SAFETY DATA SHEET

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

Creation Date 22-Sep-2011 **Revision Date** 09-Feb-2024 **Revision Number** 11

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Description: n-Butyllithium, 2.3M (20 wt.%) solution in Cyclohexane/Hexane
Cat No. : **377490000; 377491000; 377498000**
Molecular Formula C4 H9 Li

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

Recommended Use Laboratory chemicals.
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

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

Physical hazards

Flammable liquids	Category 2 (H225)
Substances/mixtures which, in contact with water, emit flammable gases	Category 1 (H260)
Pyrophoric liquids	Category 1 (H250)

Health hazards

Aspiration Toxicity	Category 1 (H304)

Skin Corrosion/Irritation	Category 1 B (H314)
Serious Eye Damage/Eye Irritation	Category 1 (H318)
Reproductive Toxicity	Category 2 (H361f)
Specific target organ toxicity - (single exposure)	Category 3 (H336)
Specific target organ toxicity - (repeated exposure)	Category 2 (H373)
Environmental hazards	
Acute aquatic toxicity	Category 1 (H400)
Chronic aquatic toxicity	Category 1 (H410)

Full text of Hazard Statements: see section 16

2.2. Label elements

Signal Word **Danger**

Hazard Statements

H250 - Catches fire spontaneously if exposed to air
H225 - Highly flammable liquid and vapor
H260 - In contact with water releases flammable gases which may ignite spontaneously
H304 - May be fatal if swallowed and enters airways
H336 - May cause drowsiness or dizziness
H314 - Causes severe skin burns and eye damage
H410 - Very toxic to aquatic life with long lasting effects
H361f - Suspected of damaging fertility
H373 - May cause damage to organs through prolonged or repeated exposure
EUH014 - Reacts violently with water

Precautionary Statements

P280 - Wear protective gloves/protective clothing/eye protection/face protection
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
P273 - Avoid release to the environment
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P302 + P335 + P334 - IF ON SKIN: Brush off loose particles from skin. Immerse in cool water

2.3. Other hazards

Reacts violently with water

Toxic to terrestrial vertebrates
This product does not contain any known or suspected endocrine disruptors

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

Component	CAS No	EC No	Weight %	CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567
Hydrocarbons, C6, n-alkanes, isoalkanes, cyclics, n-hexane rich	NA	925-292-5	0-10	Flam. Liq. 2 (H225) Skin Irrit. 2 (H315) STOT SE 3 (H336) STOT RE 2 (H373) Repr. Cat 2 (H361f) Asp. Tox. 1 (H304) Aquatic Chronic 2 (H411)
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics	64742-49-0	927-510-4	0-10	Flam. Liq. 2 (H225) Skin Irrit. 2 (H315) STOT SE 3 (H336) Asp. Tox. 1 (H304) Aquatic Chronic 2 (H411)
Cyclohexane	110-82-7	203-806-2	<80	Flam. Liq. 2 (H225) Asp. Tox. 1 (H304) Skin Irrit. 2 (H315) STOT SE 3 (H336) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)
Butyl lithium	109-72-8	203-698-7	20	Pyr. Liq. 1 (H250) Water react. 1 (H260) Skin Corr. 1B (H314) Eye Dam. 1 (H318) (EUH014)

Component	Specific concentration limits (SCL's)	M-Factor	Component notes
Cyclohexane	-	1	-

Components	Reach Registration Number	
Cyclohexane	01-2119463273-41	
Butyl lithium	01-2119494906-21	
Hydrocarbons, C6, n-alkanes, isoalkanes, cyclics, n-hexane rich	01-2119474209-33	
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics	01-2119475515-33	

Full text of Hazard Statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Eye Contact Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Skin Contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Immediate medical attention is required.

Ingestion Do NOT induce vomiting. Call a physician immediately. Call a physician or poison control center immediately. If vomiting occurs naturally, have victim lean forward.

Inhalation Remove from exposure, lie down. Remove to fresh air. If not breathing, give artificial respiration. Immediate medical attention is required. Risk of serious damage to the lungs (by aspiration).

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

Difficulty in breathing. Causes burns by all exposure routes. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and

vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

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

Notes to Physician Treat symptomatically. Symptoms may be delayed.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media
Dry chemical, soda ash, lime or sand. approved class D extinguishers. Water mist may be used to cool closed containers.

Extinguishing media which must not be used for safety reasons
Water. Do not use halon type extinguisher. Carbon dioxide (CO_2). Foam.

5.2. Special hazards arising from the substance or mixture

Flammable. Water reactive. Pyrophoric: Spontaneously flammable in air. Produce flammable gases on contact with water. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products
Carbon monoxide (CO), Carbon dioxide (CO_2), Butane.

