Lithium Thionyl Chloride Metal Batteries with Aluminum Electrolyte

Safety Data Sheet

According to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878

Date of Issue: 13/11/2024 Version: 1.0

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

1.1. Product Identifier

Product Form : Mixture

Product Name : Lithium Thionyl Chloride Metal Batteries with Aluminum Electrolyte

Product Code : No other identifiers

1.2. Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

1.2.1. Relevant Identified Uses

Use of the Substance/Mixture : Lithium-based battery product

1.2.2. Uses Advised Against

Uses Advised Against : No uses advised against are specified

1.3. Details of the Supplier of the Safety Data Sheet

Company

Engineered Power
20, 3103 - 14th Avenue N.E. Calgary
Alberta, Canada T2A 7N6
Telephone: (403) 235-2584
info@engineeredpower.com

1.4. Emergency Telephone Number

Emergency Number : VelocityEHS
(800)255-3924 (North America)
+1 (813)248-0585 (International)

SECTION 2: HAZARDS IDENTIFICATION

This product is a sealed battery and considered an article containing and integral substance/mixture. The battery contains hazardous substances, which under normal conditions of use are not in contact with the user unless the battery is altered outside of it's normal conditions of use, or there is a spill, leak, or other emergency. This Safety Data Sheet provides important information on potential hazards for exposure to the internal contents of the battery, specifically the hazardous substances encased within it. Do not attempt to open sealed cells or batteries. Do not intentionally short-circuit cells or batteries. Do not expose these products to temperatures exceeding the maximum manufacturers rating.

2.1. Classification of the Substance or Mixture

Classification According to Regulation (EC) No. 1272/2008

Not classified.

2.2. Label Elements

Labelling According to Regulation (EC) No. 1272/2008 [CLP]

No labelling applicable

2.3. Other Hazards

Other Hazards Not Contributing to the Classification : Exposure may aggravate pre-existing eye, skin, or respiratory conditions.

This substance/mixture does not meet the PBT/vPvB criteria of REACH regulation, annex XIII

The substance/mixture does not contain substance(s) equal to or greater than 0,1% by weight that are present in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product Identifier	%	Classification According to Regulation (EC) No. 1272/2008
Thionyl chloride	(CAS-No.) 7719-09-7 (EC-No.) 231-748-8 (EC Index-No.) 016-015-00-0	25 – 50	Acute Tox. 3 (Oral), H301 Acute Tox. 4 (Inhalation), H332 Skin Corr. 1A, H314 STOT SE 3, H335
Aluminum chloride	(CAS-No.) 7446-70-0 (EC-No.) 231-208-1 (EC Index-No.) 013-003-00-7	10 – 25	Met. Corr. 1, H290 Skin Corr. 1B, H314

Lithium	(CAS-No.) 7439-93-2 (EC-No.) 231-102-5 (EC Index-No.) 003-001-00-4	5 – 10	Water-react. 1, H260 Skin Corr. 1B, H314
Lithium chloride	(CAS-No.) 7447-41-8 (EC-No.) 231-212-3	2.5 – 10	Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 2, H371 STOT RE 2, H373

Specific Concentration Limits:

Name	Product Identifier	Specific Concentration Limits (%)
Thionyl chloride	(CAS-No.) 7719-09-7 (EC-No.) 231-748-8 (EC Index-No.) 016-015-00-0	(1 ≤ C < 100) STOT SE 3; H335

Full text of H-statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of First-aid Measures

First-Aid Measures General : The following first aid measures apply in case of exposure to the interior battery components, if the battery is damaged and exposure occurs. Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-Aid Measures After Inhalation : For exposure to battery contents: Remove to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention.

First-Aid Measures After Skin Contact : For exposure to battery contents: Immediately remove contaminated clothing. Immediately flush skin with plenty of water for at least 30 minutes. Get immediate medical advice/attention.

First-Aid Measures After Eye Contact : For exposure to battery contents: Immediately rinse with water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.

First-Aid Measures After Ingestion : For exposure to battery contents: Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

4.2. Most Important Symptoms and Effects Both Acute and Delayed

Symptoms/Effects : Exposure to battery contents may result in the following: May cause respiratory irritation. May cause damage to organs. May cause damage to organs through prolonged or repeated exposure. Harmful if swallowed. Causes severe skin burns and eye damage.

Symptoms/Effects After Inhalation : Exposure to the internal contents of the battery may result in: . Inhalation is likely to cause adverse health effects including but not limited to: irritation, difficulty breathing, and unconsciousness. May be corrosive to the respiratory tract.

Symptoms/Effects After Skin Contact : Exposure to the internal contents of the battery may result in: Causes severe irritation which will progress to chemical burns.

Symptoms/Effects After Eye Contact : Exposure to the internal contents of the battery may result in: Causes permanent damage to the cornea, iris, or conjunctiva.

Symptoms/Effects After Ingestion : Exposure to the internal contents of the battery may result in: This material is harmful orally and can cause adverse health effects or death in significant amounts. May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

Chronic Symptoms : Exposure to the internal contents of the battery may result in: May cause damage to organs through prolonged or repeated exposure.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media : Use Class D fire extinguisher.

