



SAFETY DATA SHEET

MATERION

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

1.1. Product identifier

Name of the substance Barium Chlorate (Ba(ClO₃)₂) powder
Identification number 017-003-00-8 (Index number)
Synonyms Chloric acid, barium salt
Document number 2GS
Materion Code 2GS
Issue date 19-January-2018
Version number 01

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

Identified uses Not available.
Uses advised against None known.

1.3. Details of the supplier of the safety data sheet

Supplier

Company name Materion Advanced Chemicals Inc.
Address 407 N. 13th Street
1316 W. St. Paul Avenue
Milwaukee, WI 53233
United States
Division Milwaukee
Telephone 414.212.0257
e-mail advancedmaterials@materion.com
Contact person Noreen Atkinson

1.4. Emergency telephone number

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The substance has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Regulation (EC) No 1272/2008 as amended

Physical hazards

Oxidising solids Category 1 H271 - May cause fire or explosion; strong oxidiser.

Health hazards

Acute toxicity, oral Category 4 H302 - Harmful if swallowed.
H302 - Harmful if swallowed.

Acute toxicity, inhalation Category 4 H332 - Harmful if inhaled.

Environmental hazards

Hazardous to the aquatic environment, long-term aquatic hazard Category 2 H411 - Toxic to aquatic life with long lasting effects.

Hazard summary

May cause flash fire or explosion. Harmful if inhaled. Harmful if swallowed. Exposure to powder or dusts may be irritating to eyes, nose and throat. Dangerous for the environment if discharged into watercourses. Occupational exposure to the substance or mixture may cause adverse health effects. The material as sold in solid form is generally not considered hazardous. However, if the process involves grinding, melting, cutting or any other process that causes a release of dust or fumes, hazardous levels of airborne particulate could be generated.

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Contains: barium chlorate

Hazard pictograms



Signal word

Danger

Hazard statements

| | |
|------|--|
| H302 | Harmful if swallowed. |
| H271 | May cause fire or explosion; strong oxidiser. |
| H302 | Harmful if swallowed. |
| H332 | Harmful if inhaled. |
| H411 | Toxic to aquatic life with long lasting effects. |

Precautionary statements

Prevention

| | |
|------|--|
| P210 | Keep away from heat. |
| P220 | Keep away from clothing and other combustible materials. |
| P220 | Keep/Store away from clothing/combustible materials. |
| P221 | Take any precaution to avoid mixing with combustibles. |
| P261 | Avoid breathing dust/fume. |
| P264 | Wash thoroughly after handling. |
| P270 | Do not eat, drink or smoke when using this product. |
| P271 | Use only outdoors or in a well-ventilated area. |
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves/eye protection/face protection. |
| P283 | Wear fire/flame resistant/retardant clothing. |

Response

| | |
|--------------------|--|
| P330 | Rinse mouth. |
| P304 + P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| P306 + P360 | IF ON CLOTHING: rinse immediately contaminated clothing and skin with plenty of water before removing clothes. |
| P312 | Call a POISON CENTRE/doctor if you feel unwell. |
| P370 + P378 | In case of fire: Use appropriate media to extinguish. |
| P371 + P380 + P375 | In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion. |
| P391 | Collect spillage. |

Storage

Store away from incompatible materials.

Disposal

| | |
|------|---|
| P501 | Dispose of contents/container in accordance with local/regional/national/international regulations. |
|------|---|

Supplemental label information

100 % of the mixture consists of component(s) of unknown acute dermal toxicity. 100 % of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. For further information, please contact the Product Stewardship Department at +1.800.862.4118.

2.3. Other hazards

Not a PBT or vPvB substance or mixture.

SECTION 3: Composition/information on ingredients

3.1. Substances

General information

| Chemical name | % | CAS-No. / EC No. | REACH Registration No. | INDEX No. | Notes |
|------------------------|---|-------------------------|------------------------|--------------|-------|
| barium chlorate | 100 | 13477-00-4 236-760-7 | - | 017-003-00-8 | # |
| Classification: | Ox. Sol. 1;H271, Acute Tox. 4;H302, Acute Tox. 4;H332, Aquatic Chronic 2;H411 | | | | |

List of abbreviations and symbols that may be used above

DSD: Directive 67/548/EEC.