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.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Remove all sources of ignition. Take precautionary measures against static discharges.

6.2. Environmental precautions

Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Do not expose spill to water.

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

Do not breathe mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Handle product only in closed system or provide appropriate exhaust ventilation. Use spark-proof tools and explosion-proof equipment. Use only non-sparking tools. Do not allow

contact with water. Do not allow contact with water because of violent reaction. Keep away from open flames, hot surfaces and sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.

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 away from heat, sparks and flame. Protect from direct sunlight. Keep from any possible contact with water. Corrosives area. Flammables area. Keep under nitrogen. Keep refrigerated. Keep containers tightly closed in a dry, cool and well-ventilated place.

Technical Rules for Hazardous Substances (TRGS) 510 Class 4.2
Storage Class (LGK) (Germany)

7.3. Specific end use(s)

Use in laboratories

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits
List source(s): **EU** - Commission Directive (EU) 2019/1831 of 24 October 2019 establishing a fifth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC and amending Commission Directive 2000/39/EC **UK** - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020. **IRE -** 2021 Code of Practice for the Chemical Agents Regulations, Schedule 1. Published by the Health and Safety Authority

Component	The United Kingdom	European Union	Ireland
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics	(TWA): 500 ppm	(TWA): 500 ppm, 2,085 mg/m³	
Cyclohexane	STEL: 300 ppm 15 min STEL: 1050 mg/m³ 15 min TWA: 100 ppm 8 hr TWA: 350 mg/m³ 8 hr	TWA: 200 ppm (8hr) TWA: 700 mg/m³ (8hr)	TWA: 200 ppm 8 hr. TWA: 700 mg/m³ 8 hr. STEL: 600 ppm 15 min STEL: 2100 mg/m³ 15 min

Biological limit values
List source(s):

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)
Cyclohexane 110-82-7 (<80)				DNEL = 2016mg/kg bw/day

Component	Acute effects local (Inhalation)	Acute effects systemic (Inhalation)	Chronic effects local (Inhalation)	Chronic effects systemic (Inhalation)
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics 64742-49-0 (0-10)	DNEL = 1066.67mg/m³	DNEL = 1286.4mg/m³	DNEL = 837.5mg/m³	
Cyclohexane 110-82-7 (<80)	DNEL = 1400mg/m³	DNEL = 1400mg/m³	DNEL = 700mg/m³	DNEL = 700mg/m³

Predicted No Effect Concentration (PNEC)
See values below.

Component	Fresh water	Fresh water sediment	Water Intermittent	Microorganisms in sewage treatment	Soil (Agriculture)
Cyclohexane 110-82-7 (<80)	PNEC = 0.207mg/L	PNEC = 16.68mg/kg sediment dw	PNEC = 0.207mg/L	PNEC = 3.24mg/L	PNEC = 3.38mg/kg soil dw

Component	Marine water	Marine water sediment	Marine water intermittent	Food chain	Air
Cyclohexane 110-82-7 (<80)	PNEC = 0.207mg/L	PNEC = 16.68mg/kg sediment dw			

8.2. Exposure controls

Engineering Measures
Use explosion-proof electrical/ventilating/lighting equipment. 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
Nitrile rubber Viton (R)	See manufacturers recommendations	-	EN 374	(minimum requirement)

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

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: low boiling organic solvent Type AX Brown conforming to EN371 or Organic gases and vapours filter Type A Brown conforming to EN14387

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:- Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141
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. Local authorities should be advised if significant spillages cannot be contained.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical State	Liquid	
Appearance	Light yellow	
Odor	Irritating	
Odor Threshold	No data available	
Melting Point/Range	No data available	
Softening Point	No data available	
Boiling Point/Range	No information available	
Flammability (liquid)	Highly flammable	On basis of test data
Flammability (solid,gas)	Not applicable	Liquid
Explosion Limits	No data available	
Flash Point	-18 °C / -0.4 °F	**Method -** (based on components)
Autoignition Temperature	No data available	
Decomposition Temperature	No data available	
pH	7	
Viscosity	No data available	
Water Solubility	Reacts violently with water	
Solubility in other solvents	No information available	

Partition Coefficient (n-octanol/water)

Component	**log Pow**
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics	4.66
Cyclohexane	3.44

Vapor Pressure	No data available	
Density / Specific Gravity	0.750	
Bulk Density	Not applicable	Liquid
Vapor Density	No data available	(Air = 1.0)
Particle characteristics	Not applicable (liquid)	

9.2. Other information

Molecular Formula	C4 H9 Li
Molecular Weight	64.06
Explosive Properties	Vapors may form explosive mixtures with air
Substances/mixtures which, in contact with water, emit flammable gases	Emitted gas ignites spontaneously Gas(es) = Butane

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

Yes

10.2. Chemical stability

Reacts violently with water. Pyrophoric: Spontaneously flammable in air. Light sensitive. Moisture sensitive. Air sensitive.