Unsuitable Extinguishing Media : Lithium metal battery fires will react with all other extinguishing agents other than a Class D extinguisher. Do not use, water spray, fog, carbon dioxide, halogented, dry chemical, or foam extinguishing agents.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard : For exposure to the internal contents of a lithium metal battery: Vigorously reacts with water to produce flammable gases which may ignite spontaneously and cause a fire or explosion. Vapours from a damaged battery may be flammable.

Explosion Hazard : Battery may rupture/explode when exposed to excessive heat or fire, if short circuited, punctured, or crushed.

Reactivity : May be corrosive to metals. Contact with metals may evolve flammable hydrogen gas. Reacts violently with water liberating highly flammable gases.

Hazardous Combustion Products : Aluminium oxides. Chlorine compounds. Corrosive vapours. Lithium oxides. Sulphur oxides.

5.3. Advice for Firefighters

Precautionary Measures Fire : Exercise caution when fighting any chemical fire.

Firefighting Instructions : In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.

Protection During Firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures : Do not get in eyes, on skin, or on clothing. Do not breathe dust. Use only non-sparking tools. Keep away from heat, sparks, open flames, hot surfaces. – No smoking. Remove ignition sources.

6.1.1. For Non-Emergency Personnel

Protective Equipment : Use appropriate personal protective equipment (PPE).

Emergency Procedures : Evacuate unnecessary personnel.

6.1.2. For Emergency Responders

Protective Equipment : Equip cleanup crew with proper protection.

Emergency Procedures : Upon arrival at the scene, a first responder is expected to recognise the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit. Ventilate area.

6.2. Environmental Precautions

Prevent entry to sewers and public waters.

6.3. Methods and Materials for Containment and Cleaning Up

For Containment : Ventilate area. Use only non-sparking tools. As an immediate precautionary measure, isolate spill or leak area in all directions. Contain solid spills with appropriate barriers and prevent migration and entry into sewers or streams.

Methods for Cleaning Up : Use only non-sparking tools. Absorb spillage to prevent material damage. Clean up spills immediately and dispose of waste safely. Contact competent authorities after a spill.

6.4. Reference to Other Sections

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed : Under normal conditions of use this product is considered an article and exposure to the ingredients contained within this product is unlikely. Never disassemble a battery or bypass any safety device. Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods. Do not directly heat or solder. Do not throw into fire. Do not mix batteries of different types and brands. Do not open or damage enclosure, or battery cell as this could cause a potential exposure and release of hazardous materials.

Precautions for Safe Handling : Since this product is a sealed battery, normal handling hazards are minimal unless the battery is damaged or the internal contents are exposed. If the battery is damaged: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes, on skin, or on clothing. Do NOT breathe (dust, vapour, mist, gas). Protect from moisture. Keep away from heat, sparks, open flames, hot surfaces. – No smoking. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

Hygiene Measures : Handle in accordance with good industrial hygiene and safety procedures.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures : Comply with applicable regulations. Proper grounding procedures to avoid static electricity should be followed. Avoid creating or spreading dust. Use explosion-proof electrical, ventilating, lighting equipment.

Storage Conditions : Store in accordance with applicable national storage class systems. Batteries should be separated from other materials and stored in a noncombustible, well ventilated, sprinkler-protected structure with sufficient clearance between walls and battery stacks. Do not store batteries in a manner that allows terminals to short circuit. Do not place batteries near heating equipment, nor expose to direct sunlight for long periods.

Incompatible Materials : Strong acids, strong bases, strong oxidisers. Metals. Water, humidity.

Packaging Materials : Store in original container or corrosive resistant and/or lined container.

7.3. Specific End Use(s)

Lithium-based battery product

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

Please see section 16 for the legal basis of limit value information in section 8.1, including the national legislation or provision which gives rise to a given limit.

Lithium (7439-93-2)		
Sweden	OEL STEL (Legal Basis:AFS 2018:1)	0,02 mg/m³ (inhalable fraction)
Switzerland	OEL STEL (Legal Basis:OLVSNAIF)	0,2 mg/m³ (inhalable dust)
Switzerland	OEL TWA (Legal Basis:OLVSNAIF)	0,2 mg/m³ (inhalable dust (Lithium compounds, inorganic)

