Revision: 18 December 2019

SAFETY DATA SHEET

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

1.1 Product identifier

- Product Name: Bromine Tablets
- Product Part Number: 016
- Chemical Name: Bromochloro-5,5-dimethylimidazolidine-2,4-dione
- Synonyms: BCDMH
- CAS No. 32718-18-6
- EC No.: 251-171-5

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

- Use of the substance/mixture: Pool / spa treatment; Biocide
- Use advised against: No information available

1.3 Emergency telephone number

- Emergency Telephone: 0800 043 0891 (technical)
  0800 043 0892 (emergency)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

- Classification (REGULATION (EC) No 1272/2008) [CLP/GHS]: Acute Tox. 4, H302; Skin Corr. 1B, H314; Skin Sens. 1, H317; Eye Dam. 1, H318; Aquatic Acute 1, H400; EUH031
- Additional information: For full text of Hazard- and EU Hazard-statements: see section 16

2.2 Label elements

- Signal Word: Danger
- A tactile warning of danger (TWD, raised triangle) is required for this product

- Hazard statements
  H302 - Harmful if swallowed.
  H314 - Causes severe skin burns and eye damage.
  H317 - May cause an allergic skin reaction.
  H400 - Very toxic to aquatic life.

- Precautionary statements
  P102 - Keep out of reach of children.
  P273 - Avoid release to the environment.

SECTION 2: Hazards identification (....)

P280: Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P305+P351+P338+P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
P501 - Dispose of contents/container to an authorised waste collection point

- Supplemental Hazard information (EU)
  EUH031 - Contact with acids liberates toxic gas.

2.3 Other hazards

- May form explosive dust/air mixtures
- Not a PBT according to REACH Annex XIII
- Not a vPvB according to REACH Annex XIII

SECTION 3: Composition/information on ingredients

3.1 Substances

- Bromochloro-5,5-dimethylimidazolidine-2,4-dione
  Concentration: 90 - 100%
  CAS Number: 32718-18-6
  EC Number: 251-171-5
  Classification (REGULATION (EC) No 1272/2008) [CLP/GHS]: Acute Tox. 4, H302; Skin Corr. 1B, H314; Skin Sens. 1, H317; Eye Dam. 1, H318; Aquatic Acute 1, H400; EUH031

3.2 Mixtures

SECTION 4: First aid measures

4.1 Description of first aid measures

- Rescuers should put on approved personal protective equipment (PPE) before administering first aid
- Rescuers should take suitable precautions to avoid becoming casualties themselves

- Contact with eyes
  If substance has got into eyes, immediately wash out with plenty of water for several minutes
  Irrigate eyes thoroughly whilst lifting eyelids
  Remove contact lenses, if present and easy to do. Continue rinsing.
  Get immediate medical advice/attention.

- Contact with skin
  After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of soap and water
  Get immediate medical advice/attention.

- Ingestion
  Rinse mouth with water (do not swallow)
  Give plenty of water to drink
  Do NOT induce vomiting.
  Never give anything by mouth to an unconscious person
  Get immediate medical advice/attention.

- Inhalation
  If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
  Keep warm and at rest, in a half upright position. Loosen clothing
  If breathing is difficult, oxygen should be given by a trained person
  Get immediate medical advice/attention.

SECTION 4: First aid measures (...)

4.2 Most important symptoms and effects, both acute and delayed

- Contact with eyes
  May cause severe damage with formation of corneal ulcers and permanent impairment of vision.
  May cause redness and swelling
  May cause blurred vision
- Contact with skin
  May cause severe burns with permanent skin damage which are slow to heal.
  May cause an allergic skin reaction.
  Possible blistering of the skin of affected areas
- Ingestion
  May cause burns to mouth and throat
  May cause damage to the stomach lining
  May cause nausea/vomiting
  May cause stomach pain
- Inhalation
  May cause respiratory irritation
  May cause breathing difficulty

4.3 Indication of any immediate medical attention and special treatment needed

- Treat symptomatically

SECTION 5: Firefighting measures

5.1 Extinguishing media

- Suitable extinguishing media: Alcohol resistant foam; sand/earth; water fog; water spray; carbon dioxide
- Unsuitable extinguishing media: Do not use water jets; Dry agent extinguishers are unsuitable and should not be used

5.2 Special hazards arising from the substance or mixture

- Avoid formation of dust
- May form explosive dust/air mixtures
- Gives off irritating or toxic fumes (or gases) in a fire.
- Decomposition products may include hydrogen bromide
- Decomposition products may include hydrogen chloride