CLP: Regulation No. 1272/2008.

#: This substance has been assigned Union workplace exposure limit(s).

#: This substance has been assigned Community workplace exposure limit(s).

M: M-factor

PBT: persistent, bioaccumulative and toxic substance.

vPvB: very persistent and very bioaccumulative substance.

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition comments

The full text for all R- and H-phrases is displayed in section 16. The full text for all H-statements is displayed in section 16.

SECTION 4: First aid measures

| | |
|--|---|
| General information | Take off all contaminated clothing immediately. Contact with combustible material may cause fire. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. |
| 4.1. Description of first aid measures | |
| Inhalation | Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a POISON CENTRE or doctor/physician if you feel unwell. |
| Skin contact | IF ON CLOTHING: rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Wash off with soap and water. Get medical attention if irritation develops and persists. |
| Eye contact | Do not rub eyes. Rinse with water. Get medical attention if irritation develops and persists. |
| Ingestion | Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. IF SWALLOWED: Call a POISON CENTRE or doctor/physician if you feel unwell. |
| 4.2. Most important symptoms and effects, both acute and delayed | Dusts may irritate the respiratory tract, skin and eyes. |
| 4.3. Indication of any immediate medical attention and special treatment needed | Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed. |

SECTION 5: Firefighting measures

| | |
|---|--|
| General fire hazards | May cause fire or explosion; strong oxidiser. Contact with combustible material may cause fire. |
| 5.1. Extinguishing media | |
| Suitable extinguishing media | Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂). |
| Unsuitable extinguishing media | None known. |
| 5.2. Special hazards arising from the substance or mixture | Strong oxidizer - contact with other material may cause fire. May cause fire or explosion; strong oxidiser. Greatly increases the burning rate of combustible materials. Containers may explode when heated. During fire, gases hazardous to health may be formed. |
| 5.3. Advice for firefighters | |
| Special protective equipment for firefighters | Self-contained breathing apparatus and full protective clothing must be worn in case of fire. |
| Special firefighting procedures | In case of fire and/or explosion do not breathe fumes. In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Move containers from fire area if you can do so without risk. Use water spray to cool unopened containers. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out. Water runoff can cause environmental damage. |

SECTION 6: Accidental release measures

| | |
|---|--|
| 6.1. Personal precautions, protective equipment and emergency procedures | |
| For non-emergency personnel | Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep away from clothing and other combustible materials. Wear appropriate personal protective equipment. Avoid inhalation of dust. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS. |
| For emergency responders | Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS. |
| 6.2. Environmental precautions | Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground. |

6.3. Methods and material for containment and cleaning up

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep combustibles (wood, paper, oil etc) away from spilled material. Ventilate the contaminated area. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Minimise dust generation and accumulation. Collect dust using a vacuum cleaner equipped with HEPA filter. Wear appropriate protective equipment and clothing during clean-up. Prevent product from entering drains. Stop the flow of material, if this is without risk.

Large Spills: Wet down with water and dike for later disposal. Absorb in vermiculite, dry sand or earth and place into containers. Shovel the material into waste container. Following product recovery, flush area with water.

Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use.

For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

6.4. Reference to other sections

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Minimise dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Keep away from heat. Take any precaution to avoid mixing with combustibles. Keep away from clothing and other combustible materials. Do not taste or swallow. Avoid breathing dust. Avoid prolonged exposure. When using, do not eat, drink or smoke. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains. Observe good industrial hygiene practices.

7.2. Conditions for safe storage, including any incompatibilities

Keep away from heat. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Do not store near combustible materials. Store away from incompatible materials (see Section 10 of the SDS).

7.3. Specific end use(s)

Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Austria. MAK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001

| Material | Type | Value | Form |
|----------------------------------|------|-----------------------|---------------------|
| barium chlorate (CAS 13477-00-4) | MAK | 0,5 mg/m ³ | Inhalable fraction. |
| | STEL | 2 mg/m ³ | Inhalable fraction. |

Belgium. Exposure Limit Values.