Thionyl chloride (7719-09-7)		
Belgium	OEL STEL (Legal Basis:Royal Decree 21/01/2020)	1 mg/m³
Belgium	OEL STEL (Legal Basis:Royal Decree 21/01/2020)	0,2 ppm
Croatia	OEL STEL (Legal Basis:OG No. 91/2018)	4,9 mg/m³
Croatia	OEL STEL (Legal Basis:OG No. 91/2018)	1 ppm
Denmark	OEL Ceiling (Legal Basis:BEK No. 698 of 28/05/2020)	5 mg/m³
Denmark	OEL Ceiling (Legal Basis:BEK No. 698 of 28/05/2020)	1 ppm
Finland	OEL Ceiling (Legal Basis:HTP-ARVOT 2020)	5 mg/m³
Finland	OEL Ceiling (Legal Basis:HTP-ARVOT 2020)	1 ppm
Greece	OEL TWA (Legal Basis:PWHSE)	5 mg/m³
Greece	OEL TWA (Legal Basis:PWHSE)	1 ppm
Greece	OEL STEL (Legal Basis:PWHSE)	5 mg/m³
Greece	OEL STEL (Legal Basis:PWHSE)	1 ppm
Ireland	OEL STEL (Legal Basis:2020 COP)	1 mg/m³ (inhalable fraction and vapour)
Ireland	OEL STEL (Legal Basis:2020 COP)	0,2 ppm
USA ACGIH	OEL Ceiling (Legal Basis:IMDFN1)	0,2 ppm
Norway	OEL Ceiling (Legal Basis:FOR-2020-04-06-695)	5 mg/m³
Norway	OEL Ceiling (Legal Basis:FOR-2020-04-06-695)	1 ppm
Poland	OEL TWA (Legal Basis:Dz. U. 2020 Nr. 61)	1,8 mg/m³
Poland	OEL TWA (Legal Basis:Dz. U. 2020 Nr. 61)	3,6 mg/m³
Portugal	OEL Ceiling (Legal Basis:Portuguese Norm NP 1796:2014)	0,2 ppm
Romania	OEL TWA (Legal Basis:Gov. Dec. No 1.218)	15 mg/m³
Romania	OEL TWA (Legal Basis:Gov. Dec. No 1.218)	3 ppm
Romania	OEL STEL (Legal Basis:Gov. Dec. No 1.218)	25 mg/m³
Romania	OEL STEL (Legal Basis:Gov. Dec. No 1.218)	5 ppm
Spain	OEL STEL (Legal Basis:OELCAIS)	4,9 mg/m³
Spain	OEL STEL (Legal Basis:OELCAIS)	1 ppm
Switzerland	OEL TWA (Legal Basis:OLVSNAIF)	5 mg/m³
Switzerland	OEL TWA (Legal Basis:OLVSNAIF)	1 ppm

8.2. Exposure Controls

Appropriate Engineering Controls : Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed. Proper grounding procedures to avoid static electricity should be followed. Gas detectors should be used when toxic gases may be released. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use explosion-proof equipment.

Personal Protective Equipment	:	Not required under normal conditions of use. When handling damaged batteries: . Gloves. Protective clothing. Protective goggles. Insufficient ventilation: wear respiratory protection. Face shield. Personal protective equipment should be chosen in accordance with Regulation (EU) 2016/425, CEN standards, and in discussion with the supplier of the protective equipment.

Materials for Protective Clothing	:	Chemically resistant materials and fabrics. Wear fire/flame resistant/retardant clothing. Corrosion-proof clothing.
Hand Protection	:	Wear protective gloves.
Eye Protection	:	Chemical safety goggles and face shield.
Skin and Body Protection	:	Wear suitable protective clothing.
Respiratory Protection	:	If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.
Other Information	:	When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State	:	Solid
Colour, Appearance	:	Metal container containing liquid and solid contents
Odour	:	Normally odourless, leaking devices may emit acrid, sulfurous or ethereal odours.
Odour Threshold	:	No data available
pH	:	No data available
pH solution	:	No data available
Evaporation Rate	:	No data available
Melting Point	:	No data available
Freezing Point	:	No data available
Boiling Point	:	No data available
Flash Point	:	No data available
Auto-Ignition Temperature	:	No data available
Decomposition Temperature	:	No data available
Flammability	:	No data available
Vapour Pressure	:	No data available
Relative Vapour Density At 20°C	:	No data available
Relative Density	:	No data available
Solubility	:	No data available
Partition Coefficient n-Octanol/Water	:	No data available
Viscosity	:	No data available
Explosive Properties	:	No data available
Oxidising Properties	:	No data available
Explosive Limits	:	No data available
Particle Size	:	No data available
Particle Size Distribution	:	No data available
Particle Shape	:	No data available
Particle Aspect Ratio	:	No data available
Particle Aggregation State	:	No data available
Particle Agglomeration State	:	No data available
Particle Specific Surface Area	:	No data available
Particle Dustiness	:	No data available

9.2. Other Information

No additional information available

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

May be corrosive to metals. Contact with metals may evolve flammable hydrogen gas. Reacts violently with water liberating highly flammable gases.

10.2. Chemical Stability

Stable under recommended handling and storage conditions (see section 7).

10.3. Possibility of Hazardous Reactions

In contact with water releases flammable gases which may ignite spontaneously.

10.4. Conditions to Avoid

Keep away from moisture, water, ignition sources, direct sunlight, extremely high or low temperatures, incompatible materials. Sparks, heat, open flame and other sources of ignition. Do not heat, expose to fire, disassemble, short circuit, immerse in water, or abuse batteries.

10.5. Incompatible Materials

Strong acids, strong bases, strong oxidisers. Metals. Water, humidity.

10.6. Hazardous Decomposition Products

None expected under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information On Hazard Classes As Defined In Regulation (EC) No 1272/2008

Likely Routes of Exposure : From exposure to battery contents: Dermal, Eye Contact, Inhalation, Oral

Acute Toxicity (Oral) : Not classified. (No exposure to internal components expected.)

