Safety Data Sheet

# Bromo-tris-pyrrolidino-phosphonium hexafluorophosphate

Version：V2.0.0.1
Report No.：A020270_EU_EN
Creation Date：2026/07/24
Revision Date：-

***Prepared in accordance with EU REACH Regulation (REACH 1907/2006 with amendment 2020/878)**

## Part 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

| | |
|---|---|
| **Product Name** | Bromo-tris-pyrrolidino-phosphonium hexafluorophosphate |
| **Product Model** | 97% |
| **Cat No.** | A020270 |
| **CAS No.** | 132705-51-2 |
| **EC No.** | 620-834-4 |
| **Molecular Formula** | $C_{12}H_{24}BrF_6N_3P_2$ |
| **REACH Registration Number** | Not available from the supplier. The applicability of REACH registration obligations shall be assessed by the EU importer based on the actual annual import tonnage, use and applicable exemptions. |
| **UFI** | Not applicable |

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

| | |
|---|---|
| **Relevant identified uses** | Laboratory chemicals / R&D use only |
| **Uses advised against** | Food, drug, cosmetic, household or other uses |

### 1.3 Details of the supplier of the Safety Data Sheet

| | |
|---|---|
| **Supplier Name** | Pharmate GmbH |
| **Supplier Address** | Monschauer Str. 12, Düsseldorf, Germany |
| **Supplier Post Code** | 40549 |
| **Supplier Telephone** | +49 211 54224195 |
| **Supplier Fax** | —— |
| **Supplier E-mail** | info@pharmaten.de |
| **Manufacturer Name** | Anhui Senrise Technology Co., Ltd. |
| **Manufacturer Address** | No. 88, Weisan Road, High-tech Development Zone, Daguan District, Anqing, Anhui Province, China |
| **Manufacturer Post Code** | 246005 |
| **Manufacturer Telephone** | 400-005-6266 |
| **Manufacturer Fax** | +86（0）556-5555368 |
| **Manufacturer E-mail** | Service@3ASenrise.com |

### 1.4 Emergency telephone number

| | |
|---|---|
| **Emergency telephone number** | 0800 181 7059 (CHEMTREC Germany)<br>Additional numbers: +44 20 3885 0382 / +1 703 527 3887<br>CHEMTREC Customer Number (CCN): 1025941 |

| | |
|---|---|
| Opening hours | 24h |

# Part 2: Hazards identification

## 2.1 CLP classification according to Regulation (EC) No. 1272/2008 with amendment 2023/707

| | |
|---|---|
| Skin corrosion/irritation | Category 1B |
| Serious eye damage/irritation | Category 1 |

## 2.2 Label elements

| | |
|---|---|
| Hazard pictograms |  |
| Signal word | Danger |

## Hazard statements

| | |
|---|---|
| H314 | Causes severe skin burns and eye damage |
| H318 | Causes serious eye damage |

## Precautionary statements

◆Prevention

| | |
|---|---|
| P260 | Do not breathe dust/fume. |
| P264 | Wash hands and other parts of the body (if related) thoroughly after handling. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |

◆Response

| | |
|---|---|
| P310 | Immediately call a POISON CENTER/doctor. |
| P321 | Specific treatment (see related instructions on the label). |
| P363 | Wash contaminated clothing before reuse. |
| P304+P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| P301+P330+P331 | IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. |
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower]. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |

◆Storage

| | |
|---|---|
| P405 | Store locked up. |

◆Disposal

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

## 2.3 Other hazards

◆Results of PBT and vPvB assessment

| Component | Results of PBT and vPvB assessment [according to (EC) No 1907/2006 with amendment 2020/878] |
|---|---|
| **Bromo-tris-pyrrolidino-phosphonium hexafluorophosphate** | No information available |

◆Results of endocrine disrupting properties assessment

| Component | Results of endocrine disrupting properties assessment [according to (EU) No 2017/2100 or (EU) No 2018/605] | |
|---|---|---|
| | Human endocrine disruptor | Environmental endocrine disruptor |
| **Bromo-tris-pyrrolidino-phosphonium hexafluorophosphate** | No information available | No information available |

◆Other

| | |
|---|---|
| | Not applicable. |

## Part 3: Composition/information on ingredients

### 3.1 Substance

| Component | Weight % content(or range) | Classification according to Regulation (EC) No. 1272/2008 with amendment 2023/707 [CLP] | SCL, M-factor and ATE |
|---|---|---|---|
| **Bromo-tris-pyrrolidino-phosphonium hexafluorophosphate**<br>CAS No.：132705-51-2<br>EC No.：620-834-4<br>Index No.：- | ≥ 97 | Skin corrosion/irritation, Category 1B, H314; Serious eye damage/irritation, Category 1, H318 | - |

