1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

GHS product identifier

Product Name **LITHIUM CSC & PMX CELLS AND BATTERIES**

Other means of identification

UN-Number UN3090 (if packed in or with equipment then use UN3091)

Synonyms Hermetically-Sealed Lithium Sulfuryl Chloride Cells and Batteries

Recommended use of the chemical and restrictions on use

Recommended Use No information available

Uses advised against 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.

Supplier's details

Supplier Address
Integer Holdings Corp.
2595 Dallas Pkwy #310
Frisco, TX 75034
TEL: 214-618-5248

Manufacturer Address
Electrochem Solutions
670 Paramount Drive
Raynham, MA 02767
TEL: 781-830-5800

Emergency telephone number

Emergency Telephone Number 1-800-424-9300 (Chemtrec Account 24706)

2. HAZARDS IDENTIFICATION

Classification

This chemical is not considered hazardous according to 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 Inhalation Toxicity - Gas	Category 1
Acute Inhalation Toxicity - Vapors	Category 1
Skin Corrosion/Irritation	Category 1 Subcategory 1B
Serious Eye Damage/Eye Irritation	Category 1
Specific Target Organ Systemic Toxicity (Single Exposure)	Category 3

GHS Label elements, including precautionary statements

Emergency Overview

Signal Word **Danger**

Hazard Statements
- Fatal if inhaled
- Causes severe skin burns and eye damage
- May cause respiratory irritation

This is a battery. In case of rupture, the above hazards exist.

Appearance No information available. **Physical State** Solid. **Odor** None.

Precautionary Statements

Prevention
- Do not breathe dust/fume/gas/mist/vapors/spray.
- Use only outdoors or in a well-ventilated area.
- Wear respiratory protection
- Wash face, hands and any exposed skin thoroughly after handling.
- Wear protective gloves/protective clothing/eye protection/face protection.

General Advice
- Specific treatment is urgent (see supplemental instructions on the administration of antidotes on this label)
- Immediately call a POISON CENTER or doctor/physician.
- Specific treatment (see supplemental instructions on the administration of antidotes on this label)

Eyes
- 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/physician.

Skin
- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- Wash contaminated clothing before reuse.

Inhalation
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- Immediately call a POISON CENTER or doctor/physician.
- Call a POISON CENTER or doctor/physician if you feel unwell.

Ingestion
- IF SWALLOWED: Rinse mouth. DO NOT induce vomiting

Storage
- Store in a well-ventilated place. Keep container tightly closed.
- Store locked up.

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

Hazard Not Otherwise Classified (HNOC)

Cells and batteries may be explosive if exposed to higher temperatures. Do not expose cells or batteries to temperatures above the maximum rated temperature as specified by the manufacturer.

Other information

7% of the mixture consists of ingredient(s) of unknown toxicity.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms Hermetically-Sealed Lithium Sulfuryl Chloride Cells and Batteries

Chemical Name	CAS-No	Weight %	Trade secret
Sulfuryl chloride	7791-25-5	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 necessary first-aid measures

General Advice First aid is upon rupture of sealed battery:

Eye Contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or Poison Control Center immediately.

Skin Contact IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Consult a physician.

Inhalation IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician or Poison Control Center immediately.

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

Most important symptoms/effects, acute and delayed

Most Important Symptoms/Effects Itching. Burning. Difficulty in breathing. Coughing and/ or wheezing. Serious eye irritation or damage.

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

Notes to Physician Treat symptomatically.

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.

Explosion Data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Use personal protective equipment. Wash thoroughly after handling. Refer to Section 8 for personal protective equipment.

Environmental Precautions

Environmental Precautions See Section 12 for additional Ecological Information.

Methods and materials for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so and properly trained.

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 line or sodium bicarbonate. Transfer damaged battery and any clean up materials to a sealed container a neutralizing material as stated above. Ensure the container is properly labeled.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling 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. In case of rupture: Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Do not breathe vapors/dust. Wear personal protective equipment.

Conditions for safe storage, including any incompatibilities

Storage Store at room temperature. Do not store in high humidity environments. Do not store near combustible or flammable materials. 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.

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

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Exposure Guidelines This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Appropriate engineering controls

Engineering Measures Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/Face Protection 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.

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, chemically resistant gloves and apron are recommended.
Respiratory Protection	None required under normal usage. If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Solid.	**Appearance**	No information available.
Odor	None.	**Odor Threshold**	No information available.

