SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
US - OSHA Hazard Communication Standard (29 CFR 1910.1200)

Issuing Date 15-Feb-2017 **Revision Date** 01-May-2025 **Revision Number** 5

1. Identification

Product identifier

Product Name LITHIUM THIONYL CHLORIDE CELLS AND BATTERIES

Other means of identification

UN/ID no UN3090

Synonyms Hermetically-Sealed Lithium Thionyl Chloride Cells and Batteries – Including all 100, 150,165, 180, 200 Moderate Rate, QTC, MWD and VHT series

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended use Battery

Restrictions on use Do not short circuit or expose to temperatures higher than the maximum temperature rating specified by the manufacturer. Do not recharge, over charge or crush any cell or pack. Ensure cells and batteries are safely handled and stored. Review Section 7 completely before use

Details of the supplier of the safety data sheet

Supplier and Manufacturer Address
Electrochem Solutions
670 Paramount Drive
Raynham, MA 02767
T: 781-830-5800 E: customersupport@electrochemsolutions.com

Emergency telephone number

Emergency telephone CHEMTREC: +1-703-527-3887 (INTERNATIONAL)
1-800-424-9300 (NORTH AMERICA)

2. Hazard(s) identification

Classification

This product is not considered hazardous by the OSHA Hazard Communication Standard 2012 (29 CFR 1910.1200). This product is an article which is a sealed battery and as such does not require an SDS per the OSHA hazard communication standard unless ruptured. The hazards indicated are for a ruptured battery.

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 1 Sub-category A
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3

Hazards not otherwise classified (HNOC)
Not applicable.

Label elements

Danger

Hazard statements
Harmful if swallowed.
Harmful if inhaled.
Causes severe skin burns and eye damage.
May cause respiratory irritation.
Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Do not breathe dusts or mists.
Wear protective gloves/clothing and eye/face protection.
Precautionary Statements - Response
Specific treatment (see supplemental first aid instructions in this document).
Immediately call a POISON CENTER or doctor.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or doctor.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
Wash contaminated clothing before reuse.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Immediately call a POISON CENTER or doctor.
IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
Rinse mouth.
Do NOT induce vomiting.
Precautionary Statements - Storage
Store locked up.
Store in a well-ventilated place. Keep container tightly closed.

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant.

Other information
No information available.

Unknown acute toxicity
5 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
5 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

3. Composition/information on ingredients

Substance

Not applicable.

Mixture

Chemical name	CAS No	Weight-%	Trade secret
Thionyl chloride	7719-09-7	25-39	*
Lithium	7439-93-2	1.5-5	*

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. First-aid measures

Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Inhalation IF INHALED: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician. Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur. Get immediate medical attention.

Eye contact Call a physician or poison control center immediately. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical attention.

Skin contact If skin irritation occurs: Get medical advice/attention. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical attention.

Ingestion Call a POISON CENTER or doctor/physician if you feel unwell. Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Get immediate medical attention.

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. Avoid contact with skin, eyes or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. See section 8 for more information. Do not breathe dusts or mists.

Most important symptoms and effects, both acute and delayed

Symptoms Burning sensation. Coughing and/ or wheezing. Difficulty in breathing.

Effects of Exposure No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure.

5. Fire-fighting measures

Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	Use of water spray when fighting a lithium fire may be inefficient. However, copious amounts of water may be used to cool a battery fire and extinguish any surrounding combustible fires.
Specific hazards arising from the chemical	The electrolyte will release toxic sulfur dioxide gas. The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors.

Explosion data

Sensitivity to mechanical impact None.
Sensitivity to static discharge None.

Special protective equipment and precautions for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions	Attention! Corrosive material. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Avoid generation of dust. Do not breathe dusts or mists.
Other information	Refer to protective measures listed in Sections 7 and 8.

Methods and material for containment and cleaning up

Methods for containment	Prevent further leakage or spillage if safe to do so.
Methods for cleaning up	During a release, ensure the Personal Protection listed in Section 8 is worn. Neutralize any electrolyte contaminated surfaces with baking soda, soda lime or sodium bicarbonate. Transfer damaged battery and any clean up materials to a sealed container with a neutralizing material as stated above. Ensure the container is properly labeled.

7. Handling and storage

Precautions for safe handling

Advice on safe handling	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Do not crush, pierce, short circuit (+) and (-) battery terminals with conductive (metal) goods. Do not directly heat or solder. Do not throw into fire. Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in non-conductive (plastic) trays. Cells or batteries that have been dropped or experience mechanical shock should be isolated and monitored for approximately 5 days to identify a possible internal short circuit and resulting fire. Do not breathe dusts or mists.