Acute Toxicity (Dermal) : Not classified. (No exposure to internal components expected.)

Acute Toxicity (Inhalation) : Not classified. (No exposure to internal components expected.)

Lithium chloride (7447-41-8)	
LD50 Oral Rat	526 mg/kg (Source: NLM_CIP)
LD50 Dermal Rat	> 2000 mg/kg (No deaths)
LC50 Inhalation Rat	> 5,57 mg/l/4h

Thionyl chloride (7719-09-7)	
LD50 Oral Rat	270 mg/kg (Source: JAPAN_GHS)
LC50 Inhalation Rat	2,717 mg/l/4h
LC50 Inhalation Rat	1,21 mg/l/4h

Skin Corrosion/Irritation : Not classified. (No exposure to internal components expected.)

Eye Damage/Irritation : Not classified. (No exposure to internal components expected.)

Respiratory or Skin Sensitisation : Not classified. (No exposure to internal components expected.)

Germ Cell Mutagenicity : Not classified. (No exposure to internal components expected.)

Carcinogenicity : Not classified. (No exposure to internal components expected.)

Reproductive Toxicity : Not classified. (No exposure to internal components expected.)

Specific Target Organ Toxicity (Single Exposure) : Not classified. (No exposure to internal components expected.)

Specific Target Organ Toxicity (Repeated Exposure) : Not classified. (No exposure to internal components expected.)

Aspiration Hazard : Not classified. (No exposure to internal components expected.)

Symptoms/Injuries After Inhalation : Exposure to the internal contents of the battery may result in: Inhalation is likely to cause adverse health effects including but not limited to: irritation, difficulty breathing, and unconsciousness. May be corrosive to the respiratory tract.

Symptoms/Injuries After Skin Contact : Exposure to the internal contents of the battery may result in: Causes severe irritation which will progress to chemical burns.

Symptoms/Injuries After Eye Contact : Exposure to the internal contents of the battery may result in: Causes permanent damage to the cornea, iris, or conjunctiva.

Symptoms/Injuries After Ingestion : Exposure to the internal contents of the battery may result in: This material is harmful orally and can cause adverse health effects or death in significant amounts. May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

Chronic Symptoms : Exposure to the internal contents of the battery may result in: May cause damage to organs through prolonged or repeated exposure.

11.2. Information On Other Hazards

Based on available data this substance/the substances in this mixture not listed below do(es) not have endocrine disrupting properties with respect to humans as it does not meet the criteria set out in section A of Regulation (EU) No 2017/2100 and/or the criteria set out in Regulation (EU) 2018/605, or the substance(s) are not required to be disclosed.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Hazardous To The Aquatic Environment, Short–Term (Acute) : Not classified. (No exposure to internal components expected.)

Hazardous To The Aquatic Environment, Long–Term (Chronic) : Not classified. (No exposure to internal components expected.)

Lithium chloride (7447-41-8)	
LC50 Fish	158 mg/kg (Exposure time: 96 h - Species: Oncorhynchus mykiss [Static])
EC50 Crustacea	249 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
ErC50 Algae	> 400 mg/l (Exposure time: 72 h - Species: Desmodesmus subspicatus [Static])
NOEC Chronic Fish	59,4 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
NOEC Chronic Crustacea	63,4 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
NOEC Chronic Algae	25 mg/l (Exposure time: 72 h - Species: Desmodesmus subspicatus [Static])

Aluminum chloride (7446-70-0)	
LC50 Fish	5,31 – 7,2 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through] Source: EPA)
EC50 Crustacea	3,9 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
LC50 Fish	6,2 – 11,9 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss Source: EPA)

12.2. Persistence and Degradability

Lithium Thionyl Chloride Metal Batteries with Aluminum Electrolyte	
Persistence and Degradability	Not established.

12.3. Bioaccumulative Potential

Lithium Thionyl Chloride Metal Batteries with Aluminum Electrolyte	
Bioaccumulative Potential	Not established.

Lithium chloride (7447-41-8)	
BCF Fish	No bioaccumulation.
Partition coefficient n-octanol/water (Log Pow)	-2,66

Aluminum chloride (7446-70-0)	
BCF Fish 1	No bioaccumulation.

12.4. Mobility in Soil

No additional information available

12.5. Results of PBT and vPvB Assessment

Does not contain any PBT/vPvB substances >= 0,1% assessed in accordance with REACH Annex XIII

12.6. Endocrine Disrupting Properties

Based on available data this substance/the substances in this mixture not listed below do(es) not have endocrine disrupting properties with respect to non-target organisms as it does not meet the criteria set out in section B of Regulation (EU) No 2017/2100 and/or the criteria set out in Regulation (EU) 2018/605, or the substance(s) are not required to be disclosed.

12.7. Other Adverse Effects

Other Information : Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste Treatment Methods

Product/Packaging Disposal Recommendations : Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations. Material should be recycled if possible.

Ecological Waste Information : Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored, and can vary based on a number of variables that may or may not have been known at the time the SDS was issued.

