

Cetylpyridinium Chloride Safety Data Sheet According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

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Cetylpyridinium Chloride Safety Data Sheet According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

SECTION 1: Identifi	fication of the substance/mixture and of the company/undertaking	
.1. Product identifie	er	
roduct identification	: Cetylpyridinium chloride	
AS RN	: 6004-24-6	
C# rade name	: 204-593-9 (Anhydrous) : Cetylpyridinium chloride	
hemical name	: 1-Hexadecylpyridinium chloride	
olecular Weight	: 358.01	
olecular Formula	: C21H38CIN.H2O	
ructural Formula:		
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	e and phase transfer reagent. It is used as an antibacterial in cough lozenges, syrups and mouthwashes. I reagent. It is also used in cosmetics for various functions.	t is also used as
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4CTORY & REGISTERE +91-5924-252353 to 2523	ED OFFICE: Jubilant Ingrevia Limited., Bhartiagram, Gajraula, District: Amroha, Uttar Pradesh-244223, Indi 2360 Contact Department-Safety: Ext. 7424 F +91-5924-252352	а
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According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

H330 - Fatal if inhaled

H335 - May cause respiratory irritation

H400 - Very toxic to aquatic life

PRECAUTIONARY STATEMENTS P260 - Do not breathe dust/fume/gas/mist/vapours/spray.

P284 - Wear respiratory protection.

P270 - Do not eat, drink or smoke when using this product.

P273 - Avoid release to the environment.

P280 - Wear protective gloves/protective clothing/eye protection/face protection.

P302+P352 - IF ON SKIN: Wash with plenty of soap and water.

P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 - Immediately call a POISON CENTER or doctor/physician.

P362 - Take off contaminated clothing and wash before reuse.

P391 - Collect spillage.

P403+P233 - Store in a well-ventilated place. Keep container tightly closed.

P501: Dispose of contents/container to local/regional/national/international regulations.

2.3 Other Hazards: WARNING! MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR (DURING PROCESSING). See Section 11 for detailed information about inhalation classification.

SECTION 3 : Composition/ information on ingredients

Name	CAS Number	EC Number	Percentage
Cetylpyridinium Chloride	6004-24-6 (for anhydrous form)	204-593-9 (Anhydrous)	~100%

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures.

Eyes: If in eyes rinse cautiously with water for at least 15 minutes. Remove contact lenses if easy to do so. Continue rinsing. Seek medical attention.

Skin: Immediately take off all contaminated clothing. Wash thoroughly with water for at least 15 minutes. Wash contaminated clothes before reuse. Seek immediate medical attention.

Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if you feel unwell. Monitor for respiratory distress. Apply artificial respiration if not breathing.Do not use mouth-to-mouth methods 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. Toxic vapours may be released on thermal decomposition including nitrogen oxides, carbon monoxide and cyanide.

Ingestion: If swallowed call a poison center if you feel unwell. Rinse mouth. Do NOT induce vomitingby use of emetics. Seek medical attention.

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

Acute:

Inhalation: Irritating to the mucous membranes and respiratory system. Irritation may be severe.

Eyes: Direct contact with this product causes serious eye irritation and damage. Serious damage may result if treatment is delayed. May result in permanent corneal injury.

Skin: Direct skin contact causes severe irritation. Symptoms include local discomfort or pain, redness and swelling and blister formation.

Ingestion: Swallowing can cause irritation to the lips, tongue, throat and digestive tract, abdominal and chest pain, nausea and vomiting.

Delayed Effects: None known.

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

Note to Physician: No specific indications. Treatment should be based on the judgment of the physician in response to the reactions of the patient.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media.

• Appropriate extinguishing media: Dry chemical powder, carbon dioxide, and alcohol resistant foam. Water spray can be effective in cooling down the fire-exposed containers and knocking down the vapors. Water jets may be used to flush spills away and dilute the same to non-flammable mixtures fog or alcohol-resistant foam by directing streams to the periphery of the fires to prevent spread.

5.2. Special hazards arising from the substance or mixture.

Hazardous Products of Combustion: During a fire, irritating and toxic gases, fumes and vapors may be generated. Hydrogen chloride Nitrogen oxides Potential for Dust Explosion: Cetylpyridinium Chloride (CPC) was tested for dust explosion characteristics and the following results were obtained: - Minimum ignition energy (MIE): 5 - 10 mJ



According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

- Explosion severity 20L Sphere
- Maximum explosion pressure (bar): 8.5
- Maximum rate of pressure rise (bar/s): 682
- Kst value (bar.m/s): 185
- The MIE data suggests a high sensitivity to ignition.

Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing,

Processing, and Handling of Combustible Particulate Solids, for safe handling.

Refer to European standards: EN1127-1, EN14491, EN14797, EN14373, and EN15089 for safe handling of and controlling explosive atmospheres in the workplace.

Special Flammability Hazards: This product is an organic solid. As such, in its finely divided form, this product has the potential to present a dust explosion hazard under certain conditions. Please review the dust explosion data enclosed in this section. Handle this product in a manner that prevents dust generation and accumulation, and refer to National Fire Protection Association (NFPA) Standard 654 for further information on prevention of dust explosions.

5.3. Advice for firefighters.

- Evacuate the area and fight fires from a safe distance.
- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions or as per locally valid procedures.
- Fire-fighters must wear Self Contained Breathing Apparatus (SCBA).

Chemical is water-soluble. Report any run-off of firewater's contaminated with this chemical as per local and federal procedures applicable.
 SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures.

- Evacuation Procedures: Isolate the hazard area and deny entry to unnecessary and unprotected personnel.
- Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate.
- Avoid breathing vapors and contact with skin and eyes.
- Shut off leak source if possible.
- Shut off all possible sources of ignition.
- Wipe up.
- Decontaminate all equipment.
- Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate.
- Alert Emergency Responders and tell them location and nature of hazard.
- Shut off all possible sources of ignition and increase ventilation.
- Stop leaks if possible.
- Clean up all spills immediately following relevant Standard Operating Procedures.
- Avoid breathing vapors and contact with skin and eyes.

6.2. Environmental precautions.

- Clean up all spills immediately following relevant Standard Operating Procedures.
- Inform authorities in event of contamination of any public sewers, drains or water bodies.
- Wipe up.
- Prevent, by any means available, spillage from entering drains or water and watercourses.
- Collect recoverable product into labeled containers for recycling, recovery or disposal.
- Contain spill with sand, earth or vermiculite.
- Spread area with lime or absorbent material, and leave for at least 1 hour before washing.

6.3. Methods and material for containment and cleaning up.

- Clean up all tools and equipment.
- Decontaminate all equipment.
- Remove all ignition sources. Ventilate the area of spill or leak. Wear protective equipment during clean-up. Vacuum, scrape or scoop the
 material into a chemical waste container after collection of material, flush area with water. Dispose of contents & container in accordance local,
 regional, national or international regulations. Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive
 mixture if they are released into the atmosphere in sufficient concentration.
- Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Non-sparking tools should be used.

6.4. Reference to other sections.

Refer to section 8 for information on selecting personal protective equipment. Refer to section 13 for information on spilled product, absorbent
and clean up material disposal instructions.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

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According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

- Do not breathe vapor or mist.
- Wear protective gloves/clothing and eye/face protection.
- Wash thoroughly after handling.
- Ground and secure containers when dispensing or pouring product.
- Avoid contact with incompatible materials.
- When handling,DO NOT eat, drink or smoke.
- Launder contaminated clothing before re-use.
- If on skin or hair, IMMEDIATELY remove all contaminated clothing and rinse/shower with plenty of water.
- Use in a well ventilated place/Use protective clothing commensurate with exposure levels.

7.2. Conditions for safe storage, including any incompatibilities

- Store at ambient temperature in dry and ventilated place.
- Keep dry &protected from direct sunlight.
- Store away from incompatible materials.
- Keep only in original container.
- Keep securely closed when not in use.

7.3. Specific end use(s)

• It is used as a preservative and phase transfer reagent. It is used as an antibacterial in cough lozenges, syrups and mouthwashes. It is also used as an emulsifier and a laboratory reagent.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters:

Sr. No.	Country	Occupational Exposure Limit	
1.	Canada - Quebec, Denmark (total dust)	10 mg/m3 as an 8-hour time-weighted average	
2.	China (total dust)	8 mg/m3 as an 8-hour time-weighted average	
3.	Spain (total dust)	0.5 mg/m3 as an 8-hour time-weighted average	
4.	Austria (respirable fraction)	5 mg/m3 as an 8-hour time-weighted average; 10mg/m3 short term limit	
5.	France, Sweden, USA - OSHA (respirable fraction)	ction) 5 mg/m3 as an 8-hour time-weighted average	
6.	Belgium, Spain, Switzerland (respirable fraction)	3 mg/m3 as an 8-hour time-weighted average	
7.	Germany (respirable fraction)	1.5 mg/m3 as an 8-hour time-weighted average	
8.	Hungary (respirable fraction)	6 mg/m3 as an 8-hour time-weighted average	
9.	Ireland (respirable fraction)	4 mg/m3 as an 8-hour time-weighted average	

Air Monitoring Method: Gravimetric analysis for total particulate and respirable fraction (<10 microns)

8.1.2 Exposure Limits (International): Not available.

Derived No Effect Levels (DNELs) – Workers:

Route	DNEL	
Long-term - systemic effects (inhalation)	No hazard identified	
Acute - systemic effects (inhalation)	No hazard identified	
Long-term - local effects (inhalation)	High hazard (no threshold derived)	
Acute - local effects (inhalation)	High hazard (no threshold derived)	
Long-term - systemic effects (dermal)	0.05 mg/kg/bw/day	
Acute - systemic effects (dermal)	No hazard identified.	
Long term - local effects (dermal)	Medium hazard (no threshold derived)	
Acute - local effects (dermal)	Medium hazard (no threshold derived)	

Derived No Effect Levels (DNELs) – General Population:

Route

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Long-term - systemic effects (oral)	No hazard identified
Long-term - systemic effects (dermal)	No hazard identified
Long-term - systemic effects (inhalation)	No hazard identified
Acute - systemic effects (oral, dermal, inhalation)	No hazard identified
Long-term - local effects (inhalation)	Low hazard (no threshold derived)
Acute - local effects (inhalation)	Low hazard (no threshold derived)
Long term - local effects (dermal)	Low hazard (no threshold derived)
Acute - local effects (dermal)	Low hazard (no threshold derived)

Predicted No Effect Concentrations (PNECs):

Route	DNEL
PNEC aqua (freshwater)	0.0061 ug/L
PNEC aqua (marine water)	0.00061 ug/L
PNEC aqua (intermittent releases)	0.061 ug/L
PNEC aqua (STP)	210 ug/L
PNEC sediment (freshwater)	0.037 mg/kg
PNEC sediment (marine water)	0.0037 mg/kg
PNEC soil	0.0043 mg/kg
PNEC aqua (freshwater)	0.0061 ug/L

8.2. Exposure controls

8.2.1 Appropriate Engineering Controls:

- Exposure Limits Values:
- ACGIH TLV: None listed
- OSHA PEL: None listed
- NIOSH: None listed
- Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits. Local ventilation is usually preferred. Ensure that eyewash stations and safety showers are close to the workstation location.

8.2.2. Personal Protection:

- Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous
 substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.
- Hands: Wear appropriate protective gloves and clothing to prevent skin exposure. The protective gloves to be used must comply with the specifications of EC directives 89/686/EEC and the resultant standard EN374.
- Eyes: Safety goggles/ Chemical Safety glasses and Face shield.
- Clothing: Boots and clothing to prevent contact.
- **Respirator:** Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

General Hygiene and general comments:

- Wash hands and face after working with substance.
- Immediately change contaminated clothing.
- Apply skin protective barrier cream.

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties.

Physical state	Solid
Appearance	Powder.
Colour	White
Odour	Characteristic (Slight amine odor)
Odour threshold	No data available



According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

рН	5.0-5.4 (10 g/L @ 20°C)
Melting point/ Freezing point	80 - 84°C
Octanol/ water Coefficient (Log Kow)	1.71
Boiling point	120-124°C @ 0.09 hPa
Flash point	No data available
Relative evaporation rate (butyl acetate=1)	No data available
Flammability (solid, gas)	Not Flammable
Explosive limits	Not Explosive
Explosive properties	No data available
Oxidising properties	No data available
Vapour pressure	<0.0000055 Pa @ 25°C
Specific Gravity or density	1.06@25°C
Relative vapour density at 20 °C	No data available
Solubility	Soluble in water (111 g/L @ 20°C). Soluble in chloroform & Slightly Soluble Ether.
Log Pow	1.71
Auto-ignition temperature	>404°C
Decomposition temperature	160 °C
Oxidizing Properties:	Not an oxidizer
Viscosity	No data available
Viscosity, kinematic	No data available
Viscosity, dynamic	No data available

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

Cetylpyridinium chloride is white powder like characteristic Odor. It is freely soluble in water.

10.2. Chemical stability

Stable under normal temperature and pressures.

10.3. Possibility of hazardous reactions

Hazardous Polymerization: Not reported

10.4. Conditions to avoid

• Keep away from High temperature, mechanical shock, incompatible materials, ignition sources, excess heat, and moisture. Avoid static discharge and uncontrolled exposure to high temperatures.

10.5. Incompatible materials

• Strong oxidizing agents; Strong bases

10.6. Hazardous decomposition products

Thermal decomposition may produce carbon monoxide and oxides of nitrogen, carbon dioxide & nitrogen, Hydrogen chloride, hydrogen cyanide and irritating and toxic fumes and sooty material.

SECTION 11:TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute Oral LD50: 560 mg/kg (rat) Cetylpyridinium Chloride

Acute Dermal LD50: > 5000 mg/kg (rat) Cetylpyridinium Chloride

Acute Inhalation LC50: 0.054 - 0.51 mg/L (4h, rat) Cetylpyridinium Chloride

Skin Irritation: Moderately irritating to skin.

Eye Irritation: Severely irritating to eyes.

Skin Sensitization: Negative for sensitizing effects in guinea pig maximization test.

Mutagenicity: This product has been shown not to be mutagenic based on a battery of assays.

Reproductive / Developmental Toxicity: No data available. Not teratogenic or fetotoxic at levels below those associated with maternal toxicity. In both 28d and 6 month studies in rats & dogs, no evidence of adverse effects on reproductive organs; no effect on fertility.



According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

Carcinogenicity: This material is not listed by IARC, NTP or OSHA as a carcinogen. No test data is available that indicates this material is a carcinogen.

Target Organs: None known

Primary Route(s) of Exposure: Skin contact and absorption, eye contact, and inhalation. Ingestion is not likely to be a primary route of exposure. Most important symptoms and effects, both acute and delayed

Inhalation: Irritating to the mucous membranes and respiratory system. Irritation may be severe. Eyes: Direct contact with this product causes serious eye irritation and damage. Serious damage may result if treatment is delayed. May result in permanent corneal injury.

Skin: Direct skin contact causes severe irritation. Symptoms include local discomfort or pain, redness and swelling and blister formation.

Ingestion: Swallowing can cause irritation to the lips, tongue, throat and digestive tract, abdominal and chest pain, nausea and vomiting. Delayed Effects: None known.

Additive or Synergistic effects: None known.

Additional Toxicity Information: CPC was tested for inhalation toxicity using finely ground material that had been milled for 24 hours. CPC is never supplied in this finely ground state - typical particle size analysis shows ~2% of the volume by weight is <10 um (respirable fraction). Exposure to the micronized CPC cannot reasonably be expected to occur under normal conditions of shipment and handling, the assignment of hazard class for transportation purposes may also be modified appropriately as per 49 CFR 173.132.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

12.2. Persistence and degradability

While OECD 301D did not demonstrate "ready biodegradability", an OECD 307 test showed rapid biodegradability; mineralization of 70.7% @ 28 days.

12.3. Bioaccumulative potential

An estimated BCF of 5.7, based on a calculated Log Kow of 1.71, suggests the potential for bioconcentration in aquatic organisms is low. This is supported by rapid biodegradation results.

12.4. Mobility in soil

This material is expected to have only slight mobility in soil. It absorbs strongly to most soil types. Quaternary ammonium compounds are known to sorb strongly and rapidly in well-mixed systems, to a wide variety of materials, such as sewage sludge, sediment and clay. This material has been shown sorb readily to activated sludge solids.

12.5. Results of PBT and vPvB assessment: this substance is not a PBT or vPvB

12.6. Other adverse effects

Environment Fate:

Based on the environmental modeling, this material has a high potential to get absorbed in the organic matter of soil and is slightly volatile
from water bodies. Since this is an estimated result it is recommended that the material should not be disposed into the environment. The
material should never be disposed into the sewage.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

- Burn in a chemical incinerator equipped with an afterburner and scrubber.
- Dispose of this material in accordance with standard practice for disposal of potentially hazardous materials as required by applicable federal, state or local laws. Note that disposal regulations may also apply to empty containers and equipment rinsates.
 SECTION 14: TRANSPORT INFORMATION

The following information applies to all shipping modes (DOT/IATA/ICAO/IMDG/ADR/RID/ADN), unless otherwise indicated:

ADR	IMDG	ΙΑΤΑ
14.1. UN number		

Jubilant Ingrevia Limited



Cetylpyridinium Chloride

Safety Data Sheet

According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

UN2811	UN2811	UN2811
14.2. UN proper shipping name		
Toxic solids, organic, N.O.S. (Cetylpyridinium Chloride)	Toxic solids, organic, N.O.S. (Cetylpyridinium Chloride)	Toxic solids, organic, N.O.S. (Cetylpyridinium Chloride)
14.3. Transport hazard class(es)		
6.1	6.1	6.1
14.4. Packing group		
() e	6	6 6
Ш	II	11
14.5. Environmental hazards		
Dangerous for the environment : Yes	Dangerous for the environment: Yes	Dangerous for the environment : Yes
×	Marine Pollutant : Yes	

SECTION 15: REGULATORY INFORMATION

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

- Chemical Inventory Lists: Status: ٠
- USA TSCA: Listed (as anhydrous form, CAS 123-03-5). •
- EINECS: 204-593-9 (Listed as anhydrous form, CAS 123-03-5). •
- Canada (DSL/NDSL): DSL (as anhydrous form, CAS 123-03-5).
- Japan: Listed (5-3686)
- Korea: Listed (99-3-1228, as anhydrous form, CAS 123-03-5)
- Australia: Listed
- China: Listed
- Philippines: Listed
- Taiwan: Listed New
- Zealand: Listed
- German Water Hazard Classification: WGK 3 ((ID# 601, n-Alkyl (C12-16) Pyridinium chloride und-bisulfat))
- SARA 313: Not applicable.
- Reportable Quantities: Not applicable.
- Other Regulatory Listings: Certain uses of this substance may be regulated under pesticide/biocidal products regulations.

GHS-US classification:

Hazards Class and Category:

Acute Toxicity Oral: Category 4 Acute Toxicity inhalation: Category 2 Skin Irritation: Category 2 Eye damage: Category 1 STOT SE: Category 3 Aquatic Acute: Category 1

Hazard Statements: H302; H330; H315; H318; H335; H400

Other Regulatory Listings: Certain uses of this substance may be regulated under pesticide/biocidal products regulations. NFPA







US information



According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

- TSCA: CAS# 6004-24-6 is not on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS number for the anhydrous form is on the inventory (40CFR720.3 (u) (2)).
- Health & Safety Reporting List: None of the chemicals are on the Health & Safety Reporting List.
- Chemical Test Rules: None of the chemicals in this product are under a Chemical Test Rule.
- TSCA Significant New Use Rule: None of the chemicals in this material have a SNUR under TSCA.
- CERCLA Hazardous Substances and corresponding RQs: None of the chemicals in this material have an RQ.
- SARA Section 302 Extremely Hazardous Substances: None of the chemicals in this product have a TPQ.
- Section 313: No chemicals are reportable under Section 313.
- Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

- Clean Water Act:
 - None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
- OSHA:
- None of the chemicals in this product are considered highly hazardous by OSHA.
- STATE
 - CAS# 6004-24-6 is not present on state lists from CA, PA, MN, MA, FL or NJ.
- California Prop 65
 - California No Significant Risk Level
 - None of the chemicals in this product are listed.
- Canada DSL/NDSL
- CAS # 6004-24-6 is not specified in any of the list and there is no control measure imposed on the substance.

SECTION 16: OTHER INFORMATION

(a) Compilation information of safety data sheet

Date of Compilation	: October 15, 2012
Chemical	: Cetylpyridinium chloride
CAS #	: 6004-24-6
File Name	: 0189Gj Ghs18 Div.3 sds Cetylpyridinium chloride
Revision Number	: 18
Date of Issue of SDS	: February 04, 2021
Revision Due Date	: January, 2024
Supersedes date	: February 06, 2019

(b) A key or legend to aberrations and acronyms used in the safety data sheet

- PBT =Persistent Bioaccumulative and Toxic
- vPvB= Very Persistent and Very Bioaccumulative
- SCBA= Self Contained Breathing Apparatus
- NIOSH REL= National Institute for Occupational Safety and Health Recommended Exposure Limit OSHA PEL=Occupational Safety and Health Administration Permissible Exposure Limit
- UEL= Upper Explosive Limit
- LEL= Lower Explosive Limit
- RTECS= Registry of Toxic Effects of Chemical Substances
- NTP=National Toxicology Programm
- IARC= International Agency for Research on Cancer
- EPA=Environmental Protection Agency
- TSCA= Toxic Substances Control Act
- SARA= Superfund Amendments and Reauthorization Act
- NFPA= National Fire Protection Association
- WHIMS= Workplace Hazardous Materials Information System
- DSL/NDSL= Domestic/Non-Domestic Substances List
- CSR=Chemical Safety Report
- BCF = Bio Concentration Factor
- TLV = Threshhold Limit Value
- REACH = Registration, Evaluation .Authorisation and Restriction of Chemicals
- CLP = Classification, Labelling and Packaging
- LD / LC = Lethal Doses / Lethal Concentration
- GHS = Globally Harmonised System
- ADR = Accord europeen relative au transport international de marchandises
- IMDG-Code = International Maritime Code for Dangerous Goods
- EmS = Emergency measures on Sea



According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

• IATA/DGR= International Air Transport Association/Dangerous Goods Regulation

(c) Key Literature reference and sources for data

Biographical reference and data sources

- CLP REG (regulation) (EC) no. 1272/2008, last modification by regulation (EC) no. 790/2009
- DIR 67/548/EWG, last modification by DIR 2009/2/EC
- REG (EC) no. 1907/2006, last modification by REG (EC) Nr. 453/2009
- JPETAB Journal of Pharmacology and Experimental Therapeutics. (Williams & Wilkins Co., 428 E. Preston St., Baltimore, MD 21202) V.1-1909/10- Volume (issue)/page/year: 74,401,1942

d) List of Hazard staten	nents
Hazards Statements	H302: Harmful if swallowed.
	 H330: Fatal if inhaled
	H315: Causes skin irritation.
	H318: Causes serious eye damage
	H335: May cause respiratory irritation.
	H400: Very toxic to aquatic life

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

(End of Safety Data Sheet)