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Bulgaria. OELs. Regulation No 13 on protection of workers against risks of exposure to chemical agents at work

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Croatia. Dangerous Substance Exposure Limit Values in the Workplace (ELVs), Annexes 1 and 2, Narodne Novine, 13/09

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | MAC | 0,5 mg/m ³ |

Czech Republic. OELs. Government Decree 361

| Material | Type | Value |
|----------------------------------|---------|-----------------------|
| barium chlorate (CAS 13477-00-4) | Ceiling | 2,5 mg/m ³ |
| | TWA | 0,5 mg/m ³ |

Denmark. Exposure Limit Values

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TLV | 0,5 mg/m ³ |

Estonia. OELs. Occupational Exposure Limits of Hazardous Substances. (Annex of Regulation No. 293 of 18 September 2001)

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Finland. Workplace Exposure Limits

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | VME | 0,5 mg/m ³ |

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

| Material | Type | Value | Form |
|----------------------------------|------|-----------------------|---------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ | Inhalable fraction. |

Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace

| Material | Type | Value | Form |
|----------------------------------|------|-----------------------|---------------------|
| barium chlorate (CAS 13477-00-4) | AGW | 0,5 mg/m ³ | Inhalable fraction. |

Greece. OELs (Decree No. 90/1999, as amended)

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Hungary. OELs. Joint Decree on Chemical Safety of Workplaces

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Iceland. OELs. Regulation 154/1999 on occupational exposure limits

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Ireland. Occupational Exposure Limits

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Italy. Occupational Exposure Limits

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Latvia. OELs. Occupational exposure limit values of chemical substances in work environment

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Lithuania. OELs. Limit Values for Chemical Substances, General Requirements

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Luxembourg. Binding Occupational exposure limit values (Annex I), Memorial A

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Malta. OELs. Occupational Exposure Limit Values (L.N. 227. of Occupational Health and Safety Authority Act (CAP. 424), Schedules I and V)

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Netherlands. OELs (binding)

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Norway. Administrative Norms for Contaminants in the Workplace

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TLV | 0,5 mg/m ³ |

Poland. MACs. Regulation regarding maximum permissible concentrations and intensities of harmful factors in the work environment, Annex 1

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Portugal. OELs. Decree-Law n. 290/2001 (Journal of the Republic - 1 Series A, n.266)

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Portugal. VLEs. Norm on occupational exposure to chemical agents (NP 1796)

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Romania. OELs. Protection of workers from exposure to chemical agents at the workplace

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Slovakia. OELs. Regulation No. 300/2007 concerning protection of health in work with chemical agents

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Slovenia. OELs. Regulations concerning protection of workers against risks due to exposure to chemicals while working (Official Gazette of the Republic of Slovenia)

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Spain. Occupational Exposure Limits

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

Sweden. OELs. Work Environment Authority (AV), Occupational Exposure Limit Values (AFS 2015:7)

| Material | Type | Value | Form |
|----------------------------------|------|-----------------------|-------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ | Total dust. |

Switzerland. SUVA Grenzwerte am Arbeitsplatz

| Material | Type | Value | Form |
|----------------------------------|------|-----------------------|-----------------|
| barium chlorate (CAS 13477-00-4) | STEL | 4 mg/m ³ | Inhalable dust. |
| | TWA | 0,5 mg/m ³ | Inhalable dust. |

UK. EH40 Workplace Exposure Limits (WELs)

| Material | Type | Value |
|----------------------------------|------|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |

EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU

| Material | Type | Value |
|---|--|-----------------------|
| barium chlorate (CAS 13477-00-4) | TWA | 0,5 mg/m ³ |
| Biological limit values | No biological exposure limits noted for the ingredient(s). | |
| Recommended monitoring procedures | Follow standard monitoring procedures. | |
| Derived no effect levels (DNELs) | Not available. | |
| Predicted no effect concentrations (PNECs) | Not available. | |

8.2. Exposure controls

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. If engineering measures are not sufficient to maintain concentrations of dust particulates below the OEL (occupational exposure limit), suitable respiratory protection must be worn. If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits.