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN Number or ID Number				
UN 3090	UN 3090	UN 3090	UN 3090	UN 3090
14.2. UN Proper Shipping Name				
LITHIUM METAL BATTERIES	LITHIUM METAL BATTERIES	LITHIUM METAL BATTERIES	LITHIUM METAL BATTERIES	LITHIUM METAL BATTERIES
14.3. Transport Hazard Class(es)				
9	9	9	9	9
				
14.4. Packing Group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental Hazards				
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No

14.6. Special Precautions For User

No additional information available

14.7. Maritime Transport in Bulk According to IMO instruments

Not applicable

SECTION 15: REGULATORY INFORMATION

15.1. Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

15.1.1. EU-Regulations

15.1.1.1. REACH Annex XVII Information

Listed on REACH Annex XVII (Restriction Conditions). The following restrictions are applicable:

3(b) Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10	Thionyl chloride
40. Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not.	Lithium

15.1.1.2. REACH Candidate List Information

Contains no substance(s) listed on the REACH Candidate List

15.1.1.3. POP (2019/1021) - Persistent Organic Pollutants Information

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

15.1.1.4. PIC Regulation EU (649/2012) - Export and Import of Hazardous Chemicals Information

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

15.1.1.5. REACH Annex XIV Information

Contains no substance(s) listed on REACH Annex XIV (Authorisation List)

15.1.1.6. Substances Depleting the Ozone layer (1005/2009) Information

No additional information available

15.1.1.7. EC Inventory Information

Lithium chloride (7447-41-8)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Lithium (7439-93-2)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Aluminum chloride (7446-70-0)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Thionyl chloride (7719-09-7)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

15.1.1.8. Other Information

No additional information available

15.1.2. National Regulations

No additional information available

15.1.3. International Inventory Lists

Lithium chloride (7447-41-8)
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active

Listed on the Canadian DSL (Domestic Substances List)
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the NCI (Vietnam - National Chemical Inventory)
Listed on Thailand Existing Chemicals Inventory (DIW)

Lithium (7439-93-2)

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Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
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Aluminum chloride (7446-70-0)

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Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Japanese Poisonous and Deleterious Substances Control Law
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the NCI (Vietnam - National Chemical Inventory)
Listed on Thailand Existing Chemicals Inventory (DIW)

Thionyl chloride (7719-09-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active
Listed on the Canadian DSL (Domestic Substances List)
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Japanese Poisonous and Deleterious Substances Control Law
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the NCI (Vietnam - National Chemical Inventory)

15.2. Chemical Safety Assessment

No chemical safety assessment has been carried out

SECTION 16: OTHER INFORMATION

Date of Preparation or Latest Revision : 13/11/2024

Data Sources : Information and data obtained and used in the authoring of this safety data sheet could come from database subscriptions, official government regulatory body websites, product/ingredient manufacturer or supplier specific information, and/or resources that include substance specific data and classifications according to GHS or their subsequent adoption of GHS.

Other Information : According to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878

Full Text of H-statements:

Acute Tox. 3 (Oral)	Acute toxicity (oral), Category 3
Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4

Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
H260	In contact with water releases flammable gases which may ignite spontaneously.
H290	May be corrosive to metals.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H371	May cause damage to organs.
H373	May cause damage to organs through prolonged or repeated exposure.
Met. Corr. 1	Corrosive to metals, Category 1
Skin Corr. 1A	Skin corrosion/irritation, Category 1, Sub-Category 1A
Skin Corr. 1B	Skin corrosion/irritation, Category 1, Sub-Category 1B
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT RE 2	Specific target organ toxicity – Repeated exposure, Category 2
STOT SE 2	Specific target organ toxicity – Single exposure, Category 2
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation
Water-react. 1	Substances and Mixtures which, in contact with water, emit flammable gases, Category 1

