



*Leading the World in ELT Technology*

## Material Safety Data Sheet

Battery Pack Part Numbers  
452-0133 & 452-0222

### 1) Product Identification and Company

**Company:** Artex Aircraft Supplies, Inc.  
14405 Keil Rd. NE  
Aurora, Or. 97002  
USA

**Emergency Telephone Number:** 503-678-7929  
1-800-547-8901

**Product:** Emergency Locator Transmitter (ELT) battery pack containing lithium manganese dioxide cells. Each battery pack has a net weight of 0.67 kilograms.

**Electrochemical system:** Each battery pack contains 13.2 grams of lithium metal. Each battery pack is diode protected, and double fused.

### 2) Composition & Information on components

Each Battery Pack consists of four (4) hermetically sealed, metallic containers containing a number of chemicals and materials of construction of which the following could potentially be hazardous upon release. Each battery pack cell contains the following.

Ingredient	Approximate % Content	CAS No	CHIP Classification
Lithium (Li)	3%	7439-93-2	F; R14/15 C; R34 R14/15, R34 S(1/2), S8, S43, S25
Manganese Dioxide	35-40%	1313-13-9	R20, R22, S25

(MnO <sub>2</sub> )			
Lithium Perchlorate (LiClO <sub>4</sub> )	1%	7791-03-9	R8, R36/37/38 S17, S26/27, S36/37/38
Tetrahydrofuran (C <sub>4</sub> H <sub>8</sub> O)	5%	109-99-9	F; R11, R19 Xi; R36/37 R11, R19 R36/37 S2, S33
Propylene Carbonate (C <sub>3</sub> H <sub>6</sub> CO <sub>3</sub> )	6%	108-32-7	R3
1,2 Dimethoxyethane (CH <sub>3</sub> OCH <sub>2</sub> CH <sub>2</sub> OCH <sub>3</sub> )	5%	110-71-4	R11, R19/20 S24/25
Carbon (C <sub>n</sub> )	2%	1333-86-4	Non Known

**3) Hazards Identification:** Do not short circuit, recharge, puncture, incinerate, crush, force discharge or expose to temperatures above the specified range. Upon severe mechanical, electrical or thermal abuse, the cell may vent with the expulsion of some of the content.

**4) First Aid Measures:**

- 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 reuse. In severe cases obtain medical attention.
- Eye Contact** Irrigate thoroughly with water for at least 10 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.

**5) Fire Fighting and Explosion Data:**

**A. Extinguishing Media**

- Recommendation is copious quantities of water based foam.
- Copious cold water is an effective extinguishing medium for lithium batteries. (Do not use warm or hot water)
- Lith-X (Class D extinguishing media), and dry powder type extinguishers have limited extinguishing potential.
- Do not use Halon type extinguishers or fire blankets.

**B. Fire fighting procedures**

- Use a positive pressure self-contained breathing apparatus if cells or batteries are involved in a fire.
- Full protective clothing is necessary.
- During a fire caution is advised as burning pieces of lithium may be ejected.
- If possible and with appropriate handling equipment available, move burning cells or batteries away from other flammable materials.

**C. Unusual fire and explosion hazards**

- Cells and batteries may flame or leak potentially hazardous organic vapors if exposed to excessive heat or fire.
- Fire or excessive heat may produce hazardous decomposition products.
- Damaged or opened cells can produce rapid heating and release flammable vapors. Vapors are heavier than air and may travel along the ground or be moved by ventilation to an ignition source and flash back.
- Leaked electrolyte should be washed away and not allowed to dry in contact with combustible material to avoid fire or explosion hazard.

**6) Accidental Release Measures:**

Do not breathe vapors or touch liquid with bare hands. If the skin has come into contact with the electrolyte it should be washed thoroughly with water. Earth or sand should be used to absorb the exudation, seal leaking battery and earth/sand in a heavy duty polythene bag and dispose of as special waste.

**7) Handling and Storage:****i. Cell or battery charging**

1. Battery pack and cells are not designed to be recharged. Charging may result in electrolyte leakage and/or cause flaming.

**ii. Cell or battery disassembly**

- Never disassemble the battery pack or the cells it contains
- Should a cell or battery pack unintentionally be damaged, releasing its contacts, rubber gloves must be worn to handle all components. Avoid inhalation of any vapors that may be emitted.
- Contact Artex for advice on disposal of damaged cells or battery packs.
- In the event of skin or eye exposure to the electrolyte, refer to section 4, First Aid information.

**iii. Cell or battery short circuit – PTC protected**

- Unless otherwise agreed with the customer, cells and batteries supplied by Ultralife Batteries are fitted with resettable PTC devices. These prevent damage by overcurrent or overheating but the short circuit should be removed as soon as possible to avoid discharge. PTC devices will revert to the low resistance state after cooling and the cell or battery will be fully functional, provided sufficient capacity remains.