Conditions for safe storage, including any incompatibilities

Storage Conditions

Do not store in high humidity environments. Never stack heavy objects on top of battery boxes. Keep batteries in original packaging until use and do not expose them to unnecessary or excessive handling. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Protect from moisture. Store locked up. Store away from other materials.

8. Exposure controls/personal protection

Control parameters

Exposure Limits

The following exposure limits are provided for information only; exposure is not expected under normal conditions of use or storage. The following ingredients are the only ingredients of the product above the cut-off level (or level that contributes to the hazard classification of the mixture) which have an exposure limit applicable in the region for which this safety data sheet is intended or other recommended limit. At this time, the other relevant constituents have no known exposure limits from the sources listed here.

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Thionyl chloride 7719-09-7	Ceiling: 0.2 ppm	(vacated) Ceiling: 1 ppm (vacated) Ceiling: 5 mg/m^3	Ceiling: 1 ppm Ceiling: 5 mg/m^3

Appropriate engineering controls

Engineering controls

Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection

Tight sealing safety goggles. Face protection shield. None required for normal handling of the finished product. If necessary to handle damaged product where exposure to the electrolyte is a possibility, chemical splash goggles and a face shield are recommended.

Hand protection

Wear suitable gloves. Impervious gloves. None required for normal handling of the finished product. If necessary to handle damaged product where exposure to the electrolyte is a possibility, chemically resistant gloves are recommended.

Skin and body protection

None required for normal handling of the finished product. If necessary to handle damaged product where exposure to the electrolyte is a possibility, a chemically resistant apron is recommended. Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.

Respiratory protection

No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

General hygiene considerations

Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Do not breathe dusts or mists.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance	
Physical state	Solid
Color	No information available
Odor	None
Odor threshold	No data available

Property	Values	Remarks • Method
pH	N/A	Not applicable unless there is exposure to an electrolyte
pH (as aqueous solution)		No data available
Melting point / freezing point	N/A	Not applicable unless there is exposure to an electrolyte: Thionyl Chloride: -104.5 °C
Initial boiling point and boiling range	N/A	Not applicable unless there is exposure to an electrolyte: Thionyl Chloride: 76.11 °C
Flash point	N/A	Not applicable unless there is exposure to an electrolyte
Evaporation rate	N/A	Not applicable unless there is exposure to an electrolyte
Flammability	N/A	Not applicable unless there is exposure to an electrolyte
Flammability Limit in Air		Not applicable unless there is exposure to an electrolyte
Upper flammability or explosive limits	N/A	No data available
Lower flammability or explosive limits	N/A	No data available
Vapor pressure	N/A	Not applicable unless there is exposure to an electrolyte: Thionyl Chloride: 97 mm Hg @ 20 °C
Relative vapor density	N/A	Not applicable unless there is exposure to an electrolyte
Relative density	N/A	Not applicable unless there is exposure to an electrolyte: Thionyl Chloride: 1.635
Water solubility		Not applicable unless there is exposure to an electrolyte: Thionyl Chloride: Decomposes violently on contact with water
Solubility(ies)	N/A	Not applicable unless there is exposure to an electrolyte
Partition coefficient	N/A	Not applicable unless there is exposure to an electrolyte
Autoignition temperature	N/A	Not applicable unless there is exposure to an electrolyte
Decomposition temperature		Not applicable unless there is exposure to an electrolyte
Kinematic viscosity	N/A	Not applicable unless there is exposure to an electrolyte
Dynamic viscosity	N/A	Not applicable unless there is exposure to an electrolyte: Thionyl Chloride: ca. 0.6 mPas @ 25°C

Other information

Explosive properties	Not applicable unless there is exposure to an electrolyte
Oxidizing properties	Not applicable unless there is exposure to an electrolyte
Softening point	No information available

Molecular weight	No information available
VOC content	Not applicable unless there is exposure to an electrolyte
Liquid Density	No information available
Bulk density	No information available

10. Stability and reactivity

Reactivity None under normal use conditions.

Chemical stability Stable under normal conditions.

Possibility of hazardous reactions None under normal use conditions. In the event of a leak or rupture: electrolyte and lithium will react with water.

Conditions to avoid Incompatible materials. Heat, flames and sparks.

Incompatible materials Under normal use, batteries are not incompatible. The electrolyte is incompatible with: Strong acids, Strong bases, Strong oxidizing agents.

Hazardous decomposition products Lithium oxides, Sulfur dioxide, Hydrogen chloride, Bromine, Chlorine.

