# SAFETY DATA SHEET

according to Regulation UK SI 2019/758 and UK SI 2020/1577 as amended

**Creation Date** 24-Nov-2010 **Revision Date** 20-Jun-2025 **Revision Number** 9

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THECOMPANY/UNDERTAKING

### 1.1. Product identifier

| | |
|---|---|
| **Product Description:** | **Potassium chlorate** |
| **Cat No. :** | **418190000; 418190050; 418195000** |
| **Synonyms** | Berthollet`s Salt; Chlorate of Potash; Salt of Tarter |
| **Index No** | 017-004-00-3 |
| **CAS No** | 3811-04-9 |
| **EC No** | 223-289-7 |
| **Molecular Formula** | Cl K O3 |
| **REACH registration number** | 01-2119494917-18 |

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

| | |
|---|---|
| **Recommended Use** | Laboratory chemicals. |
| **Sector of use** | SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites |
| **Product category** | PC21 - Laboratory chemicals |
| **Process categories** | PROC15 - Use as a laboratory reagent |
| **Environmental release category** | ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates) |
| **Uses advised against** | No Information available |

### 1.3. Details of the supplier of the safety data sheet

**Company**

**UK entity/business name**
Fisher Scientific UK
Bishop Meadow Road,
Loughborough, Leicestershire LE11 5RG, United Kingdom

**EU entity/business name**
Thermo Fisher Scientific
Janssen Pharmaceuticalaan 3a, 2440 Geel, Belgium

**E-mail address** begel.sdsdesk@thermofisher.com

### 1.4. Emergency telephone number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
**CHEMTREC** Tel. No. **US:**001-800-424-9300 / **Europe:**001-703-527-3887

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

**GHS Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567**

**Physical hazards**

| | |
|---|---|
| Oxidizing solids | Category 1 (H271) |
| **Health hazards** | |
| Acute oral toxicity | Category 3 (H301) |
| Acute Inhalation Toxicity - Dusts and Mists | Category 4 (H332) |
| **Environmental hazards** | |
| Chronic aquatic toxicity | Category 2 (H411) |

*Full text of Hazard Statements: see section 16*

### 2.2. Label elements

**Signal Word** **Danger**

**Hazard Statements**

H271 - May cause fire or explosion; strong oxidizer
H301 - Toxic if swallowed
H332 - Harmful if inhaled
H411 - Toxic to aquatic life with long lasting effects

**Precautionary Statements**

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P220 - Keep away from clothing and other combustible materials
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P371 + P380 + P375 - In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion
P264 - Wash face, hands and any exposed skin thoroughly after handling
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P312 - Call a POISON CENTER or doctor if you feel unwell

### 2.3. Other hazards

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB)

Toxicity to Soil Dwelling Organisms
Toxic to terrestrial vertebrates
This product does not contain any known or suspected endocrine disruptors

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substances

| Component | CAS No | EC No | Weight % | GHS Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567 |
|---|---|---|---|---|
| Potassium chlorate | 3811-04-9 | EEC No. 223-289-7 | <=100 | Ox. Sol. 1 (H271)<br>Acute Tox. 3 (H301)<br>Acute Tox. 4 (H332)<br>Aquatic Chronic 2 (H411) |

| REACH registration number | 01-2119494917-18 |
|---|---|

*Full text of Hazard Statements: see section 16*

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

**General Advice** Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

**Eye Contact** In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

**Skin Contact** Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

**Ingestion** Do NOT induce vomiting. Call a physician or poison control center immediately.

**Inhalation** Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

**Self-Protection of the First Aider** Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

### 4.2. Most important symptoms and effects, both acute and delayed

None reasonably foreseeable.

### 4.3. Indication of any immediate medical attention and special treatment needed

**Notes to Physician** Treat symptomatically.

## SECTION 5: FIREFIGHTING MEASURES

### 5.1. Extinguishing media

**Suitable Extinguishing Media**
Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam.

**Extinguishing media which must not be used for safety reasons**
No information available.

### 5.2. Special hazards arising from the substance or mixture

Oxidizer: Contact with combustible/organic material may cause fire. Containers may explode when heated. May ignite combustibles (wood paper, oil, clothing, etc.).

**Hazardous Combustion Products**
Chlorine, Oxygen, Hydrogen chloride gas.

### 5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment as required. Ensure adequate ventilation. Avoid dust formation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.

