

Safety Data Sheet

1. Chemical product and company identification

Product name : sec-Butylmagnesium chloride-lithium chloride complex, in tetrahydrofuran

Company information

Name of manufacturer : KANTO CHEMICAL CO., INC.
Address : 2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, JP
Name of section : Business Administration Department, Reagent Division
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Reference No : 04944

2. Hazards identification

GHS classification

Physical hazards	Flammable liquids	Category 2
	Substances and mixtures which in contact with water emit flammable gases	Category 2
Health hazards	Acute toxicity (oral)	Category 4
	Acute toxicity (inhalation:vapors)	Category 4
	Skin corrosion/irritation	Category 1B
	Serious eye damage/eye irritation	Category 1
	Carcinogenicity	Category 2
	Reproductive toxicity	Category 2
	Specific target organ toxicity (single exposure)	Category 1 (central nervous system)
	Specific target organ toxicity (single exposure)	Category 3 (narcosis)
Specific target organ toxicity (single exposure)	Category 3 (respiratory tract irritation.)	
Specific target organ toxicity (repeated exposure)	Category 1 (central nervous system, respiratory organs, liver)	

Hazard pictograms



Signal word : Danger

Hazard statements : Highly flammable liquid and vapor
In contact with water releases flammable gases.
Harmful if swallowed or if inhaled
Causes severe skin burns and eye damage
May cause respiratory irritation
May cause drowsiness or dizziness



Suspected of causing cancer
Suspected of damaging fertility or the unborn child
Causes damage to organs (central nervous system)
Causes damage to organs (central nervous system, respiratory organs, liver) through prolonged or repeated exposure

Precautionary statements

- Prevention : Do not handle until all safety precautions have been read and understood.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Keep away from any possible contact with water, because of violent reaction and possible flash fire.
Handle and store contents under inert gas. Protect from moisture.
Keep container tightly closed.
Ground and bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting equipment.
Use only non-sparking tools.
Take action to prevent static discharges.
Do not breathe mist/vapors.
Wash hands, forearms and face thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
- Response : IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
IF SWALLOWED: Rinse mouth. Do not induce vomiting.
IF ON SKIN: Brush off loose particles from skin. Immerse in cool water .
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water .
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Call a POISON CENTER or doctor.
IF exposed or concerned: Get medical advice/attention.
Immediately call a POISON CENTER or doctor.
Call a POISON CENTER or doctor if you feel unwell.
Get medical advice/attention if you feel unwell.
- Storage : Store in a dry place. Store in a closed container.
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.
- Disposal : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

3. Composition/information on ingredients

Distinction of substance or mixture : Mixture
mixture



Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
sec-Butylmagnesium chloride-lithium chloride complex	15	C ₄ H ₉ MgCl · LiCl	Not listed	-	1032768-06-1
Tetrahydrofuran	85	C ₄ H ₈ O	Listed	203-726-8	109-99-9

*Concentration : 1.0-1.3mol/L sec-butylmagnesium chloride-lithium chloride complex.

4. First aid measures

First aid measures

- First-aid measures after inhalation : Remove the victim to fresh air, and make him blow his nose and gargle. If necessary, get medical treatment.
- First-aid measures after skin contact : Wash the affected areas under running water, get medical treatment as soon as possible.
- First-aid measures after eye contact : Wash the affected areas under running water for at least 15 minutes. Get medical treatment.
- First-aid measures after ingestion : Rinse mouth with water. Give the victim one or two glasses of water or milk. Do not induce vomiting. Get medical treatment as soon as possible.
- Personal Protection in First Aid and Measures : Rescuers should wear proper protective equipment like rubber gloves, goggles.

