask respirators with replaceable filter cartridges should comply with the Canadian regulation on health and safety at work, SOR/86-304, Part XII (12.7), and any relevant provincial regulation relating to health and safety at work.
Environmental exposure controls	Keep container tightly sealed when not in use. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Tablet. Granules.
Colour	White/off-white.
Melting point	Not applicable.
Initial boiling point and range	Not applicable.
Flash point	Not applicable.
Evaporation rate	Not applicable.
Evaporation factor	Not applicable.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	Not applicable.
Vapour pressure	0.00935 Pa @ 25°C/77°F
Vapour density	Not applicable.
Relative density	1.8-2.0
Solubility(ies)	0.22 g/100 g water @ 25°C/77°F 2.5 g/100 g benzene @ 25°C/77°F
Partition coefficient	Kow: < 1
Auto-ignition temperature	No information available.
Decomposition Temperature	160°C/320°F
Viscosity	Not applicable.
Explosive properties	Dust may form explosive mixture with air.
Oxidising properties	Oxidizer

SPA FROG® Bromine Cartridge

10. Stability and reactivity

Reactivity	See the other subsections of this section for further details.
Stability	Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.
Possibility of hazardous reactions	May form combustible dust concentrations in air.
Conditions to avoid	Moisture. Keep at temperature not exceeding 160°C/320°F.
Materials to avoid	Reducing agents. Flammable/combustible materials. Hydrocarbons. Organic cyanides (nitriles). Esters. Some metals.
Hazardous decomposition products	Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Corrosive gases or vapours.

11. Toxicological informationInformation on toxicological effectsAcute toxicity - oral

Notes (oral LD₅₀) Acute Tox. 4 - H302 Harmful if swallowed.

ATE oral (mg/kg) 947.96

Acute toxicity - dermal

Notes (dermal LD₅₀) Based on available data the classification criteria are not met.

Acute toxicity - inhalation

Notes (inhalation LC₅₀) Acute Tox. 4 - H332 Harmful if inhaled.

ATE inhalation (dusts/mists mg/l) 1.53

Skin corrosion/irritation

Animal data Skin Corr. 1B - H314 Causes severe burns.

Serious eye damage/irritation

Serious eye damage/irritation Eye Dam. 1 - H318 Corrosive to skin. Corrosivity to eyes is assumed.

Respiratory sensitization

Respiratory sensitization Based on available data the classification criteria are not met.

Skin sensitization

Skin sensitization May cause skin sensitization or allergic reactions in sensitive individuals.

Germ cell mutagenicity

Genotoxicity - in vitro Based on available data the classification criteria are not met.

Carcinogenicity

Carcinogenicity Based on available data the classification criteria are not met.

IARC carcinogenicity

None of the ingredients are listed or exempt.

Reproductive toxicity

Reproductive toxicity - fertility Based on available data the classification criteria are not met.

SPA FROG® Bromine Cartridge

Reproductive toxicity - development Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure

STOT - single exposure Not classified as a specific target organ toxicant after a single exposure.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Not classified as a specific target organ toxicant after repeated exposure.

Aspiration hazard

Aspiration hazard Not relevant. Solid.

General information

The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

Inhalation

Corrosive to the respiratory tract. Symptoms following overexposure may include the following: Severe irritation of nose and throat.

Ingestion

May cause sensitization or allergic reactions in sensitive individuals. May cause chemical burns in mouth, esophagus and stomach. Symptoms following overexposure may include the following: Severe stomach pain. Nausea, vomiting.

Skin contact

May cause skin sensitization or allergic reactions in sensitive individuals. Causes severe burns. Symptoms following overexposure may include the following: Pain or irritation. Redness. Blistering may occur.

Eye contact

Causes serious eye damage. Symptoms following overexposure may include the following: Pain. Profuse watering of the eyes. Redness.

Route of exposure

Ingestion Inhalation Skin and/or eye contact

Target organs

No specific target organs known.

Medical considerations

Skin disorders and allergies.

Toxicological information on ingredients

Bromochloro-5,5-dimethylhydantoin

Acute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg) 929.0

Species Rat

ATE oral (mg/kg) 929.0

Acute toxicity - inhalation

ATE inhalation (dusts/mists mg/l) 1.5

Germ cell mutagenicity

Genotoxicity - in vitro Ames test: Positive.
Gene mutation: Positive.

Genotoxicity - in vivo Micronucleus assay
Negative.
DNA damage and/or repair: Negative.

SPA FROG® Bromine Cartridge**Carcinogenicity**

IARC carcinogenicity Not listed.

NTP carcinogenicity Not listed.

12. Ecological information**Toxicity** Aquatic Acute 1 - H400 Very toxic to aquatic life.**Ecological information on ingredients****Bromochloro-5,5-dimethylhydantoin****Acute aquatic toxicity**LC₅₀/EC₅₀ 0.1 < L(E)C₅₀ ≤ 1

M factor (acute) 1

Acute toxicity - fish LC₅₀, 96 hour: 0.4 mg/l, Oncorhynchus mykiss (Rainbow trout)
 LC₅₀, 96 hour: 0.46 mg/l, Lepomis macrochirus (Bluegill)
 LC₅₀, 96 hour: 1.6 mg/l, Cyprinodon variegatus (Sheepshead minnow)

Acute toxicity - aquatic invertebrates LC₅₀, 48 hour: 0.75 mg/l, Daphnia magna

Persistence and degradability**Persistence and degradability** The degradability of the product is not known.**Ecological information on ingredients****Bromochloro-5,5-dimethylhydantoin**

Persistence and degradability The product is biodegradable.