### 6.2. Environmental precautions

Do not flush into surface water or sanitary sewer system.

### 6.3. Methods and material for containment and cleaning up

Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Sweep up and shovel into suitable containers for disposal.

### 6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Wear personal protective equipment/face protection. Avoid dust formation. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe (dust, vapor, mist, gas). Do not ingest. If swallowed then seek immediate medical assistance. Keep away from clothing and other combustible materials.

**Hygiene Measures**
Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

### 7.2. Conditions for safe storage, including any incompatibilities

Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Do not store near combustible materials. Keep containers tightly closed in a dry, cool and well-ventilated place.

**Technical Rules for Hazardous Substances (TRGS) 510 Storage Class (LGK) (Germany)** Class 5.1A

### 7.3. Specific end use(s)

Use in laboratories

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

**Exposure limits**
List source(s):

**Biological limit values**
This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies

**Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)**
See table for values

| Component | Acute effects local (Dermal) | Acute effects systemic (Dermal) | Chronic effects local (Dermal) | Chronic effects systemic (Dermal) |
|---|---|---|---|---|
| Potassium chlorate 3811-04-9 ( <=100 ) | | | | DNEL = 3.5mg/kg bw/day |

| Component | Acute effects local (Inhalation) | Acute effects systemic (Inhalation) | Chronic effects local (Inhalation) | Chronic effects systemic (Inhalation) |
|---|---|---|---|---|
| Potassium chlorate 3811-04-9 ( <=100 ) | | | | DNEL = 5.76mg/m$^3$ |

**Predicted No Effect Concentration (PNEC)**
See values below.

| Component | Fresh water | Fresh water sediment | Water Intermittent | Microorganisms in sewage treatment | Soil (Agriculture) |
|---|---|---|---|---|---|
| Potassium chlorate 3811-04-9 ( <=100 ) | PNEC = 1.15mg/L | | | PNEC = 115mg/L | PNEC = 3.83mg/kg soil dw |

| Component | Marine water | Marine water sediment | Marine water intermittent | Food chain | Air |
|---|---|---|---|---|---|
| Potassium chlorate 3811-04-9 ( <=100 ) | PNEC = 1.15mg/L | | | | |

### 8.2. Exposure controls

**Engineering Measures**
Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.
Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

**Personal protective equipment**

**Eye Protection** Goggles (European standard - EN 166)

**Hand Protection** Protective gloves

| Glove material | Breakthrough time | Glove thickness | EU standard | Glove comments |
|---|---|---|---|---|
| Natural rubber | See manufacturers | - | | (minimum requirement) |

| | | |
|---|---|---|
| Nitrile rubber<br>Neoprene<br>PVC | recommendations | EN 374 |

**Skin and body protection** Long sleeved clothing.

Inspect gloves before use.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)
Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.
Remove gloves with care avoiding skin contamination.

**Respiratory Protection** When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

**Large scale/emergency use** Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced
**Recommended Filter type:** Particulates filter conforming to EN 143

**Small scale/Laboratory use** Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
**Recommended half mask:-** Particle filtering: EN149:2001
When RPE is used a face piece Fit Test should be conducted

**Environmental exposure controls** Prevent product from entering drains. Do not allow material to contaminate ground water system.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties

| | | |
|---|---|---|
| **Physical State** | Powder Solid | |
| **Appearance** | White | |
| **Odor** | Odorless | |
| **Odor Threshold** | No data available | |
| **Melting Point/Range** | 356 - 368 °C / 672.8 - 694.4 °F | |
| **Softening Point** | No data available | |
| **Boiling Point/Range** | No information available | |
| **Flammability (liquid)** | Not applicable | Solid |
| **Flammability (solid,gas)** | No information available | |
| **Explosion Limits** | No data available | |
| **Flash Point** | No information available | **Method -** No information available |
| **Autoignition Temperature** | No data available | |
| **Decomposition Temperature** | 400 °C | |
| **pH** | 5-6 | 73 g/l aq. sol |
| **Viscosity** | Not applicable | Solid |
| **Water Solubility** | Soluble | |
| **Solubility in other solvents** | No information available | |
| **Partition Coefficient (n-octanol/water)** | | |
| **Vapor Pressure** | No data available | |
| **Density / Specific Gravity** | No data available | |
| **Bulk Density** | No data available | |
| **Vapor Density** | Not applicable | Solid |
| **Particle characteristics** | No data available | |

### 9.2. Other information

| | |
|---|---|
| **Molecular Formula** | Cl K O3 |
| **Molecular Weight** | 122.55 |
| **Oxidizing Properties** | Oxidizer |
| **Evaporation Rate** | Not applicable - Solid |

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

Yes

### 10.2. Chemical stability

Oxidizer: Contact with combustible/organic material may cause fire. Risk of explosion by shock, friction, fire or other sources of ignition.