Indication of Changes

No additional information available

Abbreviations and Acronyms

ACGIH – American Conference of Governmental Industrial Hygienists
ADN – European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road
ATE - Acute Toxicity Estimate
BCF - Bioconcentration Factor
BEI - Biological Exposure Indices (BEI)
BOD – Biochemical Oxygen Demand
CAS No. - Chemical Abstracts Service Number
CLP – Classification, Labeling and Packaging Regulation (EC) No 1272/2008
COD – Chemical Oxygen Demand
EC – European Community
EC50 - Median Effective Concentration
EEC – European Economic Community
EINECS – European Inventory of Existing Commercial Chemical Substances
EmS-No. (Fire) - IMDG Emergency Schedule Fire
EmS-No. (Spillage) - IMDG Emergency Schedule Spillage
EU – European Union
ErC50 - EC50 in Terms of Reduction Growth Rate
GHS – Globally Harmonized System of Classification and Labeling of Chemicals
IARC - International Agency for Research on Cancer
IATA - International Air Transport Association
IBC Code - International Bulk Chemical Code
IMDG - International Maritime Dangerous Goods
IPRV - Ilgalaikio Poveikio Ribinis Dydis
IOELV – Indicative Occupational Exposure Limit Value
LC50 - Median Lethal Concentration
LD50 - Median Lethal Dose
LOAEL - Lowest Observed Adverse Effect Level
LOEC - Lowest-Observed-Effect Concentration
Log Koc - Soil Organic Carbon-water Partitioning Coefficient
Log Kow - Octanol/water Partition Coefficient
Log Pow - Ratio of the equilibrium concentration (C) of a dissolved substance in a two-phase system consisting of two largely immiscible solvents, in this case octanol and water
MAK – Maximum Workplace Concentration/Maximum Permissible Concentration
MARPOL - International Convention for the Prevention of Pollution
NDS - Najwyzsze Dopuszczalne Stezenie
NDSCh - Najwyzsze Dopuszczalne Stezenie Chwilowe
NDSP - Najwyzsze Dopuszczalne Stezenie Pulapowe
NOAEL - No-Observed Adverse Effect Level
NOEC - No-Observed Effect Concentration
NRD - Nevirsytinas Ribinis Dydis
NTP – National Toxicology Program
OEL - Occupational Exposure Limits
PBT - Persistent, Bioaccumulative and Toxic
PEL - Permissible Exposure Limit
pH – Potential Hydrogen
REACH – Registration, Evaluation, Authorisation, and Restriction of Chemicals
RID – Regulations Concerning the International Carriage of Dangerous Goods by Rail
SADT - Self Accelerating Decomposition Temperature
SDS - Safety Data Sheet
STEL - Short Term Exposure Limit
STOT - Specific Target Organ Toxicity
TA-Luft - Technische Anleitung zur Reinhaltung der Luft
TEL TRK – Technical Guidance Concentrations
ThOD – Theoretical Oxygen Demand
TLM - Median Tolerance Limit
TLV - Threshold Limit Value
TPRD - Trumpalaikio Poveikio Ribinis Dydis
TRGS 510 - Technische Regel für Gefahrstoffe 510 - Lagerung von Gefahrstoffen in ortsbeweglichen Behältern
TRGS 552 – Technische Regeln für Gefahrstoffe - N-Nitrosamine
TRGS 900 - Technische Regel für Gefahrstoffe 900 – Arbeitsplatzgrenzwerte
TRGS 903 - Technische Regel für Gefahrstoffe 903 - Biologische Grenzwerte
TSCA - Toxic Substances Control Act
TWA - Time Weighted Average
VOC – Volatile Organic Compounds
VLA-EC - Valor Límite Ambiental Exposición de Corta Duración
VLA-ED - Valor Límite Ambiental Exposición Diaria
VLE – Valeur Limite D'exposition
VME – Valeur Limite De Moyenne Exposition
vPvB - Very Persistent and Very Bioaccumulative
WEL – Workplace Exposure Limit
WGK - Wassergefährdungsklasse

Glossary of Data Source Abbreviations

ATSDR: Agency for Toxic Substances and Disease Registry (U.S. Department of Health and Human Services)
AU_WES: Australia WES
FOOD_JOURN: Food Research Journal (1956)
IARC: The International Agency for Research on Cancer
IDLH: National Institute for Occupational Health and Safety Immediately

CHEMVIEW: ChemView (U.S. Environmental Protection Agency)
EC_RAR: European Commission Renewal Assessment Report
EC_SCOEL: European Commission Scientific Committee on Occupational Exposure Limits
ECETOC: European Centre for Ecotoxicology and Toxicology of Chemicals Reports
ECHA_API: European Chemicals Agency API
ECHA_RAC: ECHA Committee for Risk Assessment
EFSA: European Food Safety Authority
EPA: U.S. Environmental Protection Agency
EPA_AEGL: Acute Exposure Guideline Levels (U.S. Environmental Protection Agency)
EPA_FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act Reregistration Eligibility Decision (U.S. Environmental Protection Agency)
EPA_HPV: High Production Volume Chemicals (U.S. Environmental Protection Agency)
EPA_TRED: Risk Assessment for Tolerance Reassessment Eligibility Decision (U.S. Environmental Protection Agency)
EU_CLH: European Union Harmonised Classification and Labelling Proposal
EU_RAR: European Union Risk Assessment Report
Dangerous to Life or Health Value Profiles
IUCLID: International Uniform Chemical Information Database
JAPAN_GHS: Japan GHS Basis for Classification Data
JP_J-CHECK: Japan J-Check
KR_NIER: South Korea National Institute of Environmental Research Evaluations
NICNAS: Australia National Industrial Chemicals Notification and Assessment Scheme
NIOSH: National Institute for Occupational Health and Safety (U.S. Department of Health and Human Services)
NLM_CIP: National Library of Medicine ChemID plus database
NLM_HSDB: National Library of Medicine Hazardous Substance Data Bank
NLM_PUBMED: National Library of Medicine PubMed database
NTP: National Toxicology Program
NZ_CCID: New Zealand Chemical Classification and Information Database
OECD_EHSP: Environment, Health, and Safety Publication (Organisation for Economic Co-operation and Development)
OECD_SIDS: Screening Information Data Sets (Organisation for Economic Co-operation and Development)
WHO: World Health Organization

Limit Value Legal Basis*

*Includes the below and any related regulations/provisions, and subsequent amendements

EU - 2019/1831 EU in accor. with 98/24/EC - Directive 2019/1831/EU of October 24, 2019 establishing a fifth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC, and amending Commission Directives 2000/39/EC.