Bioaccumulative potential**Bioaccumulative potential** No data available on bioaccumulation.**Partition coefficient** Kow: < 1**Ecological information on ingredients****Bromochloro-5,5-dimethylhydantoin****Bioaccumulative potential** The product does not contain any substances expected to be bioaccumulating.**Mobility in soil****Mobility** No data available.**Other adverse effects****Other adverse effects** None known.**13. Disposal considerations****Waste treatment methods****General information** Following dilution, discharge to the sewer with plenty of water may be permitted.**Disposal methods** Do not reuse empty container. Rinse empty container thoroughly, wrap and dispose of with household garbage. For information on the disposal of unused, unwanted product and the cleanup of spills contact the Provincial Regulatory Agency.

SPA FROG® Bromine Cartridge

Waste class Dispose of contents/container in accordance with local regulations. Dispose of contents/container in accordance with national regulations.

14. Transport information

General In small packages, such as most consumer sizes, the products may be eligible for limited quantity exceptions. Details depend on package and mode of transport. If shipped in larger quantities, product is fully regulated as defined below.

UN number

UN No. (TDG) 3085

UN No. (IMDG) 3085

UN No. (ICAO) 3085

UN proper shipping name

Proper shipping name (TDG) OXIDIZING SOLID, CORROSIVE, N.O.S. (CONTAINS Bromochloro-5,5-dimethylhydantoin)

Proper shipping name (IMDG) OXIDIZING SOLID, CORROSIVE, N.O.S. (CONTAINS Bromochloro-5,5-dimethylhydantoin)

Proper shipping name (ICAO) OXIDIZING SOLID, CORROSIVE, N.O.S. (CONTAINS Bromochloro-5,5-dimethylhydantoin)

Transport hazard class(es)

TDG class 5.1

TDG subsidiary risk 8

TDG label(s) 5.1

IMDG class 5.1

IMDG subsidiary risk 8

ICAO class/division 5.1

ICAO subsidiary risk 8

Transport labels



Packing group

TDG packing group II

IMDG packing group II

ICAO packing group II

Environmental hazards

Environmentally hazardous substance/marine pollutant



Special precautions for user

EmS F-A, S-Q

SPA FROG® Bromine Cartridge

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

Safety, hygiene and environmental regulations / legislation specific for the substance or mixture:

Canada PCPA - Pesticide Labeling

This pest control product is to be used only in accordance with the directions on the label. It is an offence under the Pest Control Products Act to use this product in a way that is inconsistent with the directions on the label.

This chemical is a pest control product registered under the Canada Pest Control Products Act (Registration #27880) and is subject to certain labeling requirements under federal pesticide law. These requirements may differ from the classification criteria and hazard information required for a WHMIS GHS SDS. The following is the hazard information as required on the PCPA label:

Signal Word

WARNING - POISON, CORROSIVE
DANGER - CORROSIVE TO EYES AND SKIN
POTENTIAL SKIN SENSITIZER

Symbol and Pictogram



Hazard Statements

- Corrosive - Causes eye damage and skin burns.
- Skin exposure to dust may cause allergic skin reaction in some individuals.
- May be harmful or fatal if swallowed.
- Dust may be harmful or fatal if inhaled.
- Strong oxidizing agent.
- May cause fire and explosion if contaminated.
- Dangerous gas formed when mixed with acid.
- This product is toxic to fish. Do not discharge into lakes, streams, ponds or public water.
- Do not reuse empty container. Rinse empty container thoroughly, wrap and dispose of with household garbage. For information on the disposal of unused, unwanted product and the cleanup of spills contact the Provincial Regulatory Agency.
- KEEP OUT OF REACH OF CHILDREN.

Inventories

EU - EINECS/ELINCS

EINECS

All the ingredients are listed or exempt.

Canada – DSL/NDSL

DSL

All the ingredients are listed or exempt.

US - TSCA

This product is registered under FIFRA.
BCDMH is listed in the TSCA inventory under CAS 16079-88-2.
TSCA: EPA number P-94-34.
Subject to reporting under SNUR - any use. (40 CFR 721).

SPA FROG® Bromine Cartridge

Australia - AICS

All the ingredients are listed or exempt.

Japan - ENCS

All the ingredients are listed or exempt.

ENCS No. 5-6368

Korea - KECI

All the ingredients are listed or exempt.

KE-03634

China - IECSC

All the ingredients are listed or exempt.

Phillippines – PICCS

All the ingredients are listed or exempt.

New Zealand - NZIOC

All the ingredients are listed or exempt.

Taiwan - TCSI

All the ingredients are listed or exempt.

16. Other information

Classification abbreviations and acronyms	Ox. Sol. = Oxidising solid Acute Tox. = Acute toxicity Eye Dam. = Serious eye damage Skin Corr. = Skin corrosion Skin Sens. = Skin sensitisation Aquatic Acute = Hazardous to the aquatic environment (acute)
Revision date	2019-04-11
SDS number	4809
Hazard statements in full	H272 May intensify fire; oxidizer. H302 Harmful if swallowed. H314 Causes severe skin burns and eye damage. H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H332 Harmful if inhaled. May form combustible dust concentrations in air.

The information provided on the SDS is correct to the best of our knowledge, information, and belief at the date of this publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal, and release, and is not to be considered as 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 material or in any process, unless specified in the text.