### 10.3. Possibility of hazardous reactions

| | |
|---|---|
| **Hazardous Polymerization** | Hazardous polymerization does not occur. |
| **Hazardous Reactions** | None under normal processing. |

### 10.4. Conditions to avoid

Excess heat. Incompatible products. Combustible material.

### 10.5. Incompatible materials

Acids. Alcohols. Strong reducing agents. Hydrocarbons. Organic materials. Finely powdered metals. Combustible material.

### 10.6. Hazardous decomposition products

Chlorine. Oxygen. Hydrogen chloride gas.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

**Product Information**

**(a) acute toxicity;**

| | |
|---|---|
| **Oral** | Category 3 |
| **Dermal** | Based on available data, the classification criteria are not met |
| **Inhalation** | Category 4 |

| Component | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---|---|---|---|
| Potassium chlorate | LD50 = 100 mg/kg ( Rat ) | LD50 > 2000 mg/kg ( Rat ) | LC50 > 5.1 mg/L ( Rat ) 4 h |

**(b) skin corrosion/irritation;** No data available

**(c) serious eye damage/irritation;** No data available

**(d) respiratory or skin sensitization;**

| | |
|---|---|
| **Respiratory** | No data available |
| **Skin** | No data available |

**(e) germ cell mutagenicity;** No data available

**(f) carcinogenicity;** No data available

There are no known carcinogenic chemicals in this product

**(g) reproductive toxicity;** No data available

**(h) STOT-single exposure;** No data available

**(i) STOT-repeated exposure;** No data available

**Target Organs** None known.

**(j) aspiration hazard;** Not applicable
Solid

**Symptoms / effects,both acute and delayed** No information available.

**11.2. Information on other hazards**

**Endocrine Disrupting Properties** Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

## SECTION 12: ECOLOGICAL INFORMATION

**12.1. Toxicity**

**Ecotoxicity effects** Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

| Component | Freshwater Fish | Water Flea | Freshwater Algae |
|---|---|---|---|
| Potassium chlorate | LC50: = 1750 mg/L, 96h (Oncorhynchus mykiss)<br>LC50: = 13500 mg/L, 96h (Pimephales promelas) | | |

**12.2. Persistence and degradability**

**Persistence** Soluble in water, Persistence is unlikely, based on information available.

**Degradability** Not relevant for inorganic substances.

**Degradation in sewage treatment plant** Contains substances known to be hazardous to the environment or not degradable in waste water treatment plants.

**12.3. Bioaccumulative potential** Bioaccumulation is unlikely

**12.4. Mobility in soil** The product is water soluble, and may spread in water systems Will likely be mobile in the environment due to its water solubility. Highly mobile in soils

**12.5. Results of PBT and vPvB assessment** Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB).

**12.6. Endocrine disrupting properties**

**Endocrine Disruptor Information** This product does not contain any known or suspected endocrine disruptors

**12.7. Other adverse effects**

**Persistent Organic Pollutant** This product does not contain any known or suspected substance

**Ozone Depletion Potential** This product does not contain any known or suspected substance

## SECTION 13: DISPOSAL CONSIDERATIONS

**13.1. Waste treatment methods**

**Waste from Residues/Unused Products** Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

**Contaminated Packaging** Dispose of this container to hazardous or special waste collection point.

**European Waste Catalogue (EWC)** According to the European Waste Catalog, Waste Codes are not product specific, but application specific.

**Other Information** Do not flush to sewer. Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains. Do not let this chemical enter the environment.