11. Toxicological information

Information on likely routes of exposure

Product Information Exposure is not expected for product under normal conditions of use. In the event of an exposure to electrolyte the following toxicological information is provided:.

Inhalation Specific test data for the substance or mixture is not available. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal. May cause irritation of respiratory tract. Harmful by inhalation.

Eye contact Specific test data for the substance or mixture is not available. Causes serious eye damage. (based on components). Corrosive to the eyes and may cause severe damage including blindness. May cause irreversible damage to eyes.

Skin contact Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes severe burns.

Ingestion Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Redness. Burning. May cause blindness. Coughing and/ or wheezing.

Acute toxicity Harmful if swallowed. Harmful by inhalation.

Numerical measures of toxicity

The following values are calculated based on chapter 3.1 of the GHS document:

ATEmix (oral) 1,229.50 mg/kg
ATEmix (inhalation-dust/mist) 3.71 mg/l

Unknown acute toxicity

5 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
5 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Thionyl chloride 7719-09-7	= 270 mg/kg (Rat)	-	= 2.717 mg/L (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Classification based on data available for ingredients. Causes severe skin burns and eye damage.

Serious eye damage/eye irritation Classification based on data available for ingredients. Causes serious eye damage. Causes burns.

Respiratory or skin sensitization No information available.

Germ cell mutagenicity No information available.

Carcinogenicity No information available.

Reproductive toxicity No information available.

STOT - single exposure May cause respiratory irritation.

STOT - repeated exposure No information available.

Target organ effects Eyes. Skin. Respiratory system. Gastrointestinal tract (GI). Kidney. Liver.

Aspiration hazard No information available.

Other adverse effects No information available.

Interactive effects No information available.

12. Ecological information

Ecotoxicity Avoid any release to waterways, groundwater, or any environmental media. Harmful effects due to pH shift are expected.

Persistence and degradability No information available.

Bioaccumulation No information available.

Other adverse effects No information available.

13. Disposal considerations

Disposal methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

14. Transport information

Note: Intended for All lithium batteries:
Lithium cells and batteries must successfully pass the tests defined in “UN Manual of Tests and Criteria”, Section 38.3 and may require they be manufactured under a Quality Management Program. Lithium Metal and Lithium Ion cells and batteries, when shipped by themselves (not in or with equipment) are forbidden as cargo on passenger aircraft and must be marked as “Cargo Air Only” if shipped by air (they must be marked “Cargo Air Only” for all modes of DOT transport). Lithium Ion cells and batteries, when shipped by themselves (not in or with equipment) by air must be shipped at or below 30% full charge. Note: Some regulations require a summary of test results and/or a copy of the Quality Management Programs be made available for Lithium cells and batteries
.
For specific transport information for all variations of BCX cells, please review the Product Data Sheet. This can be sent upon request. Please contact the manufacturer.

If packed in or with equipment use UN3091.

DOT

UN/ID no	UN3090
Proper shipping name	LITHIUM METAL BATTERIES
Transport hazard class(es)	9
Special Provisions	388, 422, A54
DOT Marine Pollutant	NP
Description	UN3090, LITHIUM METAL BATTERIES, 9
Emergency Response Guide Number	138

IATA

UN number or ID number	UN3090
UN proper shipping name	Lithium metal batteries
Transport hazard class(es)	9
Description	UN3090, Lithium metal batteries, 9
Special Provisions	A88, A99, A154, A164, A183, A201, A213, A334, A802
ERG Code	12FZ

IMDG

UN number or ID number	UN3090
UN proper shipping name	LITHIUM METAL BATTERIES
Transport hazard class(es)	9
Marine pollutant	NP
Description	UN3090, LITHIUM METAL BATTERIES, 9

Special Provisions 188, 230, 310, 376, 377, 384, 387
EmS-No. F-A, S-I

15. Regulatory information

International Inventories
Contact supplier for inventory compliance status

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories
Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

US State Regulations

California Proposition 65
The cell does not contain any Proposition 65 chemicals, however any additional electrical components added may. Please contact the manufacturer for more information.

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Thionyl chloride 7719-09-7	X	X	X
Lithium 7439-93-2	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other information

NFPA **Health hazards** 3 **Flammability** 0 **Instability** 0 **Special hazards** -

HMIS **Health hazards** 3 **Flammability** 0 **Physical hazards** 0 **Personal protection** X

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend Section 8: Exposure controls/personal protection

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation

Key literature references and sources for data used to compile the SDS

Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine’s PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
World Health Organization

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Revision Note Change in the mixture classification.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet