Chemical Safety Data Sheet MSDS / SDS

Lithium SDS

Revision Date:2024-04-25 Revision Number:1

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

Product identifier

Product name: Lithium

CAS: 7439-93-2

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

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

Company Identification

Company: Chemicalbook.in

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SECTION 2: Hazards identification

Classification of the substance or mixture

Substances and mixtures, which in contact with water, emit flammable gases, Category 1
Skin corrosion, Sub-category 1B

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H260 In contact with water releases flammable gases which may ignite spontaneously
H314 Causes severe skin burns and eye damage

Precautionary statement(s)

Prevention

P223 Do not allow contact with water.
P231+P232 Handle and store contents under inert gas/....Protect from moisture.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash ... thoroughly after handling.

Response

P302+P335+P334 IF ON SKIN: Brush off loose particles from skin. Immerse in cool water [or wrap in wet bandages].
P370+P378 In case of fire: Use ... to extinguish.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P363 Wash contaminated clothing before reuse.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P316 Get emergency medical help immediately.
P321 Specific treatment (see ... on this label).
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

P402+P404 Store in a dry place. Store in a closed container.
P405 Store locked up.

Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and

regulations, and product characteristics at time of disposal.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Lithium
Common names and synonyms:	Lithium
CAS number:	7439-93-2
EC number:	231-102-5
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Half-upright position. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention .

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Refer for medical attention . See Notes.

Most important symptoms/effects, acute and delayed

Contact with eyes causes caustic irritation or burn. Incontact with skin lithium reacts with body moisture to cause chemical burns:

foil, ribbon, and wire react relatively slowly. (USCG, 1999)

Indication of immediate medical attention and special treatment needed, if necessary

Basic treatment: Establish a patent airway (oropharyngeal or nasopharyngeal airway, if needed). Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary . Monitor for shock and treat if necessary . Anticipate seizures and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with 0.9% saline (NS) during treatment . Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool . Cover skin burns with dry sterile dressings after decontamination . Lithium and related compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

Extinguish lithium fires only with chemicals designed for this purpose.

Specific hazards arising from the chemical

Special Hazards of Combustion Products: Strong alkali fumes are formed in fire. Behavior in Fire: Molten lithium is quite easily ignited and is then difficult to extinguish. Hot or burning lithium will react with all gases except those of the helium-argon group. It also reacts violently with concrete, wood, asphalt, sand, asbestos; and in fact, nearly everything except metal. Do not apply water to adjacent fires. Hydrogen explosion may result. (USCG, 1999)

Special protective actions for fire-fighters

Use special powder. NO water. NO other agents. In case of fire: keep drums, etc., cool by spraying with water. NO direct contact with water.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: complete protective clothing including self-contained breathing apparatus. Consult an expert! Do NOT wash away into sewer. Sweep spilled substance into covered dry, metallic, sealable containers. Carefully collect remainder. Then store and dispose of according to local regulations.

Environmental precautions

Personal protection: complete protective clothing including self-contained breathing apparatus. Consult an expert! Do NOT wash away into sewer. Sweep spilled substance into covered dry, metallic, sealable containers. Carefully collect remainder. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

Eliminate all ignition sources. Keep water away from release. Shovel into suitable dry container.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames, NO sparks and NO smoking. NO contact with water. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Fireproof. Separated from strong oxidants, acids, halons and other incompatible materials. See Chemical Dangers. Dry. Keep under mineral oil.Store in a cool, dry, well-ventilated location. Separate from water.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

MAK: (inhalable fraction): 0.2 mg/m3; peak limitation category: I(1); pregnancy risk group: C

Biological limit values

no data available

Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety goggles or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Solid. Granular or powder.
Colour:	White.
Odour:	ODORLESS
Melting point/freezing point:	722 °C. Atm. press.:1 013.25 hPa.
Boiling point or initial boiling point and boiling range:	1342°C(lit.)
Flammability:	Flammable. Many reactions may cause fire or explosion. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	no data available
Auto-ignition temperature:	354° F (USCG, 1999)

Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	Reacts with water
Partition coefficient n-octanol/water:	no data available
Vapour pressure:	7.90X10-11 Pa (5.92X10-13 mm Hg) at 400 K (127 deg C); 0.000489 Pa (3.67X10-6 mm Hg) at 600 K (327 deg C); 1.08 Pa (0.00810 mm Hg) at 800 K (524 deg C); 109 Pa (0.818 mm Hg) at 1000 K (727 deg C)
Density and/or relative density:	2.1 g/cm3.
Relative vapour density:	no data available
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Heating may cause violent combustion or explosion. The substance , when finely dispersed, may ignite spontaneously on contact with air. Upon heating, toxic fumes are formed. Decomposes on heating. This produces toxic fumes. Reacts violently with strong oxidants, acids and many compounds (hydrocarbons, halogens, halons, concrete, sand and asbestos). This generates fire and explosion hazard. Reacts violently with water. This produces highly flammable hydrogen gas and corrosive fumes of lithium hydroxide.

Chemical stability

Decomposes in water

Possibility of hazardous reactions

Flammable solid.Burns in air, oxygen, nitrogen, hydrogen, and carbon dioxide. The reactions can become extremely violent at

higher temperatures. The disposition to ignite of surfaces of molten lithium exposed to any of these gases is increased by the presence of lithium oxides and nitrides. Lithium reacts avidly with water to generate gaseous hydrogen and a solution of lithium hydroxide (a caustic). Contact with halogenated hydrocarbons can produce extremely violent reactions, especially on impact [Haz. Chem. Data 1966]. Boron trifluoride reacts with incandescence when heated with lithium [Merck 11th ed. 1989]. Maleic anhydride decomposes explosively in the presence of lithium [Chemical Safety Data Sheet SD-88. 1962, Chem. Haz. Info. Series C-71. 1960]. Chlorine vapors and lithium react producing a luminous flame [Mellor 2, Supp. 1:380. 1956]. The product of the reaction between lithium and carbon monoxide, lithium carbonyl, detonates violently with water, igniting the gaseous products [Mellor 2, Supp. 2:84. 1961]. The reaction of lithium and ferrous sulfide starts around 260° C with subsequent rise in temperature to 950° C [Mellor 2, Supp. 2:80. 1961]. A truck, which was carrying lithium batteries, sodium dithionite and derivatives of cyanide, caught fire; multiple explosions occurred as the cargo was exposed to the air.

Conditions to avoid

no data available

Incompatible materials

Reacts with water forming lithium hydroxide and hydrogen. Keep under mineral oil or other liquid free from oxygen or water.

Hazardous decomposition products

Combustion may produce irritants and toxic gases.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 - rat - 525 mg/kg bw.

Inhalation: LC50 - rat (male/female) - > 2 mg/L air.

Dermal: LD50 - rabbit (male/female) - > 3 000 mg/kg bw.

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

The substance is corrosive to the eyes, skin and respiratory tract. Corrosive on ingestion. Inhalation may cause lung oedema. See Notes.

STOT-repeated exposure

no data available

Aspiration hazard

Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 - Oncorhynchus mykiss (previous name: Salmo gairdneri) - 30.3 mg/L - 96 h. Remarks:Li2 CO3.

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - 33.2 mg/L - 48 h. Remarks:Li2 CO3.

Toxicity to algae: EC50 - Desmodesmus subspicatus (previous name: Scenedesmus subspicatus) - > 400 mg/L - 72 h.

Toxicity to microorganisms: EC50 - activated sludge, domestic - 180.8 mg/L - 3 h. Remarks:LiOH.

Persistence and degradability

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

Other adverse effects

no data available

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: UN1415 (For reference only, please check.)
IMDG: UN1415 (For reference only, please check.)
IATA: UN1415 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: LITHIUM (For reference only, please check.)
IMDG: LITHIUM (For reference only, please check.)
IATA: LITHIUM (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 4.3 (For reference only, please check.)
IMDG: 4.3 (For reference only, please check.)
IATA: 4.3 (For reference only, please check.)

Packing group, if applicable

ADR/RID: I (For reference only, please check.)
IMDG: I (For reference only, please check.)
IATA: I (For reference only, please check.)

Environmental hazards

ADR/RID: No
IMDG: No
IATA: No

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential.Immediate administration of an appropriate inhalation therapy by a doctor, or by an authorized person, should be considered.