REVISION HISTORY

Refer to the DCA and associated markups for a complete description of the changes incorporated in a revision.

REV	DCA	DATE	DRAWN	CHECKED	APPROVED	PUBLISHED
C	W10569	12/06/10	L. Treto	E. Erway	A. Coburn	Linda Andujo

TEMPLATE 150-744545-01 REV. C

COBHAM

Chelton Avionics, Inc.
dba Wulfsberg Electronics Division
Prescott, AZ

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DOCUMENT TITLE

MATERIAL SAFETY DATA SHEET BATTERY PACK P/N 452-0133 & 452-0222

SIZE	LRU	DOCUMENT NUMBER	REV
A	**452**	**560-0107**	**C**

Typed signatures indicate approval. Handwritten signature approval of this document is on file at Wulfsberg Electronics, Prescott, Arizona.

SCALE: NONE

DO NOT SCALE DRAWING

SECTION 1 – MANUFACTURER AND PRODUCT IDENTIFICATION

Manufacturer's Name: Wulfsberg Electronics Division **Address: 6400 Wilkinson Drive Prescott, AZ 86301-6164** **Phone: 1-928-756-1615**	**HMIS – For normal use and storage purposes** **Flammability: 1 Reactivity: 0** **Health : 0 Protective Equipment: A**
Product: Emergency Locator Transmitter (ELT) battery pack containing lithium manganese Dioxide cells. Each battery pack contains 13.2 grams of lithium metal. Each battery pack is diode protected and double fused. Each battery pack has a net weight of 0.67 kilograms. Each Battery Pack consists of four (4) hermetically sealed battery cells. **EMERGENCY TELEPHONE NUMBER** **24 HOUR EMERGENCY CONTACT NUMBER CHEMTERC** **1-800-424-9300 (US / NORTH AMERICA)** **001-703-527-3887 (OUTSIDE THE US - COLLECT CALLS)**	**NFPA – For incidences and emergency response purposes** **Flammability: 1 Reactivity: 3** **Health : 3 Protective Equipment: E** **DATE ISSUED: 09/02/2004** **REVISED: 12/06/2010**

2) – HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

Hazardous Components (Specific Chemical Identity) : Common Name(s)

Ingredient	Approximate % Content	CAS No	CHIP Classification
Lithium (Li)	3%	7439-93-2	F; R14/15C; R34 R14/15, R34 S(1/2), S8, S43, S25
Manganese Dioxide (MnO2)	35-40%	1313-13-9	R20, R22, S25
Lithium Perchlorate (LiClO4)	1%	7791-03-9	R8, R36/37/38 S17, S26/27, S36/37/38
Tetrahydrofuran (C4H8O)	5%	109-99-9	F; R11, R19 Xi; R36/37R11, R19 R36/37S2, S33
Propylene Carbonate (C3H6CO3)	6%	108-32-7	R3
1,2 Dimethoxyethane (CH3OCH2CH2OCH3)	5%	110-71-4	R11, R19/20 S24/25
Carbon (Cn)	2%	1333-86-4	Non Known

3) Hazards:

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 or 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

- CO2 extinguishers or copious quantities of water or water-based foam can be used to cool down burning battery packs, as long as the extent of the fire has not progressed to the point that the lithium metal they contain is exposed. (If you use water, use enough to smother the fire. Using an insufficient amount of water will only make the fire worse. Cooling the exterior of the batteries will help prevent rupturing.) CAUTION: If the raw lithium has been exposed, do not use water.
- Do not use for this purpose sand, dry powder or soda ash, graphite powder or fire blankets.
- Lith-X (Class D) extinguishers are the preferred extinguishing media for batteries that have ruptured or the lithium has been exposed.

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:

Cell or battery charging

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

A. Cell or battery handling

- 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.
- Avoid reversing cell or battery polarity within equipment.
- 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.
- Cells and batteries should be disposed of only in accordance with local current regulations.

B. 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.

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	May cause 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

Battery packs should be disposed of only in accordance with local, state and federal regulations.

14) Transportation

Lithium Batteries Only	-	UN3090 Lithium Metal Batteries Class 9 Cargo Aircraft Only Packing Group II Marine Pollutant – No
ELT with Lithium Battery	-	UN3072 Life-Saving Appliances, Not Self-Inflating Class 9 Passenger and Cargo Aircraft Packing Group – None Marine Pollutant - No

The battery pack listed above has met the testing requirements of Part III, subsection 38.3 of the UN Manual of Tests and Criteria.

In case of incident, follow Emergency Response Guidebook # 138

15) Regulatory Information

USA: This MSDS meets/exceeds OSHA requirements. None of the chemicals listed on this MSDS are listed on the “Safe Drinking Water and Toxic Enforcement Act” list (Proposition 65) for the state of California, USA.
Canada: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.
International: This MSDS conforms to European Union (EU), the International Standards Organization (ISO) and the International Labour Organization (ILO) and as documented in ANSI (American National Standards Institute) Standard Z400.1-1993.

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.