5.3 Advice for firefighters

- Keep container(s) exposed to fire cool, by spraying with water
- Collect contaminated fire extinguishing water separately. This MUST not be discharged into drains. Prevent fire extinguishing water from contaminating surface or ground water.
- Special protective equipment: Wear self-contained breathing apparatus (SCBA). Wear full protective clothing including chemical protection suit.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- Rescuers should take suitable precautions to avoid becoming casualties themselves
- Only trained and authorised personnel should carry out emergency response
- Shut off all ignition sources
- Avoid formation of dust
- Personal precautions for non-emergency personnel: Do not touch or walk through spilt material; Do not breathe dust/fume/gas/mist/vapours/spray; Do not get in eyes, on skin, or on clothing; Wear protective clothing as per section 8; Wash thoroughly after handling.

SECTION 6: Accidental release measures (....)

- Personal precautions for emergency responders: Evacuate the area and keep personnel upwind; Wear chemical protection suit; Wear self-contained breathing apparatus (SCBA).

6.2 Environmental precautions

- Avoid release to the environment.
- Do not allow to enter public sewers and watercourses
- If contamination of drainage systems or water courses is unavoidable, immediately inform appropriate authorities

6.3 Methods and material for containment and cleaning up

- Stop leak if safe to do so.
- Small spills
  Wipe up spillage with damp absorbent cloth or towel
- Large spills
  Avoid formation of dust
  Sweep or shovel-up spillage and remove to a safe place
  Collect as much as possible in clean container for reuse or disposal
  Place in sealable container
  Seal containers and label them
  To be disposed of as hazardous waste
  Ventilate the area and wash spill site after material pick-up is complete

6.4 Reference to other sections

- See section(s): 7, 8, & 13

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Avoid raising dust
- Do not breathe dust
- Ensure adequate ventilation
- Use local exhaust ventilation and/or enclosures.
- Avoid contact with skin and eyes
- Wear protective clothing as per section 8
- Take action to prevent static discharges.
- Do not eat, drink or smoke when using this product.
- Wash thoroughly after handling.
- Contaminated clothing should be laundered before reuse

7.2 Conditions for safe storage, including any incompatibilities

- Keep container tightly closed, in a cool, well ventilated place
- Protect from sunlight.
- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Incompatible with oxidizing substances

7.3 Specific end use(s)

- Pool / spa treatment

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

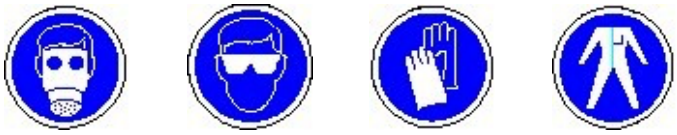
- No exposure limits have been set for this substance
- The UK HSE (EH40) recommends the following limits for dusts: 10 mg/m^3 (8hr TWA) total inhalable dust; 4 mg/m^3 (8hr TWA) total respirable dust
- PNEC aqua (freshwater) 0.00112 mg/l
- PNEC aqua (intermittent releases, freshwater) 0.042 mg/l

SECTION 8: Exposure controls/personal protection (....)

- PNEC terrestrial (soil) 0.00037 mg/kg

8.2 Exposure controls

- Selection and use of personal protective equipment should be based on a risk assessment of exposure potential
- Engineering controls
  Ensure adequate ventilation
  Engineering controls should be provided which maintain airborne concentrations as low as practicable
  Use local exhaust ventilation and/or enclosures.
- Respiratory protection
  In case of insufficient ventilation, wear suitable respiratory equipment
  Where a reusable half mask respirator is required, use EN 140 mask and EN 143 particle filter, or EN 1827
  Where a full face mask respirator is required, use EN 136, with particle filter EN 143
- Eye/face protection
  Wear goggles giving complete eye protection approved to standard EN 166.
- Skin protection
  Wear protective gloves. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and standard EN 374.
  The selection of a suitable glove depends on work conditions and whether the product is present on its own or in combination with other substances. Breakthrough time is dependent on the characteristics of the brand of glove used and the supplier should be consulted.
  Glove material: Nitrile rubber
  Thickness: No information
  Breakthrough time: > 480 min
  Reference: Supplier
- Hygiene measures
  Do not eat, drink or smoke when using this product.
  Use good personal hygiene practices
  Wash thoroughly after handling.
  Ensure eyewash stations and safety showers are nearby
- Environmental exposure controls
  Do not empty into drains
  Do not allow to penetrate the ground/soil.



SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- Appearance: White tablets
- Odour: Odourless
- Odour threshold: No information available
- pH: No information available
- Melting point/freezing point: 156 - 162 °C
  Decomposition: Yes
  Method: OECD Test Guideline 102

SECTION 9: Physical and chemical properties (...)

- Initial boiling point and boiling range: Not applicable
  Decomposition: Yes
  Method: OECD Test Guideline 103 GLP: Yes
- Flashpoint: No information available
- Evaporation Rate: No information available
- Flammability (solid,gas): No information available
- Upper/lower flammability or explosive limits: No information available
- Vapour Pressure: 3.8 mPa (25°C)
  Method: OECD Test Guideline 104
  GLP: Yes
- Vapour Density: Not applicable
- Relative Density: 1.87 (23°C)
  Method: OECD Test Guideline 109
  GLP: Yes
- Solubility(ies): Water
  hydrolyses Method: OECD Test Guideline 105
  GLP: Yes
- Partition Coefficient (n-Octanol/Water): No information available
- Autoignition Temperature: No information available
- Decomposition temperature: No information available
- Viscosity: Not applicable
- Explosive Properties: No information available
- Oxidising properties: The product has been shown not to be oxidizing in a test following Directive 67/548/EEC (Method A17, Oxidizing properties).
  Method: Oxidizing properties (solids)
  The substance or mixture is not classified as oxidizing.
  GLP: Yes

9.2 Other information

- Molecular weight: 482.94 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

- No decomposition if stored normally.

10.2 Chemical stability

- Considered stable under normal conditions

10.3 Possibility of hazardous reactions

- Contact with acids liberates toxic gas.
- May form explosive dust/air mixtures

10.4 Conditions to avoid

- Keep away from heat and sources of ignition

10.5 Incompatible materials

- Incompatible with acid
- Incompatible with oxidizing substances
- Incompatible with alkalis (strong bases)
- Incompatible with combustible material

10.6 Hazardous decomposition products

- Decomposition products may include bromine
- Decomposition products may include hydrogen bromide
- Decomposition products may include hydrogen chloride
- Decomposition products may include nitrogen and carbon oxides

SECTION 11: Toxicological information

11.1 Information on toxicological effects

- Acute Toxicity
  Harmful if swallowed.

Substances

Chemical Name	LD50 (oral, rat)	LD50 (oral, mouse)	LD50 (dermal, rabbit)
BCDMH	485 mg/kg Method: FIFRA GLP: yes	700 mg/kg Method: FIFRA GLP: yes	> 2 000 mg/kg Method: FIFRA

- Skin corrosion/irritation
  Causes severe skin burns
  Species: Rabbit
  Exposure time: 4 h
  Method: OECD Test Guideline 404
  Result: Corrosive
  GLP: Yes
- Serious eye damage/irritation
  Causes serious eye damage.
  Species: Rabbit
  Method: FIFRA
  Result: Corrosive
  GLP: Yes
- Respiratory or skin sensitisation
  May cause an allergic skin reaction.
  Test Type: Buehler Test
  Species: Guinea pig
  Result: Sensitising
  GLP: Yes
- Germ cell mutagenicity
  Genotoxicity in vitro:

  Test Type: Ames test
  Species: Salmonella typhimurium
  Metabolic activation: Yes
  Method: OECD Test Guideline 471
  Result: Positive

  Test Type: Gene mutation
  Species: Mouse lymphoma cells
  Metabolic activation: Yes
  Method: OECD Test Guideline 476
  Result: Positive

  Genotoxicity in vivo:

  Test Type: In vivo micronucleus test
  Species: Mouse
  Method: OECD Test Guideline 474
  Result: Negative

  Test Type: Unscheduled DNA synthesis assay
  Species: Rat
  Method: OECD Test Guideline 486
  Result: Negative

SECTION 11: Toxicological information (. ..)