**iv. Polarity**

- Avoid reversing cell or battery polarity within equipment.

**v. Overheating and Safety vent operation**

- Under no circumstances should the cell case temperature exceed 90° C during operation. If operated at high currents and/or at high ambient temperature, there is a danger of the cell overheating and venting. See cell data sheets for maximum recommended currents. At least 1mm clearance must be available for the safety vent to operate correctly. Do not place potting or other material on top of the vent and ensure that the lead connected to the cell terminal does not impede the vent.

**vi. Storage Precautions**

- Store cells and batteries in their original packaging until used. Do not allow the terminals to short circuit or contact conductive materials.
- Store cells and batteries in an area which is dry, cool (below 70° F / 21° C) and subject to little temperature change.
- Do not place near heating equipment nor expose to direct sunlight for long periods. Elevated temperatures can result in reduced battery service life.
- Provide Extinguishing media in the near vicinity as recommended in Section 5A.

**8) Exposure Controls & Personal Protection**

Respiratory Protection	In all fire situations, use self-contained breathing apparatus
Hand Protection	In the event of leakage, wear gloves
Eye Protection	Wear safety glasses during handling leaking battery
Skin Protection	In the event of leakage, wear protective clothing

**9) Physical and Chemical Properties**

Appearance	Battery Pack with four lithium cells
Odor	If leaking, smells of medical ether
pH	Not applicable as supplied
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

**10) Stability and Reactivity**

Product is stable under conditions as described in Section 7.

**Hazardous reactions:** Lithium metal reacts vigorously with water emitting flammable gas (Hydrogen).

**Hazardous decomposition reactions**

Toxic fumes and may form peroxides

**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. Over exposure can cause symptoms of non-fibrotic lung injury and membrane irritation.

**Inhalation**

Lung irritant

**Skin Contact**

Skin irritant

**Eye Contact**

Eye irritant

**Ingestion**

Poisoning 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.

**12) Ecological Information****Mammalian Effects**

None known at present

**Eco-toxicity**

None known at present

**Bioaccumulation potential**

Slowly bio-degradable

**Environmental fate**

None known environmental hazards at present

**13) Disposal Considerations**

- Cells and batteries should be disposed of only in accordance with local current regulations.
- Cells and batteries, where possible, should be completely discharged prior to disposal and have their terminals taped over.
- Dispose of discharged cell and batteries by incineration or burial only at permitted waste treatment and/or disposal sites.

**14) Transport Information**

Label for Conveyance

Class 9 (miscellaneous)

UN Number

Lithium battery pack only #3090 / Emergency Locator Transmitter #3072

Shipping name

Lithium batteries / Life-Saving Appliances, Not Self-Inflating

Hazard Classification

Class 9 (Miscellaneous)

Packing Group

II

Marine Pollutant

No

15) Regulatory Information

Risk Phrases	Lithium	R14/15	Reacts violently with water, liberating extremely flammable gases.
		R34	Causes burns.
	Manganese Dioxide	R20/22	Harmful by inhalation and if swallowed
	Lithium Perchlorate	R8	Contact with combustible material may cause fire
		R36/37/38	Irritating to eyes, respiratory system and skin
	Tetrahydrofuran	R11	Highly flammable
		R19	May form explosive peroxides
		R36/37	Irritating to eyes and respiratory system
	Propylene Carbonate	R36	Irritating to eyes
	1,2 Dimethoxyethane	R11	Highly flammable
		R19	May form explosive peroxides
		R20	Harmful by inhalation
	Lithium	S1/2	Keep locked up and out of reach of children
		S8	Keep container dry
		S43	In case of fire, use Lith-X (graphite based) fire extinguisher. Never use water.
		S45	In case of accident or if you feel unwell, seek medical advice immediately.
	Manganese dioxide	S25	Avoid contact with eyes
	Lithium Perchlorate	S17	Keep away from combustible materials
		S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
		S27	Take off immediately all contaminated clothing
		S36/37	Wear suitable protective clothing and gloves
		S38	In case of insufficient ventilation, wear suitable respiratory equipment
	Tetrahydrofuran	S2	Keep out of reach of children
		S16	Keep away from sources of ignition – No smoking
		S29	Do not empty into drains
		S33	Take precautionary measures against static discharges
	Propylene Carbonate	S24/25	Avoid contact with skin and eyes
	1,2 Dimethoxyethane	S24/25	Avoid contact with skin and eyes
<b>UK Regulatory references</b>	Classified under CHIP		

**16) Other Information**

The information contained herein is furnished without warranty of any kind. Users should consider this data only as a supplement to other information gathered by them and must make independent determinations of the suitability and completeness of information from all sources to ensure proper use and disposal of these materials and the health and safety of employees and customers.