Amerex Lithium/Thionyl Chloride Battery ($LiSOCl_2$) Safety Data Sheet

Section 1 - Product Identification and Company Information

Product Identifier:

21933 - Battery Kit for 20544
23720 - Battery Assy, Amerex SA2Z Battery
24903 - Battery, Replacement, STRIKE ECS

Supplier Name:
Amerex Corporation
P.O. Box 81
Trussville, AL 35173

Telephone: (205) 655-3271
Fax: (205) 655-2879

Website: www.amerex-fire.com

Product Operating Voltage: 3.6 vdc nominal

Product Use:
To be used only with Amerex Fire Control Panels

Emergency Contact:
ChemTrec 1-800-424-9300
1-703-527-3887

The batteries referenced herein are exempt articles and are not subject to the OSHA Hazard Communication Standard requirement. This sheet is provided as a service to our customers

Section 2 – Hazard Identification

The Li-$SOCl_2$ batteries described in this Safety Data Sheet are sealed units which are not hazardous under normal operating conditions in accordance with manufacturer's recommendations, as stated in the user's manual or other similar documentation. Under normal use, the battery integrity is maintained and the active components it contains are isolated from the outside.

In particular, the battery should not be submitted to any mechanical (opening, puncture, immersion), thermal (burning, heating to temperatures above the normal temperature range of the product) or electrical abuse (short-circuit, recharge, forced discharge), which will lead to the activation of safety valves and/or the rupture of the battery container.

Any accidental release of the inner components of the cell, or their combustion products could be highly hazardous. Battery content exposition to air humidity/liquid water may be followed by severe battery vent/explosion/fire, depending on the hazard causes and circumstances.

The information and recommendations set forth are made in good faith and believed to be accurate as of the date of preparation. Amerex Corporation makes no warranty, expressed or implied, with respect to this information and disclaims all liabilities from reliance on it.

Section 3 - Composition

Contents	CAS No.	CHIP Classification			Ingredient
2 - 6%	7439-93-2			**F**; R14/15 **C**; R34 R14/15, R21,R22, R35, R41, R43, S2, S8, 45	Lithium (Li)
18 - 47%	7719-09-7			**C;** R14, R21, R22, R35, R37, R41,R42/43, S2, S8, S24, S26, S36, S37, S45	Thionyl chloride *($SOCl_2$)*
1-5%	7446-70-0			R14, R22, R37, R41, R43. S2, S8, S22, S24, S26, S36, S45	Aluminum chloride Anhydrous *($AlCl_3$)*
2-5%	1333-86-4			NONE KNOWN	Carbon *(C_n)*
Amount varies depending on cell size.					

Section 4 – First Aid Measures

Threshold Limit Values: See Section 3

Inhalation	Remove from exposure, rest and keep warm. In severe cases obtain medical attention.
Skin contact	Wash off skin thoroughly with water. Remove contaminated clothing and wash before re-use. In severe cases obtain medical attention.
Eye contact	Irrigate thoroughly with water for at least 15 minutes. Obtain medical attention.
Ingestion	Wash out mouth thoroughly with water and give plenty of water to drink. Obtain medical attention
Further treatment	All cases of eye contamination, persistent skin irritation and casualties who have swallowed this substance or been affected by breathing its vapors should be seen by a Doctor.

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Section 5 – Fire-fighting Measures

EXTINGUISHING MEDIA:

- During a fire with lithium batteries, using large amounts of cold water or water-based foam has some cooling effect and is effective to prevent fire expansion as long as the extent of the fire has not progressed to the point that the lithium metal they contain is exposed (as marked by appearance of deep red flames). Do not use warm or hot water.
- Lith-X Class D extinguishers are effective on fires involving only a few lithium batteries.
- Do not use CO2 or Halon-type extinguishers.
- Do not use sand, dry powder or soda ash, graphite powder or fire blankets.
- Use only class D metal extinguishers on raw lithium metal.

SPECIAL FIRE FIGHTING PROCEDURES:

- Fire fighters should wear approved/certified positive pressure self-contained breathing apparatus.
- Full protective clothing is necessary to prevent potential body contact with electrolyte solution.
- During water spraying, caution is advised as burning pieces of lithium may be ejected from the fire.
- It is permissible to use any class of extinguishing medium, specified above, on these batteries or their packing material. Cool exterior of batteries if exposed to fire to prevent rupture.
- If the cells or batteries are not located at the center of the fire, copious amounts of water may be supplied using a diffuser type nozzle so that the cells remain cool during the fire containment and extinction. A sprinkler system should be suitable for this purpose, the critical factor being that the lithium cells do not experience temperatures above the melting point of lithium (180°C).
- Small amounts of water should never be used such as the volumes contained within portable fire extinguishers. Standard dry powder extinguishers are ineffective. It should be kept in mind that a hazard of hydrogen formation exists whenever hot lithium metal comes into contact with water.