### 3.2 Mixture

| | |
|---|---|
| | Not applicable |

## Part 4: First aid measures

### 4.1 Description of first aid measures

| | |
|---|---|
| **General advice** | Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance. |
| **Eye contact** | Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician if feel uncomfortable. |
| **Skin contact** | Take off contaminated clothing and shoes immediately. Wash off with plenty of soap and water for at least 15 minutes and consult a physician if feel uncomfortable. |
| **Ingestion** | Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately. |
| **Inhalation** | Move victim into fresh air. If breathing is difficult, give oxygen. Do not use mouth to mouth resuscitation if victim ingested or inhaled the substance. If not breathing, give artificial respiration and consult a physician immediately. |
| **Protecting of first-aiders** | Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination. |

### 4.2 Most important symptoms/effects, acute and delayed

| | |
|---|---|
| 1 | Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. |

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

| | |
|---|---|
| 1 | Treat symptomatically. |
| 2 | Symptoms may be delayed. |

## Part 5: Fire-fighting measures

### 5.1 Extinguishing media

| | |
|---|---|
| **Suitable extinguishing media** | Small fire: dry chemical, $CO_2$ or water spray; Large fire: dry chemical, $CO_2$, alcohol-resistant foam or water spray; Fire involving tanks, rail tank cars or highway tanks: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Do not get water inside containers. |
| **Unsuitable extinguishing media** | No information available. |

### 5.2 Specific hazards arising from the substance or mixture

| | |
|---|---|
| 1 | Development of hazardous combustion gases or vapor possible in the event of fire. |
| 2 | May expansion or decompose explosively when heated or involved in fire. |
| 3 | Fire may produce irritating, poisonous or corrosive gases. |

### 5.3 Advice for firefighters

| | |
|---|---|
| 1 | As in any fire, wear self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full protective gear. |
| 2 | Fight fire from a safe distance, with adequate cover. |
| 3 | Prevent firefighting wastewater from contaminating surface water or the ground water system. |

## Part 6: Accidental release measures

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

| | |
|---|---|
| 1 | Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges. |
| 2 | Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. |
| 3 | Use personal protective equipment,do not breathe dust/fume. |
| 4 | Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. |
| 5 | Do not touch or walk through spilled material. |
| 6 | Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. |

### 6.2 Environmental precautions

| | |
|---|---|
| 1 | Prevent further leakage or spillage if safe to do so. |
| 2 | Discharge into the environment must be avoided. |

### 6.3 Methods and materials for containment and cleaning up

| | |
|---|---|
| 1 | Isolation of contaminated areas and restrictions on access. |
| 2 | Cover the spill with a plastic sheet to reduce scattering. |
| 3 | It is recommended that emergency personnel wear dust masks and wear anti-corrosion clothing. |
| 4 | Do not touch broken containers and spills before putting on appropriate protective clothing. |

### 6.4 Reference to other sections

| | |
|---|---|
| 1 | Personal Protective Equipment advice is contained in Section 8 of the SDS. |
| 2 | Disposal considerations advice is contained in Section 13 of the SDS. |

## Part 7: Handling and storage

### 7.1 Precautions for safe handling

◆ Protective measures

| | |
|---|---|
| 1 | Handling is performed in a well ventilated place. |
| 2 | Wear suitable protective equipment. |
| 3 | Avoid contact with skin and eyes. |

◆ Measures to prevent fire

| | |
|---|---|
| 1 | Keep away from heat/sparks/open flames/ hot surfaces. |

◆ Measures to prevent aerosol and dust generation

| | |
|---|---|
| 1 | Avoid formation of dust and aerosols. |
| 2 | Provide appropriate exhaust ventilation at places where dust is formed. |

◆ Advice on general occupational hygiene

| | |
|---|---|
| 1 | Wash hands and face after using of the substances. |
| 2 | Replace the contaminated clothing immediately. |

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

| | |
|---|---|
| 1 | Keep containers tightly closed. |
| 2 | Keep containers in a dry, cool and well-ventilated place. |
| 3 | Keep away from heat/sparks/open flames/hot surfaces. |
| 4 | Store away from incompatible materials and foodstuff containers. |
| 5 | Store only in the original container in accordance with national regulations (German TRGS 510). |
| 6 | Storage class (LGK) according to TRGS 510: 8A |

### 7.3 Specific end use(s)

| | |
|---|---|
| 1 | In addition to use mentioned in the Section 1.2, unforeseen other specific end uses. |

## Part 8: Exposure controls/personal protection

### 8.1 Control parameters

◆Occupational exposure limit values

| | |
|---|---|
| **Occupational Exposure limit values** | No relevant regulations |

◆Biological limit values

| | |
|---|---|
| **Biological limit values** | No relevant regulations |

◆Monitoring methods

| | |
|---|---|
| **Monitoring methods** | Use suitable workplace exposure monitoring methods in accordance with applicable EU/UK and national requirements. Where applicable, methods meeting EN 482 and EN 14042 may be used. For Germany, monitoring of inhalation exposure should be carried out in accordance with TRGS 402; IFA/DGUV methods may be used where applicable. |

◆ Derived No effect level (DNEL)

| Component | Route of exposure | DNEL for Workers | | | |
|---|---|---|---|---|---|
| | | Acute effects (local) | Acute effects (systemic) | Chronic effects (local) | Chronic effects (systemic) |
| Bromo-tris-pyrrolidino-phosphonium hexafluorophosphate | Inhalation | No information available | No information available | No information available | No information available |
| | Oral | No information available | No information available | No information available | No information available |
| | Dermal | No information available | No information available | No information available | No information available |

◆ Predicted No Effect Concentration (PNEC)

| | |
|---|---|
| Predicted No Effect Concentration (PNEC) | No information available |

### 8.2 Exposure controls

### 8.2.1 Engineering controls

| | |
|---|---|
| 1 | Ensure adequate ventilation, especially in confined areas. |
| 2 | Ensure that eyewash stations and safety showers are close to the workstation location. |
| 3 | Set up emergency exit and necessary risk-elimination area. |
| 4 | Handle in accordance with good industrial hygiene and safety practice. |

### 8.2.2 Personal protection equipment

| | |
|---|---|
| General requirement |  |
| Eye protection | Must wear appropriate anti-corrosion goggles. |
| Hand protection | Must wear acid and alkali resistant chemical protective gloves. |
| Respiratory protection | Must wear appropriate personal respiratory protective equipment. |
| Skin and body protection | Must wear acid and alkali resistant chemical protective clothing. |

### 8.2.3 Environmental exposure controls

| | |
|---|---|
| Environmental exposure controls | No information available |

## Part 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

| | |
|---|---|
| Physical state | solid |
| Colour | White to yellow to brown |
| Odour | No information available |
| Odour threshold | No information available |
| pH | No information available |
| Melting point/freezing point(℃) | No information available |
| Boiling point/freezing point(℃) | No information available |
| Flash point(Closed cup,℃) | Not applicable |
| Evaporation rate | Not applicable |
| Flammability | No information available |
| Lower and upper explosion limit/flammability limit [%(v/v)] | Upper limit: No information available; Lower limit: No information available |

| | |
|---|---|
| Vapour pressure | Not applicable |
| Relative vapour density(Air = 1) | Not applicable |
| Relative density(Water=1) | No information available |
| Solubility(mg/L) | No information available |
| Partition coefficient n-octanol/water (log value) | No information available |
| Auto-ignition temperature(℃) | No information available |
| Decomposition temperature(℃) | No information available |
| Kinematic viscosity($mm^2/s$) | Not applicable |
| Explosive properties | No information available |
| Oxidizing properties | No information available |
| Particle characteristics | No information available |

### 9.2 Other information

### 9.2.1 Information with regard to physical hazard classes

| | |
|---|---|
| Information with regard to physical hazard classes | No information available |

### 9.2.2 Other safety characteristics

| | |
|---|---|
| Other safety characteristics | No information available |

## Part 10: Stability and reactivity

### Stability and reactivity

| | |
|---|---|
| 10.1 Reactivity | Contact with incompatible substances can cause decomposition or other chemical reactions. |
| 10.2 Chemical stability | Stable under proper operation and storage conditions. |
| 10.3 Possibility of hazardous reactions | No information available. |
| 10.4 Conditions to avoid | Incompatible materials, heat, flame and spark. |
| 10.5 Incompatible materials | No information available. |
| 10.6 Hazardous decomposition products | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |

## Part 11: Toxicological information

### 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008 with amendment 2023/707

| Bromo-tris-pyrrolidino-phosphonium hexafluorophosphate(Component) | |
|---|---|
| Skin corrosion/irritation | Causes severe skin burns and eye damage(Category 1B) |
| Serious eye damage/irritation | Causes serious eye damage(Category 1) |
| Skin sensitization | Based on available data, the classification criteria are not met |
| Respiratory sensitization | Based on available data, the classification criteria are not met |
| Reproductive toxicity | Based on available data, the classification criteria are not met |
| STOT-single exposure | Based on available data, the classification criteria are not met |
| 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 |

| | |
|---|---|
| **Germ cell mutagenicity** | Based on available data, the classification criteria are not met |

### Acute toxicity

| | |
|---|---|
| **Acute toxicity** | No information available |

### Carcinogenicity

| Component | List of carcinogens by the IARC Monographs | Report on Carcinogens by NTP |
|---|---|---|
| **Bromo-tris-pyrrolidino-phosphonium hexafluorophosphate** | Not Listed | Not Listed |

### 11.2 Information on other hazards

### 11.2.1 Human endocrine disrupting properties

| Component | Human endocrine disrupting properties |
|---|---|
| **Bromo-tris-pyrrolidino-phosphonium hexafluorophosphate** | No information available |

### 11.2.2 Other Information

| | |
|---|---|
| **Other Information** | See Section 11.1 |

## Part 12: Ecological information

### 12.1 Toxicity

### Acute aquatic toxicity

| | |
|---|---|
| **Acute aquatic toxicity** | No information available |

### Chronic aquatic toxicity

| | |
|---|---|
| **Chronic aquatic toxicity** | No information available |

### 12.2 Persistence and degradability

| | |
|---|---|
| **Persistence and degradability** | No information available |

### 12.3 Bioaccumulative potential

| | |
|---|---|
| **Bioaccumulative potential** | No information available |

### 12.4 Mobility in soil

| | |
|---|---|
| **Mobility in soil** | No information available |

### 12.5 Results of PBT and vPvB assessment

| Component | Results of PBT and vPvB assessment [according to (EC) No 1907/2006 with amendment 2020/878] |
|---|---|
| **Bromo-tris-pyrrolidino-phosphonium hexafluorophosphate** | No information available |

### 12.6 Endocrine disrupting properties

| Component | Endocrine disrupting properties |
|---|---|

| | |
|---|---|
| **Bromo-tris-pyrrolidino-phosphonium hexafluorophosphate** | No information available |

### 12.7 Other adverse effects

| | |
|---|---|
| | No information available |

## Part 13: Disposal considerations

### 13.1 Waste treatment methods

| | |
|---|---|
| **Waste chemicals** | Before disposal should refer to the relevant national and local laws and regulation. Recommend the use of incineration disposal. |
| **Contaminated packaging** | Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible. |
| **Disposal recommendations** | Refer to section waste chemicals and contaminated packaging. |

## Part 14: Transport information

### Label

| | |
|---|---|
| **Transporting Label** |  |

### IMDG-CODE

| | |
|---|---|
| **14.1 UN number** | 3260 |
| **14.2 UN proper shipping name** | CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. |
| **14.3 Transport hazard class** | 8 |
| **14.4 Packing group** | Ⅱ |
| **14.5 Environmental hazards (Yes or no)** | No |
| **14.6 EmS No.** | F-A，S-B |

### IATA-DGR

| | |
|---|---|
| **14.1 UN number** | 3260 |
| **14.2 UN proper shipping name** | CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. |
| **14.3 Transport hazard class** | 8 |
| **14.4 Packing group** | Ⅱ |
| **14.5 Environmental hazards (Yes or no)** | No |

### UN-ADR

| | |
|---|---|
| **14.1 UN number** | 3260 |
| **14.2 UN proper shipping name** | CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. |
| **14.3 Transport hazard class** | 8 |
| **14.4 Packing group** | Ⅱ |
| **14.5 Environmental hazards (Yes or no)** | No |

### Special precautions for user

| | |
|---|---|
| | Transport vehicles should be equipped with the appropriate variety and quantity of fire equipment and emergency equipment leakage during transport. Before transport, should be preceded by checking whether container integrity, sealing. The transport unit must be placarded and marked in accordance with relevant transporting requirements. |

### Maritime transport in bulk according to IMO instruments

◆Transport in bulk according to Annex II of MARPOL and the IBC code

| | |
|---|---|
| | No information available |

◆Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

| | |
|---|---|
| | No information available |

◆Transport in bulk in accordance with the IGC Code

| | |
|---|---|
| | No information available |

## Part 15: Regulatory information

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

### International chemical inventory

| Component | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bromo-tris-pyrrolidino-phosphonium hexafluorophosphate** | √ | × | × | × | × | × | × | × | × | × | × | √ | √ |

【A】 China Inventory of Existing Chemical Substances(IECSC)
【B】 European Inventory of Existing Commercial Chemical Substances(EC inventory)
【C】 United States Toxic Substances Control Act Inventory(TSCA)
【D】 Canadian Domestic Substances List(DSL)
【E】 New Zealand Inventory of Chemicals(NZIoC)
【F】 Philippines Inventory of Chemicals and Chemical Substances(PICCS)
【G】 Korea Existing Chemicals Inventory(KECL)
【H】 Australian Inventory of Industrial Chemicals(AIIC)
【I】 Japan Inventory of Existing & New Chemical Substances(ENCS)
【J】 Thailand Existing Chemicals Inventory(TECI)
【K】 Mexico National Inventory of Chemical Substances(INSQ)
【L】 Russia Inventory of Existing Substances(DRAFT)
【M】 Inventory of Existing Chemical Substances in Taiwan, China(TCSI)

### List of Chemical Substances under International Conventions

| Component | A | B | C |
|---|---|---|---|
| **Bromo-tris-pyrrolidino-phosphonium hexafluorophosphate** | × | × | × |

【A】 The Montreal Protocol on Substances that Deplete the Ozone Layer
【B】 Stockholm Convention on Persistent Organic Pollutants (POPs)
【C】 Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade

### European chemical inventory

| Component | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| **Bromo-tris-pyrrolidino-phosphonium** | × | × | × | × | × | × | × | × |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **hexafluorophosphate** | | | | | | | | |

【A】 Candidate list of Substances of Very High Concern for authorisation under EU REACH regulation
【B】 Substances requiring authorisation under EU REACH regulation
【C】 Substances restricted under EU REACH
【D】 Registered substances under EU REACH
【E】 Substance Evaluation – CoRAP under EU REACH
【F】 List of priority substances under EU water policy
【G】 Substances subject to POPs Regulation
【H】 Substances proposed as POPs

Note:
"√" Indicates that the substance included in the regulations.
"×" No data or not included in the regulations.

### German water hazard class(WGK)

| | |
|---|---|
| | WGK 3 – highly hazardous to water (precautionary classification according to AwSV; no published WGK classification available). |

### German technical instructions on air quality control(TA LUFT)

| | |
|---|---|
| | No information available |

### German technical rules for hazardous substances(TRGS)

| | |
|---|---|
| | No information available |

### 15.2 Chemical safety assessment

| | |
|---|---|
| | No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier. |

## Part 16: Other information

### Information on revision

| | |
|---|---|
| **Creation Date** | 2026/07/24 |
| **Revision Date** | - |
| **Reason for revision** | - |

### Reference

[1] IPCS: The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home.
[2] IARC, website: http://www.iarc.fr/.
[3] OECD: The Global Portal to Information on Chemical Substances, website: https://www.echemportal.org/echemportal/.
[4] CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple.
[5] NLM: ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp.
[6] EPA: Integrated Risk Information System, website: http://cfpub.epa.gov/iris/.
[7] U.S. Department of Transportation: ERG, website: http://www.phmsa.dot.gov/hazmat/library/erg.
[8] Germany GESTIS-database on hazard substance, website: http://gestis-en.itrust.de/.

### Abbreviations and acronyms

| | | | |
|---|---|---|---|
| CAS | Chemical Abstracts Service | UN | The United Nations |
| PC-STEL | Short term exposure limit | OECD | Organisation for Economic Co-operation and Development |
| PC-TWA | Time Weighted Average | IMDG-CODE | International Maritime Dangerous Goods CODE |
| MAC | Maximum Allowable Concentration | IARC | International Agency for Research on Cancer |
| DNEL | Derived No Effect Level | ICAO | International Civil Aviation Organization |
| PNEC | Predicted No Effect Concentration | IATA | International Air Transport Association |
| NOEC | No Observed Effect Concentration | ACGIH | American Conference of Governmental Industrial Hygienists |
| $LC_{50}$ | Lethal Concentration 50% | NFPA | National Fire Protection Association |

| | | | |
|---|---|---|---|
| $LD_{50}$ | Lethal Dose 50% | NTP | National Toxicology Program |
| $EC_{50}$ | Effective Concentration 50% | PBT | Persistent, Bioaccumulative, Toxic |
| $EC_X$ | Effective Concentration X% | vPvB | very Persistent, very Bioaccumulative |
| $P_{OW}$ | Partition coefficient Octanol: Water | CMR | Carcinogens, mutagens or substances toxic to reproduction |
| BCF | Bioconcentration factor | RPE | Respiratory Protective Equipment |
| ED | Endocrine disruptor | G1 | Carcinogenic to humans |
| G2A | Probably carcinogenic to humans | G2B | Possibly carcinogenic to humans |
| G3 | Not yet classified as carcinogenic to humans | G4 | Probably not carcinogenic to humans |

## Disclaimer

This Safety Data Sheet (SDS) was prepared according to REACH Regulation The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.