Property	Values	Remarks/ - Method
pH	Not applicable unless there is exposure to an electrolyte.	None known
Melting Point/Range	Not applicable unless there is exposure to an electrolyte.	Sulfuryl Chloride: - 54 °C
Boiling Point/Boiling Range	Not applicable unless there is exposure to an electrolyte.	Sulfuryl Chloride: 67 - 69.4 °C
Flash Point	Not applicable unless there is exposure to an electrolyte.	None known
Evaporation rate	Not applicable unless there is exposure to an electrolyte.	None known
Flammability (solid, gas)	Not applicable unless there is exposure to an electrolyte.	None known
Flammability Limits in Air		
upper flammability limit	Not applicable unless there is exposure to an electrolyte.	
lower flammability limit	Not applicable unless there is exposure to an electrolyte.	
Vapor Pressure	Not applicable unless there is exposure to an electrolyte.	Sulfuryl Chloride: 148 hPa @ 20 °C Sulfuryl Chloride: 993 hPa @ 68 °C
Vapor Density	Not applicable unless there is exposure to an electrolyte.	None known
Specific Gravity	Not applicable unless there is exposure to an electrolyte.	Sulfuryl Chloride: 1.66
Water Solubility	Not applicable unless there is exposure to an electrolyte.	None known
Solubility in other solvents	Not applicable unless there is exposure to an electrolyte.	None known
Partition coefficient: n-octanol/water	Not applicable unless there is exposure to an electrolyte.	None known
Autoignition Temperature	Not applicable unless there is exposure to an electrolyte.	None known
Decomposition Temperature	Not applicable unless there is exposure to an electrolyte.	None known
Viscosity	Not applicable unless there is exposure to an electrolyte.	None known

Flammable Properties	Not flammable
Explosive Properties	Not applicable unless there is exposure to an electrolyte.
Oxidizing Properties	Not applicable unless there is exposure to an electrolyte.
VOC Content (%)	Not applicable unless there is exposure to an electrolyte.

10. STABILITY AND REACTIVITY

Reactivity

No dangerous reaction known under conditions of normal use.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

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

Hazardous Polymerization

Hazardous polymerization does not occur.

Conditions to avoid

Ignitions sources - heat, sparks and open flames.

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, 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 Fatal if inhaled.
Eye Contact Corrosive to the eyes and may cause severe damage including blindness.
Skin Contact Corrosive to rabbit skin (4hr).
Ingestion May be harmful if swallowed.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sulfuryl chloride	-	-	= 159 ppm (Rat) 4 h

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Burning. Eye and skin redness, tearing, hives, blurry vision. May cause blindness.

Delayed and immediate effects and also chronic effects from short and long term exposure

Sensitization No information available.
Mutagenic Effects No information available.
Carcinogenicity Contains no ingredients above reportable quantities listed as a carcinogen.

Reproductive Toxicity No information available.
STOT - single exposure Contains a component known to cause systemic target organ toxicity from acute exposure.
STOT - repeated exposure No information available.
Target Organ Effects Eyes. Skin. Respiratory system. Gastrointestinal tract (GI). Kidney. Liver.
Aspiration Hazard No information available.

Numerical measures of toxicity - Product

Unknown acute toxicity 7% of the mixture consists of ingredient(s) of unknown toxicity.

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

Inhalation

gas	44
Vapor	0.4 mg/L; Acute toxicity estimate

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

Waste Disposal Methods This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261).

Contaminated Packaging Do not re-use empty containers.

14. TRANSPORT INFORMATION

Note: Lithium batteries shipped as "Lithium batteries", "Lithium batteries packed with equipment", or "Lithium batteries contained in equipment" may not be classified as "Dangerous Goods" when shipped in accordance with "special provision A45 of IATA-DGR" or "special provision 188 of IMO-IMDG Code". 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.

DOT

UN-Number	UN3090 (if packed in or with equipment then use UN3091)
Proper shipping name	Lithium metal battery
Hazard Class	9
Description	UN3090, Lithium metal batteries, 9
Emergency Response Guide Number	138

IATA Forbidden by Passenger Air

UN-Number	UN3090 (if packed in or with equipment then use UN3091)
Proper Shipping Name	Lithium metal batteries
Hazard Class	9
ERG Code	9FZ
Description	UN3090, Lithium metal batteries, 9

IMDG/IMO

UN-Number	UN3090 (if packed in or with equipment then use UN3091)
Proper Shipping Name	Lithium metal batteries
Hazard Class	9
EmS No.	F-A, S-I
Description	UN3090, Lithium metal batteries, 9

15. REGULATORY INFORMATION

International Inventories

TSCA All components of this product are either listed or are exempt on the TSCA inventory.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

U.S. Federal Regulations

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

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

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.

U.S. State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Illinois	Rhode Island
Sulfuryl chloride	X	X	X		X
Lithium	X	X	X		X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION

NFPA	**Health Hazard**	0	**Flammability**	0	**Instability**	0	**Physical and Chemical Hazards** -
HMIS	**Health Hazard**	0	**Flammability**	0	**Physical Hazard**	0	**Personal Protection** X

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General Disclaimer

The information provided on this SDS 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.

End of Safety Data Sheet