5. Fire fighting measures

- Suitable extinguishing media : Dry chemical powder, carbon dioxide, dry sand
- Unsuitable extinguishing media : Do not use extinguishing media containing water.
- Fire hazard : In contact with water releases flammable gases which may ignite spontaneously.
- Firefighting instructions : Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.
Fight fire from windward.
In case of fire, cover fire area with dry sand to extinguish.
- Personal protection (Emergency response) : Wear breathing apparatus.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures

- General measures : Wear proper protective equipment and avoid contact with skin and inhalation of vapor. Conduct operations from upwind and evacuate people downwind. Remove all sources of ignition. Keep away personnel except for authorized ones from spillage area by stretching ropes.

Environmental precautions

- Environmental precautions : Attention should be given to avoid damage to the environment by flowing of spillage to rivers.

Methods and Equipment for Containment and Cleaning up

- For containment : Absorb spill with inert material (e.g, diatomaceous earth,



Prevention Measures for Secondary Accidents : sand) and flush spillage area with copious amounts of water.
: Remove nearby sources of ignition and prepare extinguishing media.

7. Handling and storage

Handling

Technical measures : Wear proper protective equipment to avoid contact with skin or inhalation of vapor. Fire is strictly prohibited.
Ventilate well at working places.

Precautions for safe handling : Use with an enclosed system or a local exhaust ventilation. Use in well-ventilated areas.
Do not allow contact with oxidizing substances.
Handle under inert gas.

Storage

Storage conditions : Store in a dark, cool place and tightly closed.
Purge container with inert gas.

Material used in packaging/containers : Glass.
Do not use polyvinyl chloride resin, polyethylene, polypropylene, polycarbonate.

8. Exposure controls / Personal protection equipment

Tetrahydrofuran	
ACGIH TWA	50 ppm
ACGIH STEL	100 ppm
Remark (ACGIH)	Skin

Appropriate engineering controls : Use with an enclosed system or a local exhaust ventilation.

Protective equipment

Respiratory protection : If necessary, wear chemical cartridge respirator with an organic vapor cartage

Hand protection : Impervious protective gloves

Eye protection : Safety goggles

Skin and body protection : Protective clothing, protective boots

9. Physical and chemical properties

Physical state : Liquid
Color : Brown
Odor : Ethereal
pH : No data available
Melting point : No data available
Freezing point : No data available
Boiling point : 66 ° C (as THF)
Flash point : -17.2 ° C (C.C.) (as THF)
Auto-ignition temperature : No data available



Decomposition temperature	: No data available
Flammability	: Flammable
Vapor pressure	: No data available
Relative density	: No data available
Density	: No data available
Relative gas density	: No data available
Solubility	: Decomposes by water
Partition coefficient n-octanol/water (log Pow)	: No data available
Explosive limits (vol %)	: No data available
Viscosity, kinematic	: No data available
Particle characteristics	: No data available

10. Stability and reactivity

Reactivity	: Reacts with aldehydes to produce secondary alcohols and reacts with ketones to produce tertiary alcohols. Reacts with carbon dioxide to produce carboxylic acid.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: It may spontaneously ignite when exposed to the air. May react violently when in contact with water. THF can explode on impact at high concentrations of peroxides.
Conditions to avoid	: Light, heat, moisture, air.
Incompatible materials	: Water, oxidizing substances.
Hazardous decomposition products	: Carbon monoxide, chlorine, hydrogen chloride.

11. Toxicological information

Acute toxicity (oral)	: Harmful if swallowed *15% of the mixture consists of ingredient of unknown toxicity. ATEmix=1650mg/kg
Acute toxicity (dermal)	: Classification not possible
Acute toxicity (inhalation)	: No classification (gas) Harmful if inhaled (vapor) *15% of the mixture consists of ingredient of unknown toxicity. ATEmix=18187ppm Classification not possible (dust, mist)
Skin corrosion/irritation	: Causes severe skin burns Since this substance reacts violently when it comes in contact with water, it was classified into category 1B.
Serious eye damage/irritation	: Causes serious eye damage Since this substance reacts violently when it comes in contact with water, it was classified into category 1.
Respiratory sensitization	: Classification not possible
Skin sensitization	: Classification not possible
Germ cell mutagenicity	: Classification not possible
Carcinogenicity	: Suspected of causing cancer THF : It is classified as A3 by ACGIH, "suggestive evidence of carcinogenic potential" by EPA. Thus, it was classified into category 2.