EU - 2019/1243/EU, and 98/24/EC) - Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work and amendment Regulation (EU) 2019/1243.

Austria - BGBl. II Nr. 254/2018 - Ordinance on Limit Values for Workplace Substances and on Carcinogens from the Federal Ministry of Economics and Labour, Published in 2003, Appendix 1: Substance List, Published through: Ministry of Economics and Labour of the Republic of Austria amended through the Government Gazette II (BGBL. II) No 119/2004) & BGBl. II No. 242/2006, BGBl. II No. 243/2007, lastly changed through BGBl. I Nr. 51/2011), BGBl. II Nr. 186/2015, BGBl. II Nr. 288/2017 amended by BGBl. II Nr. 254/2018.

Austria - BLV BGBl. II Nr. 254/2018 - Ordinance on health monitoring at the workplace 2008, published through BGBl. II Nr. 224/2007 by Austria Minister for Labor and Social Affairs, Lastly changed through BGBl. II Nr. 254/2018

Belgium - Royal Decree 21/01/2020 - Royal decree amending title 1 relating to chemical agents in Book VI of the code of well-being at work, with regard to the list of limit values of exposure to chemical agents and title 2 relating to carcinogens, mutagens and reprotoxics of Book VI of the code of well-being at work (1)

Bulgaria - Reg. No. 13/10 -
Regulation No. 13 of December 30, 2003 on the Protection of Workers from Hazards Related to Exposure to Chemical Agents at Work Labor Code, Annex No.1 Limit values of chemical agents in the air of the working environment, and Annex № 2 Biological limit values of chemical agents and their metabolites (bio markers of exposure) or bio markers of effect Amended by: 71/2006, 67/2007, 2/2012, 46/2015, 73/2018, 5/2020), and Regulation No.10 of September 26, 2003 on the Protection of Workers from the Risks Associated with Exposure to Carcinogens and Mutagens at Work Annex No.1 Occupational Exposure Limits, Amended by: 8/2004, 46/2015, 5/2020

Croatia - OG No. 91/2018 - Regulation on the Protection of Workers from Exposure to Hazardous Chemicals at Work, the Limit Values of Exposure and the Biological Limit Values. Official Gazette No. 91 of October 12, 2018

Cyprus - KDP 16/2019 - Government of Cyprus Cabinet of Ministers Regulation 268/2001 - Safety and Health in the Working Environment (Chemical Substances) Article 38, As amended by Regulation 16/2019 and Cabinet of Ministers Regulation 153/2001 - Safety and Health in the Working Environment (Chemical Substances-Carcinogens), as amended by Regulation 493/2004 - Safety and Health in the Working Environment (Chemical Substances - Carcinogens) AND Law 47(I) 2000 - Occupational Health and Safety (Asbestos), as amended by Decree 316/2006.

Czech Republic - Reg. 41/2020 - Regulation 41/2020 amending Regulation 361/2007 of Coll. establishing Occupation Exposure Limits as amended

Czech Republic - Decree No. 107/2013 - Decree No. 107/2013 Coll., amending Decree No. 432/2003 Coll., laying down the conditions for the application of the work into categories, limit values for the parameters of biological exposure tests, collection of biological material conditions for the implementation of

Greece - PWHSE - Occupational Exposure Limits - Protection of workers' health and safety from exposure to certain chemical substances during the workday, (latest amendment 82/2018) and Occupation Exposure Limits - Protection of workers' health and safety from exposure to certain carcinogenic and mutagenic chemical substances (latest amendment 26/2020), and Presidential Decree 212/2006 - Protection of workers that are exposed to asbestos.

Hungary - Decree 05/2020 - 5/2020. (II. 6.) ITM decree on the protection of the health and safety of workers from the risks related to chemical agents

Ireland - 2020 COP - 2020 Code of Practice for the Chemical Agents Regulations, Schedule 1

Italy - Decree 81 - Title IX, Annex XLIII and XXXVIII, Professional Exposure Limits and Annex XXXIX Mandatory Biological Limit Values and Health Monitoring, Article 1, Law 123 of August 3, 2007, Legislative Decree 81 of April 9, 2008, Last amended: January 2020

Italy - IMDFN1 - Ministerial Decree of August 20, 1999 Final Note (1)

Latvia - Reg. No. 325 - Cabinet of Ministers Regulation No. 325 - Labour Protection Requirements when Coming in Contact with Chemical Substances at Workplaces, Amended by Cabinet of Ministers Regulation No. 92, 163, 407 and No. 11.

Lithuania - HN 23:2011 - Lithuanian Hygiene Standard HN 23:2011 Occupational Exposure Limit Values, Amended by Order V-695/A1-272.