## SECTION 14: TRANSPORT INFORMATION

**IMDG/IMO**

**14.1. UN number** UN1485
**14.2. UN proper shipping name** POTASSIUM CHLORATE
**14.3. Transport hazard class(es)** 5.1
**14.4. Packing group** II

**ADR**

**14.1. UN number** UN1485
**14.2. UN proper shipping name** POTASSIUM CHLORATE
**14.3. Transport hazard class(es)** 5.1
**14.4. Packing group** II

**IATA**

**14.1. UN number** UN1485
**14.2. UN proper shipping name** POTASSIUM CHLORATE
**14.3. Transport hazard class(es)** 5.1
**14.4. Packing group** II

**14.5. Environmental hazards** Dangerous for the environment
Product is a marine pollutant according to the criteria set by IMDG/IMO

**14.6. Special precautions for user** No special precautions required.

**14.7. Maritime transport in bulk according to IMO instruments** Not applicable, packaged goods

## SECTION 15: REGULATORY INFORMATION

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

**International Inventories**

Europe (EINECS/ELINCS/NLP), China (IECSC), Taiwan (TCSI), Korea (KECL), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Australia (AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

| Component | CAS No | EINECS | ELINCS | NLP | IECSC | TCSI | KECL | ENCS | ISHL |
|---|---|---|---|---|---|---|---|---|---|
| Potassium chlorate | 3811-04-9 | 223-289-7 | - | - | X | X | KE-29085 | X | X |

| Component | CAS No | TSCA | TSCA Inventory notification - Active-Inactive | DSL | NDSL | AICS | NZIoC | PICCS |
|---|---|---|---|---|---|---|---|---|
| Potassium chlorate | 3811-04-9 | X | ACTIVE | X | - | X | X | X |

**Legend:** X - Listed '-' - Not Listed **KECL** - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

**Authorisation/Restrictions according to EU REACH** Not applicable

| Component | CAS No | REACH (1907/2006) - Annex XIV - Substances Subject to Authorization | REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances | REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC) |
|---|---|---|---|---|
| Potassium chlorate | 3811-04-9 | - | - | - |

**Seveso III Directive (2012/18/EC)**

| Component | CAS No | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements |
|---|---|---|---|
| Potassium chlorate | 3811-04-9 | Not applicable | Not applicable |

**Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals**
Not applicable

**Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?**
Not applicable

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work .

**National Regulations**

**UK** - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

**WGK Classification** See table for values

| Component | Germany - Water Classification (AwSV) | Germany - TA-Luft Class |
|---|---|---|
| Potassium chlorate | WGK2 | |

### 15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has not been conducted

## SECTION 16: OTHER INFORMATION

**Full text of H-Statements referred to under sections 2 and 3**
H301 - Toxic if swallowed
H332 - Harmful if inhaled
H411 - Toxic to aquatic life with long lasting effects
H271 - May cause fire or explosion; strong oxidizer

**Legend**

**CAS** - Chemical Abstracts Service

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances
**IECSC** - Chinese Inventory of Existing Chemical Substances
**KECL** - Korean Existing and Evaluated Chemical Substances

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory
**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List
**ENCS** - Japanese Existing and New Chemical Substances
**AICS** - Australian Inventory of Chemical Substances
**NZIoC** - New Zealand Inventory of Chemicals

**WEL** - Workplace Exposure Limit
**ACGIH** - American Conference of Governmental Industrial Hygienists
**DNEL** - Derived No Effect Level
**RPE** - Respiratory Protective Equipment
**LC50** - Lethal Concentration 50%
**NOEC** - No Observed Effect Concentration
**PBT** - Persistent, Bioaccumulative, Toxic

**TWA** - Time Weighted Average
**IARC** - International Agency for Research on Cancer
Predicted No Effect Concentration (PNEC)
**LD50** - Lethal Dose 50%
**EC50** - Effective Concentration 50%
**POW** - Partition coefficient Octanol:Water
**vPvB** - very Persistent, very Bioaccumulative

**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road
**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code
**OECD** - Organisation for Economic Co-operation and Development
**BCF** - Bioconcentration factor

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association
**MARPOL** - International Convention for the Prevention of Pollution from Ships
**ATE** - Acute Toxicity Estimate
**VOC** - (Volatile Organic Compound)

**Key literature references and sources for data**
https://echa.europa.eu/information-on-chemicals
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

**Training Advice**
Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.
Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.
First aid for chemical exposure, including the use of eye wash and safety showers.

| | |
|---|---|
| **Creation Date** | 24-Nov-2010 |
| **Revision Date** | 20-Jun-2025 |
| **Revision Summary** | SDS sections updated. |

**This safety data sheet complies with Regulation UK SI 2019/758 and UK SI 2020/1577 as amended.**

**Disclaimer**

**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**

## End of Safety Data Sheet