Section 6 Accidental Release Measures

INDIVIDUAL PRECAUTIONS: Evacuate the employees from area until fumes dissipate. In case of electrolyte leakage from a cell or battery, do not inhale vapors or touch liquid with bare hands. In case of skin or eye contact, inhalation or ingestion, follow the measured described in section 4.

ENVIRONMENTAL PRECAUTION: Avoid sewage, surface water and underground water contamination. Avoid ground and atmosphere contamination.

METHOD FOR CLEANING: With protective glasses and gloves, use absorbent material (sand, earth, chalk (CaCO3) or lime (CaO) powder or Vermiculite) to absorb any exuded material. Seal leaking battery (unless hot) and contaminated absorbent material tight in plastic bag, and dispose of as hazardous waste in accordance with local regulations. Electrolyte traces may be wiped off dryly using household paper. Rinse with water afterwards.

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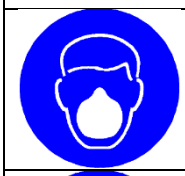
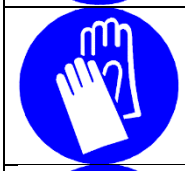
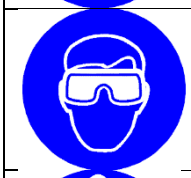
Section 7 - Safe Handling and Storage

STORAGE: Store in a cool, regulated (preferably below 21°C and in any case below 30°C), dry and ventilated area, away from possible sources of heat, open flames, food and drink. Avoid exposure to direct sunlight for long periods. Temperatures above 100°C (or higher for High Temperatures cells and batteries such as the LSH20-150 cell- refer to individual data sheets for maximum temperatures) may cause leakage and rupture, and result in shortened battery service life. Keep proper clearance space between batteries and walls. A short circuit can cause burn hazard, leakage or explosion hazard, keep batteries in original packaging until use and do not mix them.

HANDLING:

- Do not open the battery system.
- Do not crush or pierce the cells.
- Do not short (+) or (-) terminal with conductors.
- Do not reverse the polarity.
- Do not submit to excessive mechanical stress.
- Do not mix batteries of different types or mix new and old batteries together.
- Do not use the unit without its electronic management system.
- Do not expose the unit to water or condensation.
- Do not directly heat, solder or throw into fire.

Section 8 – Exposure controls/Personal protection

Occupational exposure standard		Compound Sulfur dioxide Hydrogen chloride	8hr TWA 1 ppm 1 ppm	15min TWA 1 ppm 5 ppm	SK -- --
	**Respiratory protection**	In all fire situations, use self-contained breathing apparatus.			
	**Hand protection**	In the event of leakage wear gloves.			
	**Eye protection**	Safety glasses are recommended during handling.			
	**Other**	In the event of leakage, wear chemical apron.			

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Section 9 – Physical and chemical properties

Appearance	Cylindrical or prismatic shape
Odor	If leaking, gives off a pungent corrosive odor.
pH	Not applicable
Flash point	Not applicable unless individual components exposed
Flammability	Not applicable unless individual components exposed
Relative density	Not applicable unless individual components exposed
Solubility (water)	Not applicable unless individual components exposed
Solubility (other)	Not applicable unless individual components exposed

Section 10 – Stability and Reactivity

Product is stable under conditions described in Section 7.	
Conditions to avoid.	Heat above 100 (150°C for the LSH 20-150 cells and the battery packs assembled from them) or incinerate. Deformation. Crushing. Piercing. Disassembly. Recharging. Short circuiting. Exposure over a long period to humid conditions.
Materials to avoid	Oxidizing agents, alkalis, water. Avoid electrolyte contact with aluminum or zinc.
Hazardous decomposition Products	Hydrogen (H_2) as well as Lithium oxide (Li_2O) and Lithium hydroxide (LiOH) dust is produced in case of reaction of *lithium metal* with water. Chlorine (Cl_2), Sulfur dioxide (SO_2) and Disulfur dichloride (S_2Cl_2) are produced in case of thermal decomposition of *Thionyl chloride* above 140°C. Hydrochloric acid (HCl) and Sulfur dioxide (SO_2) are produced in case of reaction of *Thionyl chloride* with water at room temperature. Hydrochloric acid (HCl) fumes, Lithium oxide, (Li_2O), Lithium hydroxide (LiOH) and Aluminum hydroxide ($Al(OH)_3$) dust are produced in case of reaction of *Lithium tetrachloroaluminate ($LiAlCl_4$)* with water.