Luxembourg - A-N 684 - Grand-Ducal Regulation of 20 July 2018 amending the Grand-Ducal Regulation of 14 November 2016 concerning the protection of the safety and health of employees against the risks associated with chemical agents in the workplace. Official journal of the Grand-Duke of Luxembourg, A-N°684 of 2018

Malta - MOSHAA Ch. 424 - Malta Occupational Health and Safety Authority Act: Chapter 424 as amended by: Legal Notice 353, 53, 198, and 57.

Netherlands- OWCRLV - Occupational Working Conditions Regulation, Limit Values for substances harmful to health, Annex XVIII, Updated from August 1, 2020.

Norway - FOR-2020-04-060695 - Regulations concerning action and limit values for physical and chemical agents in the working environment and classified biological agents, FOR-2011-12-06-1358, Updated by: FOR-2020-04-06-695, FOR-2020-03-23-402, FOR-2018-12-20-2186, FOR-2018-08-21-1255, FOR-2017-12-20-2353.

Poland - Dz. U. 2020 Nr. 61 - Regulation of the Minister of Family, Labor and Social Policy of June 12, 2018 on the Highest Allowable Concentrations and Intensities of Factors Harmful to Health in the Work Environment Dz.U. 2018 Nr. 1286 of June 12, 2018, Annex 1 - List of values of the highest permissible chemical concentrations and dust factors harmful to health in the work environment, amended by: Dz. U. 2020 Nr. 61.

Portugal - Portuguese Norm NP 1796:2014 - Occupational exposure limits and biological exposure indices to chemical agents. Table 1 - Occupational exposure limits and biological exposure indices to chemical agents (OELs), Law Decree 35/2020.

Romania - Gov. Dec. No 1.218 - Governmental Decision No. 1.218 from 06/09/2006 on the minimum health and safety requirements for protection of workers from the risks related to exposure to chemical agents, Annex No. 1

biological exposure tests and requirements for reporting work with asbestos and biological agents

Denmark - BEK No. 698 of 28/05/2020 - Order on Limit Values for Substances and Materials, The Statutory Order No. 507 of May 17, 2011, Appendix 1 - Limits for air pollution, etc. and Appendix 3 - Biological Exposure Values, Amended by: No. 986 of October 11, 2012, No. 655 of May 31, 2018, No. 1458 December 13, 2019, No. 698 of May 28, 2020

Estonia - Regulation No. 105 - Health and Safety Requirements for the Use of Dangerous Chemicals and Materials Containing Them and Occupational Exposure Limits to Chemical Agents
Government of the Republic, Regulation No. 105 of 20 March 2001, Amended 17 October 2019, and 17 January, 2020.

Finland - HTP-ARVOT 2020 - Concentrations Known to be Hazardous, 654/2020 OEL values 2020 Publications of Ministry of Social Affairs and Health 2020:24 Annexes1, 2 and 3.

France - INRS ED 984 - Occupational Exposure Limit Values to Chemical Agents in France Published 2016 by the INRS National Institute of Research and Safety Health and safety of work, revised, updated by: Decree 2016-344, JORF No 0119, and Decree 2019-1487.

France - Decree 2009-1570 - Decree 2009-1570 of December 15, 2009, relative to the control of chemical risk on workplaces.

Germany - TRGS 900 - Occupational Exposure Limits, Technical Rules for Dangerous Substances, latest amendment March, 2020

Germany - TRGS 903 - Biological Threshold Limits (BGW-Values), Technical Rules for Dangerous Substances, latest amendment March, 2020

Gibraltar - LN. 2018/131 - Factories (Control of Chemical Agents at Work) Regulations 2003 LN. 2003/035, amended by LN. 2008/035, LN. 2008/050, LN. 2012/021, LN. 2015/143, LN. 2018/181.
Mandatory National Occupational Exposure Limit Values for Chemical Agents. Amended by Decision no. 157, 584, 359, and 1.

Slovakia - Gov. Decree 33/2018 - Government Decree of Slovak Republic 33/2018 on January 17, 2018 amending Government Decree of Slovak Republic 355/2006 about protection of health of employees when working with chemical agents

Slovenia - No. 79/19 - Regulation for protection of workers against risks related to carcinogenic or mutagenic substances exposure. Annex III - Classification and binding levels of carcinogenic or mutagenic substances for occupational exposure. The Official Journal of the Republic of Slovenia, No. 101/2005. Amended by 38/15, 79/19. Regulation for protection of workers against risks related to exposure to chemical substances at the workplace. Republic of Slovenia, No. 100/2001 . Annex I - List of Binding Occupational Exposure Limit Values. Amended by 39/05, 53/07, 102/10, 38/15, 78/18, 78/19

Spain - AFS 2018:1 - NATIONAL INSTITUTE FOR HEALTH AND SAFETY AT WORK. Occupational exposure limits for chemical agents in Spain. Tables 1 and 3. Latest edition Feb. 2019

Sweden - AFS 2018:1 - Statute Book of the Swedish Work Environment Authority, AFS 2018:1
The Swedish Work Environment Authority's Ordinance and General Guidance on Hygienic Limit Values

Switzerland - OLVSNAIF - Occupational Limit Values 2020 Swiss National Accident Insurance Fund. List of Biological Limit Values (BAT-Werte) and List of MAK Values.

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.

EU GHS SDS (2020/878)