Individual protection measures, such as personal protective equipment

| | |
|-------------------------------|---|
| General information | Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment. |
| Eye/face protection | Wear eye/face protection. Wear safety glasses with side shields (or goggles). |
| Skin protection | |
| - Hand protection | Wear appropriate chemical resistant gloves. Frequent change is advisable. |
| - Other | Wear fire/flare resistant/retardant clothing. Wear protective gloves. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment. |
| Respiratory protection | Wear respirator with dust filter. Dust & vapor respirator. |
| Thermal hazards | Wear appropriate thermal protective clothing, when necessary. |

Hygiene measures Keep from contact with clothing and other combustible materials. Remove and wash contaminated clothing promptly. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Environmental exposure controls Contain spills and prevent releases and observe national regulations on emissions. Inform appropriate managerial or supervisory personnel of all environmental releases.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties****Appearance**

| | |
|--|-------------------|
| Physical state | Solid. |
| Form | Powder. |
| Colour | Not available. |
| Odour | Not available. |
| Odour threshold | Not available. |
| pH | Not available. |
| Melting point/freezing point | 414 °C (777,2 °F) |
| Initial boiling point and boiling range | Not available. |
| Flash point | Not available. |
| Evaporation rate | Not available. |
| Flammability (solid, gas) | Not available. |

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

| | |
|--|---|
| Flammability limit - upper (%) | Not available. |
| Vapour pressure | < 0,0000001 kPa at 25 °C |
| Vapour density | Not available. |
| Relative density | Not available. |
| Solubility(ies) | |
| Solubility (water) | Not available. |
| Partition coefficient (n-octanol/water) | Not available. |
| Auto-ignition temperature | Not available. |
| Decomposition temperature | Not available. |
| Viscosity | Not available. |
| Explosive properties | Not explosive. |
| Oxidising properties | May cause fire or explosion; strong oxidiser. |

9.2. Other information

| | |
|--------------------------|------------------------------------|
| Density | 3,18 g/cm ³ estimated |
| Molecular formula | Ba.Cl ₂ -O ₃ |
| Molecular weight | 304,23 g/mol |
| Specific gravity | 3,18 |

SECTION 10: Stability and reactivity

| | |
|---|---|
| 10.1. Reactivity | Keep away from combustible material. May ignite or explode on contact with combustible materials. Not available. |
| 10.2. Chemical stability | Risk of explosion. |
| 10.3. Possibility of hazardous reactions | No dangerous reaction known under conditions of normal use. |
| 10.4. Conditions to avoid | Excessive heat. Contact with incompatible materials. |
| 10.5. Incompatible materials | Reducing Agents. |
| 10.6. Hazardous decomposition products | Barium oxide. |

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

| | |
|---------------------|---|
| Inhalation | Harmful if inhaled. |
| Skin contact | Due to lack of data the classification is not possible. Dust or powder may irritate the skin. |
| Eye contact | Dust may irritate the eyes. |
| Ingestion | Harmful if swallowed. Harmful if swallowed. |

Symptoms Dusts may irritate the respiratory tract, skin and eyes.

11.1. Information on toxicological effects

| | |
|--|---|
| Acute toxicity | Harmful if inhaled. Harmful if swallowed. Harmful if swallowed. |
| Skin corrosion/irritation | Due to partial or complete lack of data the classification is not possible. |
| Serious eye damage/eye irritation | Due to partial or complete lack of data the classification is not possible. |
| Respiratory sensitisation | Due to partial or complete lack of data the classification is not possible. |
| Skin sensitisation | Due to partial or complete lack of data the classification is not possible. |
| Germ cell mutagenicity | Due to partial or complete lack of data the classification is not possible. |
| Carcinogenicity | Due to partial or complete lack of data the classification is not possible. |

Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)

Not listed.

| | |
|---|---|
| Reproductive toxicity | Due to partial or complete lack of data the classification is not possible. |
| Specific target organ toxicity - single exposure | Due to partial or complete lack of data the classification is not possible. |
| Specific target organ toxicity - repeated exposure | Due to partial or complete lack of data the classification is not possible. |

| | |
|---|---|
| Aspiration hazard | Due to partial or complete lack of data the classification is not possible. |
| Mixture versus substance information | No information available. |
| Other information | Not available. |

SECTION 12: Ecological information

| | |
|--|---|
| 12.1. Toxicity | Toxic to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected. Due to partial or complete lack of data the classification for hazardous to the aquatic environment, acute hazard, is not possible. |
| 12.2. Persistence and degradability | No data is available on the degradability of this product. |
| 12.3. Bioaccumulative potential | No data available. |
| Partition coefficient n-octanol/water (log Kow) | Not available. |
| Bioconcentration factor (BCF) | Not available. |
| 12.4. Mobility in soil | No data available. |
| 12.5. Results of PBT and vPvB assessment | Not a PBT or vPvB substance or mixture. |
| 12.6. Other adverse effects | No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component. |
| 12.7. Additional information | |

Estonia Dangerous substances in groundwater Data

| | |
|----------------------------------|--|
| barium chlorate (CAS 13477-00-4) | Barium (Ba) 50 UG/L Barium (Ba) 7000 UG/L |
|----------------------------------|--|

Estonia Dangerous substances in soil Data

| | |
|----------------------------------|--|
| barium chlorate (CAS 13477-00-4) | Barium (Ba) 2000 mg/kg Barium (Ba) 500 mg/kg Barium (Ba) 750 mg/kg |
|----------------------------------|--|

SECTION 13: Disposal considerations

13.1. Waste treatment methods

| | |
|-------------------------------------|--|
| Residual waste | Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). |
| Contaminated packaging | Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal. |
| EU waste code | The Waste code should be assigned in discussion between the user, the producer and the waste disposal company. |
| Disposal methods/information | Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations. |
| Special precautions | Dispose in accordance with all applicable regulations. |

SECTION 14: Transport information

ADR

| | |
|---|------------------------|
| 14.1. UN number | UN1445 |
| 14.2. UN proper shipping name | BARIUM CHLORATE, SOLID |
| 14.3. Transport hazard class(es) | |
| Class | 5.1 |
| Subsidiary risk | 6.1(PGI, II) |
| Label(s) | 5.1 +6.1 |
| Hazard No. (ADR) | 56 |
| Tunnel restriction code | E |
| 14.4. Packing group | II |

- 14.5. Environmental hazards** No.
- 14.6. Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.

RID

- 14.1. UN number** UN1445
- 14.2. UN proper shipping name** BARIUM CHLORATE, SOLID
- 14.3. Transport hazard class(es)**
- Class** 5.1
 - Subsidiary risk** 6.1(PGI, II)
 - Label(s)** 5.1+6.1
- 14.4. Packing group** II
- 14.5. Environmental hazards** No.
- 14.6. Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.

ADN

- 14.1. UN number** UN1445
- 14.2. UN proper shipping name** BARIUM CHLORATE, SOLID
- 14.3. Transport hazard class(es)**
- Class** 5.1
 - Subsidiary risk** 6.1(PGI, II)
 - Label(s)** 5.1+6.1
- 14.4. Packing group** II
- 14.5. Environmental hazards** No.
- 14.6. Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.

IATA

- 14.1. UN number** UN1445
- 14.2. UN proper shipping name** Barium chlorate, solid
- 14.3. Transport hazard class(es)**
- Class** 5.1
 - Subsidiary risk** 6.1(PGI, II)
- 14.4. Packing group** II
- 14.5. Environmental hazards** No.
- ERG Code** 5P
- 14.6. Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.
- Other information**
- Passenger and cargo aircraft** Allowed with restrictions.
 - Cargo aircraft only** Allowed with restrictions.

IMDG

- 14.1. UN number** UN1445
- 14.2. UN proper shipping name** BARIUM CHLORATE, SOLID
- 14.3. Transport hazard class(es)**
- Class** 5.1
 - Subsidiary risk** 6.1(PGI, II)
- 14.4. Packing group** II
- 14.5. Environmental hazards**
- Marine pollutant** No.
- EmS** F-H, S-Q
- 14.6. Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.



SECTION 15: Regulatory information

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

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

barium chlorate (CAS 13477-00-4)

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

barium chlorate (CAS 13477-00-4)

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Not listed.

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.

Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended

barium chlorate (CAS 13477-00-4)

Other regulations

The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended. Additional information is given in the Safety Data Sheet.

National regulations

Follow national regulation for work with chemical agents.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations

Not available.

Information on evaluation method leading to the classification of mixture

Not applicable.

Disclaimer

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