- Carcinogenicity
  No information available
- Reproductive toxicity
  No information available
- Specific target organ toxicity (STOT) - single exposure
  Based on available data, the classification criteria are not met
- Specific target organ toxicity (STOT) - repeated exposure
  Based on available data, the classification criteria are not met
- Aspiration hazard
  Based on available data, the classification criteria are not met
- Contact with eyes
  May cause severe damage with formation of corneal ulcers and permanent impairment of vision.
  May cause redness and swelling
  May cause blurred vision
- Contact with skin
  May cause severe burns with permanent skin damage which are slow to heal.
  May cause an allergic skin reaction.
  Possible blistering of the skin of affected areas
- Ingestion
  May cause burns to mouth and throat
  May cause perforation of the oesophagus and stomach
  May cause damage to the stomach lining
  May cause nausea/vomiting
  May cause stomach pain
- Inhalation
  May cause respiratory irritation
  May cause breathing difficulty

SECTION 12: Ecological information

12.1 Toxicity

Very toxic to aquatic life.

Toxicity to fish:

LC50 (Oncorhynchus mykiss (rainbow trout)): 0,65 mg/l
Exposure time: 96 h
Method: US-EPA
GLP: Yes
LC50 (Lepomis macrochirus (Bluegill sunfish)): 1,17 mg/l
Exposure time: 96 h
Method: US-EPA
GLP: Yes

Toxicity to daphnia and other aquatic invertebrates:

EC50 (Daphnia magna (Water flea)): 0,87 mg/l Exposure time: 48 h
Test Type: Immobilization
Method: US-EPA
GLP: Yes

Toxicity to algae:

ErC50 (Desmodesmus subspicatus (green algae)): 2 mg/l
End point: Growth rate
Exposure time: 72 h
Test Type: Growth inhibition

SECTION 12: Ecological information (. ..)

Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: Yes

Toxicity to microorganisms:

EC50 (activated sludge): 20 mg/l
Exposure time: 3 h
Test Type: Respiration inhibition
Analytical monitoring: No
Method: OECD Test Guideline 209
GLP: Yes

12.2 Persistence and degradability

Biodegradability:

Result: No data available

Stability in water:

Degradation half life (t1/2): <= 91 h (25 °C)
pH: 7
Method: EPA-FIFRA
GLP: Yes

12.3 Bioaccumulative potential

- No information available

12.4 Mobility in soil

- No information available

12.5 Results of PBT and vPvB assessment

- Not a PBT according to REACH Annex XIII
- Not a vPvB according to REACH Annex XIII

12.6 Other adverse effects

The following ecotoxicological data refer to:
5,5-Dimethylhydantoin (CAS-No.: 77-71-4)

Toxicity to fish:

LC50 (Oncorhynchus mykiss (rainbow trout)): > 972 mg/l
Exposure time: 96 h
Analytical monitoring: No
Method: US-EPA
GLP: Yes

LC50 (Pimephales promelas (fathead minnow)): 16 500 mg/l
Exposure time: 96 h
NOEC (Pimephales promelas (fathead minnow)): 14 mg/l
Exposure time: 33 d
Test Type: Early-life Stage
Analytical monitoring: Yes
Method: FIFRA
GLP: Yes

Toxicity to daphnia and other aquatic invertebrates:

EC50 (Daphnia magna (Water flea)): 6 200 mg/l
Exposure time: 48 h
Test Type: Immobilization
Analytical monitoring: No
Method: EPA-FIFRA
GLP: No

SECTION 12: Ecological information (. ..)

NOEC (Daphnia magna (Water flea)): 71 mg/l
Exposure time: 21 d
Test Type: Reproduction Test
Analytical monitoring: Yes
Method: OECD Test Guideline 202
GLP: Yes

Toxicity to algae:

EC50 (Pseudokirchneriella subcapitata): > 1 000 mg/l
Exposure time: 96 h
Test Type: Growth inhibition
Analytical monitoring: Yes
Method: OECD Test Guideline 201

Toxicity to microorganisms:

EC50 (activated sludge): > 1 000 mg/l
Exposure time: 3 h
Test Type: Respiration inhibition
Analytical monitoring: No
Method: OECD Test Guideline 209

Biodegradability:

Test Type: Die-Away Test
Inoculum: activated sludge
Concentration: 25 mg/l
Result: Biodegradable
Biodegradation: 94 %
Exposure time: 19 d
GLP: No

Test Type: CO2 Evolution Test
Inoculum: activated sludge
Concentration: 10 mg/l
Result: Readily biodegradable.
Biodegradation: 88 %
Exposure time: 28 d
Method: OECD Test Guideline 301B
GLP: Yes

Stability in water:

Test Type: Abiotic degradation
Degradation half life (t1/2): > 360 d (25 °C)
pH: 5 - 9
Method: EPA-FIFRA
GLP: Yes

Bioaccumulation:

Species: Lepomis macrochirus (Bluegill sunfish)
Exposure time: 42 d
Bioconcentration factor (BCF): < 1,79
Method: OECD Test Guideline 305
GLP: Yes

SECTION 13: Disposal considerations

13.1 Waste treatment methods

- Disposal should be in accordance with local, state or national legislation

SECTION 13: Disposal considerations (...)

- Do not discharge into drains or the environment, dispose to an authorised waste collection point
- Do not reuse empty containers without commercial cleaning or reconditioning

13.2 Classification

- The waste must be identified according to the List of Wastes (2000/532/EC)
- Hazardous Property Code(s): HP 6 Acute Toxicity; HP 8 Corrosive; HP 13 Sensitising; HP 14 Ecotoxic

SECTION 14: Transport information

14.1 UN number

- UN No.: 3085

14.2 UN proper shipping name

- Proper Shipping Name: OXIDIZING SOLID, CORROSIVE, N.O.S (bromochloro-5,5-dimethylimidazolidine-2,4-dione)

14.3 Transport hazard class(es)

- Hazard Class: 5.1 (8)

14.4 Packing group

- Packing Group: III

14.5 Environmental hazards

- Marine pollutant

14.6 Special precautions for user

- See Section 7

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

- Not applicable

14.8 Transport Regulations

14.9 Road/Rail (ADR/RID)

- Proper Shipping Name: OXIDIZING SOLID, CORROSIVE, N.O.S (Bromochloro-5,5-dimethylimidazolidine-2,4-dione)
- ADR UN No.: 3085
- ADR Hazard Class: 5.1 (8)
- ADR Packing Group: III
- Tunnel Code: E

14.10 Sea (IMDG)

- Proper Shipping Name: OXIDIZING SOLID, CORROSIVE, N.O.S (Bromochloro-5,5-dimethylimidazolidine-2,4-dione)
- IMDG UN No.: 3085
- IMDG Hazard Class: 5.1 (8)
- IMDG Pack Group.: III

14.11 Air (ICAO/IATA)

- Proper Shipping Name: OXIDIZING SOLID, CORROSIVE, N.O.S (Bromochloro-5,5-dimethylimidazolidine-2,4-dione)
- ICAO UN No.: 3085
- ICAO Hazard Class: 5.1 (8)

SECTION 14: Transport information (....)

- ICAO Packing Group: III

SECTION 15: Regulatory information

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

- This safety data sheet is provided in compliance with REACH Regulation (EC) No 1907/2006 as amended by Regulation (EU) 2015/830
- Regulation (EC) No. 1272/2008 on the classification, labelling and packaging of substances and mixtures (CLP Regulation) applies in Europe
- The Hazardous Waste (England and Wales) Regulations 2005 apply in the UK
- This product is covered by EU Directive 2012/18/EU (the Seveso III Directive)
- This product is covered by the EU Biocides Regulation 528/2012 (EU BPR)

15.2 Chemical safety assessment

- A chemical safety assessment is not required under REACH

SECTION 16: Other information

This 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. Such information is, to the best of our knowledge and belief, accurate, and reliable as of the date of authorisation of this safety data sheet. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. It is the user's responsibility to be satisfied as to the suitability and completeness of such information for the product as used.

Sources of data: Information from published literature and supplier safety data sheets

Revision No. 2.0.0. Revised December 2019.
Changes made: Revised to conform to Revised Annex II in Regulation (EU) 2015/830

Text not given with phrase codes where they are used elsewhere in this safety data sheet:

- H302: Harmful if swallowed
- H314: Causes severe skin burns and eye damage
- H317: May cause an allergic skin reaction.
- H318: Causes serious eye damage
- H400: Very toxic to aquatic life

Acronyms

- CAS: Chemical Abstracts Service
- DNEL: Derived No-Effect Level
- EC: European Community
- EC50: Effective Concentration, 50%
- GHS: Globally Harmonised System
- LC50: Lethal Concentration, 50%
- LD50: Lethal Dose, 50%
- NOAEL: No observed adverse effect level
- OEL: Occupational Exposure Limit
- PBT: Persistent, Bioaccumulative and Toxic
- PNEC: Predicted No-Effect Concentration
- REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals
- SVHC: Substances of Very High Concern
- vPvB: very Persistent and very Bioaccumulative
- WEL: Workplace Exposure Limit

--- end of safety datasheet ---