Section 11 – Toxicological Information

Signs & symptoms	None, unless battery ruptures. In the event of exposure to internal contents, corrosive fumes will be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.
Inhalation	Lung irritant.
Skin contact	Skin irritant
Eye contact	Eye irritant.
Ingestion	Tissue damage to throat and gastro-respiratory tract if swallowed.
Medical conditions generally aggravated by exposure	In the event of exposure to internal contents, eczema, skin allergies, lung injuries, asthma and other respiratory disorders may occur.

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Section 12 – Ecological Information

Mammalian effects	None known if used/disposed of correctly.
Eco-toxicity	None known if used/disposed of correctly.
Bioaccumulation potential	None known if used/disposed of correctly.
Environmental fate	None known if used/disposed of correctly.

Section 13 – Disposal Considerations

Do not incinerate, or subject cells to temperatures in excess of 100°C. Such abuse can result in loss of seal, leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations.

Section 14 - Transportation

Note : when manufacturing a new battery pack, one must ensure that it is tested in accordance with the UN Model Regulations, Manual of Tests and Criteria, Part III, subsection 38.3	
Label for conveyance	For the single cell batteries and multicell battery packs that are non-restricted to transport (non-assigned to the Miscellaneous Class 9), use lithium batteries label. For the single cell batteries and multicell battery packs which are restricted to transport (assigned to Class 9), use Class 9 Miscellaneous Dangerous Goods and UN Identification Number labels. In all cases, refer to the product transport certificate issued by the manufacturer.
UN numbers	UN 3090 (shipment of cells and batteries *in bulk*) UN 3091 (cells and batteries *contained in equipment* or *packed with it*)
Shipping names	Lithium Metal Batteries
Hazard classification	Depending on their lithium metal content, some single cells and small multicell battery packs may be non-assigned to Class 9 (Refer to Transport Certificate)
Packing Group	II
IMDG Code	3090 (Li batteries) 3091 (Li batteries contained in equipment or packed with it)
CAS	
EmS No.	F-A , S-I
Marine pollutant	No
ADR Class	Class 9

International agreements

By Air International: IATA/ICAO: UN 3090 or UN3091
By Sea International: IMDG: UN 3090 or UN 3091
European road transportation: ADR
European rail transportation: RID

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Section 15 – Regulatory Information

Regulations specifically applicable to the product:

- ACGIH and OSHA: see exposure limits of the internal ingredients of the battery in section 8.
- IATA/ICAO (air transportation): UN 3090 or UN 3091
- IMDG (sea transportation): UN 3090 or UN 3091
- Transportation within the US-DOT, 49 Code of Federal Regulations

Risk phrases	Lithium *(Li)*	R14/15 R21 R22 R35 R41 R42/43	Reacts violently with water, liberating extremely flammable gases. Harmful in contact with skin. Harmful if swallowed. Causes burns. Risk of serious damage to eye. May cause sensitization by inhalation and skin contact.
	Thionyl chloride *($SOCl_2$)*	R14 R22 R35 R37 R41 R42/43	Reacts with water. Harmful if swallowed. Causes burns. Irritating to respiratory system. Risk of serious damage to eye. May cause sensitization by inhalation and skin contact.
	Aluminum chloride anhydrous *($AlCl_3$)*	R14 R22 R37 R41 R43	Reacts with water. Harmful if swallowed. Irritating to respiratory system. Risk of serious damage to eye. May cause sensitization by skin contact.
Safety phrases	Lithium *(Li)*	S2 S8 S45	Keep out of reach of children Keep away from moisture In case of incident, seek medical attention.
	Thionyl chloride *($SOCl_2$)*	S2 S8 S24 S26 S36 S37 S45	Keep out of reach of children. Keep away from moisture. Avoid contact with skin. In case of contact with eyes, rinse immediately with plenty of water. Wear suitable protective clothing. Wear suitable gloves. In case of incident, seek medical attention.
	Aluminum chloride anhydrous *($AlCl_3$)*	S2 S8 S22 S24 S26 S36	Keep out of reach of children. Keep away from moisture. Do not breathe dust. Avoid contact with skin. In case of contact with eyes, rinse immediately with plenty of water. Wear suitable protective clothing.
UK regulatory references	Classified under CHIP		

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Section 16 – Other Information

This information (effective November 3, 2016) has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein.
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