Reproductive toxicity	: Suspected of damaging fertility or the unborn child THF : No effects on fertility or teratogenicity were observed. However, in mouse teratogenicity tests, decreased fetal viability was observed at dosing levels toxic to dams. Thus, it was classified into category 2.
STOT-single exposure	: Causes damage to organs (central nervous system) May cause drowsiness or dizziness May cause respiratory irritation THF : The substance has airway stimulativeness. There is human evidence including "in inhalation exposure (vapor) at high concentration, it may adversely affect central nervous system, causing lethargy.", "in oral ingestion and inhalation exposure, cough, pharyngalgia, giddiness, headache, nausea and unconsciousness were observed." and "increased hepatic enzyme in blood, nausea, dizziness, lowered hearing ability, blood vessel edema, occipital headache and brain cramps were noted." Thus, it was classified into category 1 (central nervous system), category 3 (respiratory irritation, narcosis).
STOT-repeated exposure	: Causes damage to organs (central nervous system, respiratory organs, liver) through prolonged or repeated exposure THF : There are many reports on human repeated exposure (occupational exposure), for example, central nervous system symptoms (headache, dizziness, nausea), respiratory organs symptoms (cough, chest pain, dyspnea), and hepatopathy (increases in serum AST, ALT and γ -GT, fatty degeneration of tissues by liver biopsy, siderosis). However, all these effects are combined exposure effects with other solvents and there is no clear relationship with concentration or exposure time. There is evidence from animal studies including "in 12-week inhalation (vapor) exposure test in rats (4 hours/day) within the concentration range of category 2 (200 ppm (600 mg/m ³), as guidance value: 0.37 mg/L/6 hours), increased serum AST was observed." and "in 13-week or 2-year inhalation exposure NTP test in rats and mice, at high concentration (out of category) (1.77-5.31 mg/L/6 hours), the effects on liver (increased weight, hepatocellular necrosis) and central nervous system symptoms (coma (during exposure to within 1 hour after exposure) (anesthetic actions), ataxia) were observed." Based on the above information, it was classified into category 1 (central nervous system, respiratory organs, liver).
Aspiration hazard	: Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	: No classification *15% of mixture consists of ingredient of unknown hazards to the aquatic environment. Fish LC50m=2160mg/L
Aquatic chronic	: No classification *15% of mixture consists of ingredient of unknown hazards to the aquatic environment.

Persistence and degradability

No additional information available

Bioaccumulative potential

No additional information available

Mobility in soil

No additional information available

Hazardous to the ozone layer

Ozone : Classification not possible

13. Disposal considerations

Ecology - waste materials : Burn in a chemical incinerator equipped with an afterburner and a scrubber. Or entrust approved waste disposal companies with the disposal.

Contaminated container and packaging : In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information

International Regulations

Transport by sea (IMDG)

UN-No. (IMDG) : 3399
Proper Shipping Name (IMDG) : ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE
Packing group (IMDG) : II
Transport hazard class(es) (IMDG) : 4.3 (3)

Air transport (IATA)

UN-No. (IATA) : 3399
Proper Shipping Name (IATA) : Organometallic substance, liquid, water-reactive, flammable
Packing group (IATA) : II
Transport hazard class(es) (IATA) : 4.3 (3)

Marine pollutant : Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Pollutant category : Z
MFAG-No : 138

15. Regulatory information

Regulatory information with regard to this substance in your country or region should be examined by your own responsibility.

16. Other information

Data sources : Dictionary of Organic Compounds, The society of Synthetic Organic Chemistry, Kodansha Ltd. (1985) .
Handbook of 17322 Chemical Products, The Chemical Daily Co. (2022) .
NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully. The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements. The information herein is only provision of information, and

it does not represent a guarantee the properties of the product. The Safety Data Sheet (SDS) is prepared based on JIS Z7253.