10.3. Possibility of hazardous reactions

Hazardous Polymerization	No information available.
Hazardous Reactions	No information available.

10.4. Conditions to avoid

Keep away from open flames, hot surfaces and sources of ignition. Exposure to air. Exposure to light. Incompatible products. Exposure to moist air or water.

10.5. Incompatible materials

Acids. Water. Strong oxidizing agents. Alcohols. Carbon dioxide (CO2).

10.6. Hazardous decomposition products

Carbon monoxide (CO). Carbon dioxide (CO_2). Butane.

SECTION 11: TOXICOLOGICAL INFORMATION

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

Product Information No acute toxicity information is available for this product

(a) acute toxicity;

Oral Based on available data, the classification criteria are not met
Dermal Based on available data, the classification criteria are not met
Inhalation Based on available data, the classification criteria are not met

Toxicology data for the components

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Hydrocarbons, C6, n-alkanes, isoalkanes, cyclics, n-hexane rich	LD50 > 5000 mg/kg (Rat)	LD50 > 3160 mg/kg (Rabbit)	LC50 = 73680 ppm (Rat) 4 h
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 20 mg/l
Cyclohexane	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	LC50 > 32880 mg/m³ (Rat) 4 h

(b) skin corrosion/irritation; Category 1 B

(c) serious eye damage/irritation; Category 1

(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

The table below indicates whether each agency has listed any ingredient as a carcinogen

Component	EU	UK	Germany	IARC
Hydrocarbons, C6, n-alkanes, isoalkanes, cyclics, n-hexane rich	Carc Cat. 1B			
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics	Carc Cat. 1B			

(g) reproductive toxicity; Category 2

(h) STOT-single exposure; Category 3

Results / Target organs Central nervous system (CNS).

(i) STOT-repeated exposure; Category 2

Target Organs Central nervous system (CNS), Peripheral Nervous System (PNS).

(j) aspiration hazard; Category 1

Other Adverse Effects The toxicological properties have not been fully investigated.

Symptoms / effects,both acute and delayed Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation.

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 The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Reacts with water so no ecotoxicity data for the substance is available.

Component	Freshwater Fish	Water Flea	Freshwater Algae
Hydrocarbons, C6, n-alkanes, isoalkanes, cyclics, n-hexane rich		LC50: = 2.6 mg/L, 96h (Chaetogammarus marinus)	
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics	> 13.4 mg/l (LC50) 96h Onchorhyncus mykiss	3 mg/l (EC50) 48h Daphnia magna	10 mg/l (EC50) 72h Algae - Raphidocelis
Cyclohexane	LC50: 48.87 - 68.76 mg/L, 96h static (Poecilia reticulata) LC50: 24.99 - 44.69 mg/L, 96h static (Lepomis macrochirus) LC50: 23.03 - 42.07 mg/L, 96h static (Pimephales promelas) LC50: 3.96 - 5.18 mg/L, 96h flow-through (Pimephales promelas)	EC50 = 0.9 mg/l/48h	EC50 >500 mg/L/72h

Component	Microtox	M-Factor
Cyclohexane	EC50 = 85.5 mg/L 5 min EC50 = 93 mg/L 10 min	1

12.2. Persistence and degradability

No information available

Persistence Persistence is unlikely, based on information available.

Degradability Reacts with water.

Component	Degradability
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics 64742-49-0 (0-10)	98% (28d) OECD301F
Cyclohexane 110-82-7 (<80)	77% (28d)

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

12.3. Bioaccumulative potential

Product does not bioaccumulate due to reaction with water

Component	log Pow	Bioconcentration factor (BCF)
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics	4.66	No data available
Cyclohexane	3.44	83.15

12.4. Mobility in soil

Reacts violently with water . Is not likely mobile in the environment.

12.5. Results of PBT and vPvB assessment	Reacts violently with water.
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. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.
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. Can be landfilled or incinerated, when in compliance with local regulations. Do not empty into drains. Large amounts will affect pH and harm aquatic organisms. Do not let this chemical enter the environment.

SECTION 14: TRANSPORT INFORMATION

IMDG/IMO

14.1. UN number	UN3394
14.2. UN proper shipping name	ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC, WATER-REACTIVE
Technical Shipping Name	Cyclohexane, Butyl lithium
14.3. Transport hazard class(es)	4.2
Subsidiary Hazard Class	4.3
14.4. Packing group	I

ADR

14.1. UN number	UN3394
14.2. UN proper shipping name	ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC, WATER-REACTIVE
Technical Shipping Name	Cyclohexane, Butyl lithium
14.3. Transport hazard class(es)	4.2
Subsidiary Hazard Class	4.3
14.4. Packing group	I

IATA FORBIDDEN FOR IATA TRANSPORT

14.1. UN number	UN3394
14.2. UN proper shipping name	ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC, WATER-REACTIVE FORBIDDEN FOR IATA TRANSPORT
Technical Shipping Name	Cyclohexane, Butyl lithium
14.3. Transport hazard class(es)	4.2

Subsidiary Hazard Class	4.3
14.4. Packing group	I
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
Hydrocarbons, C6, n-alkanes, isoalkanes, cyclics, n-hexane rich	NA	265-151-9	-	-	X	-	X	-	-
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics	64742-49-0	927-510-4	-	-	x	X	x	x	-
Cyclohexane	110-82-7	203-806-2	-	-	X	X	KE-18562	X	X
Butyl lithium	109-72-8	203-698-7	-	-	X	X	KE-04320	X	X

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	DSL	NDSL	AICS	NZIoC	PICCS
Hydrocarbons, C6, n-alkanes, isoalkanes, cyclics, n-hexane rich	NA	X	-	X	-	X	X	X
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics	64742-49-0	T	ACTIVE	x	-	x	X	x
Cyclohexane	110-82-7	X	ACTIVE	X	-	X	X	X
Butyl lithium	109-72-8	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

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)
Hydrocarbons, C6, n-alkanes, isoalkanes, cyclics, n-hexane rich	NA	-	Use restricted. See item 28. (see *http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32006R1907:EN:NOT* for restriction details) Use restricted. See item 29. (see *http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32006R1907:EN:NOT* for restriction details)	-
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics	64742-49-0	-	Use restricted. See item 28. (see link for restriction details) Use restricted. See item	-

			29. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	
Cyclohexane	110-82-7	-	Use restricted. See item 57. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	-
Butyl lithium	109-72-8	-	-	-

REACH links
https://echa.europa.eu/substances-restricted-under-reach

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
Hydrocarbons, C6, n-alkanes, isoalkanes, cyclics, n-hexane rich	NA	Not applicable	Not applicable
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics	64742-49-0	Not applicable	Not applicable
Cyclohexane	110-82-7	Not applicable	Not applicable
Butyl lithium	109-72-8	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 .
Take note of Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
Take note of Directive 94/33/EC on the protection of young people at work
Take note of Dir 92/85/EC on the protection of pregnant and breastfeeding women at work

National Regulations

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

WGK Classification Water endangering class = 3 (self classification)

Component	Germany - Water Classification (AwSV)	Germany - TA-Luft Class
Hydrocarbons, C6, n-alkanes, isoalkanes, cyclics, n-hexane rich	WGK 3	
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics	WGK2	
Cyclohexane	WGK2	
Butyl lithium	WGK1	

Component	France - INRS (Tables of occupational diseases)
Hydrocarbons, C6, n-alkanes,	Tableaux des maladies professionnelles (TMP) - RG 84

isoalkanes, cyclics, n-hexane rich	
Hydrocarbons, C7, n-alkanes, isoalkanes, cyclics	Tableaux des maladies professionnelles (TMP) - RG 84
Cyclohexane	Tableaux des maladies professionnelles (TMP) - RG 84

Component	Switzerland - Ordinance on the Reduction of Risk from handling of hazardous substances preparation (SR 814.81)	Switzerland - Ordinance on Incentive Taxes on Volatile Organic Compounds (OVOC)	Switzerland - Ordinance of the Rotterdam Convention on the Prior Informed Consent Procedure
Cyclohexane 110-82-7 (<80)	Prohibited and Restricted Substances	Group I	

15.2. Chemical safety assessment

Chemical Safety Assessment/Reports (CSA/CSR) are not required for mixtures

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3
H225 - Highly flammable liquid and vapor
H250 - Catches fire spontaneously if exposed to air
H260 - In contact with water releases flammable gases which may ignite spontaneously
H304 - May be fatal if swallowed and enters airways
H314 - Causes severe skin burns and eye damage
H315 - Causes skin irritation
H318 - Causes serious eye damage
H336 - May cause drowsiness or dizziness
H361f - Suspected of damaging fertility
H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects
H411 - Toxic to aquatic life with long lasting effects
EUH014 - Reacts violently with water

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

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Physical hazards	On basis of test data
Health Hazards	Calculation method
Environmental hazards	Calculation method

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.
Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.
Chemical incident response training.

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Revision Date	09-Feb-2024
Revision Summary	Not applicable.

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

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Disclaimer

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End of Safety Data Sheet