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KANNAD ULTIMA ELTs

MATERIAL SAFETY DATA SHEET

Name	**Sign.** **Date**	**Name**	**Sign.** **Date**	**Name**	**Sign.** **Date**
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RECORD OF REVISIONS

Rev.	Date	Description of modification
A	04/01/2021	First Issue
B	30/05/2022	Add part 14.3 for ELTs Shipped with spare batteries (ECN 22-0031)
C	12/09/2023	Update: part 1.2. List of ELTs and part 17. APPENDIX

Table of Contents

1. LIST OF BATTERY PACKS

1.1. List of Battery Packs

Battery Pack Name	Battery Pack P/N	Qty of cells per Battery Pack	Cells Reference	Lithium content for each product	Net Quantity
BAT400 BATTERY PACK	S1863514-01	4	SAFT LM17500 Primary Li-MnO2 cell	4.0 g max	0.406 kg
BAT800 BATTERY PACK	S1865514-01	8	SAFT LM17500 Primary Li-MnO2 cell	8.0 g max	0.400 kg

1.2. List of ELTs

ELT Name	Part Number	Battery Pack Name	Battery P/N included	Lithium content for each product	Net Quantity
KANNAD ULTIMA-S-03(Cat A)	S1863501-03	BAT400	S1863514-01	4.0 g	0.406 kg
KANNAD ULTIMA-S-13 (Cat A)	S1863501-13	BAT400	S1863514-01	4.0 g	0.406 kg
KANNAD ULTIMA-S-04 (Cat A RLS)	S1863501-04	BAT400	S1863514-01	4.0 g	0.406 kg
KANNAD ULTIMA-S-14 (Cat A RLS)	S1863501-14	BAT400	S1863514-01	4.0 g	0.406 kg
KANNAD-ULTIMA-DT-05	S1865501-05	BAT800	S1865514-01	8 g	0.400 kg
KANNAD-ULTIMA-DT-06	S1865501-06	BAT800	S1865514-01	8 g	0.400 kg

1.3. List of Battery Kits

For future use

2. COMPOSITION, INFORMATION OR INGREDIENTS

2.1. Products

Products are ELT beacons powered by Lithium Batteries. Sealed inside the product, the battery pack contains either 4 Lithium Manganese dioxide primary cells (for BAT400) or 8 Lithium Manganese dioxide primary cells (for BAT800). Each pack has its own housing, and incorporates electrical short-circuit protection.

The batteries in this product have a limited service life: see label for expiry date

The product contains no user-serviceable parts.

The product should only be disassembled by qualified service personnel.

DO NOT ATTEMPT TO RECHARGE THE BATTERIES.

2.2. At Cell Level

Component	CAS Number	EINECS/ELINCS	Content (wt. %)*
Lithium	7439-93-2	231-102-5	3-4
Manganese dioxide	1313-13-9	215-202-6	40-50
Organic electrolyte**	N/A	N/A	15-25
Carbon	1338-86-4		1-5
Copper	7440-50-8	231-159-6	1-15
Aluminium	7429-90-5	231-072-3	1-20
Stainless steel, Nickel, inert material	N/A	N/A	remainder

***** *Quantities vary with cell type*

****** *Contains 1,2-Dimethoxyethane (CAS 110-71-4, EINECS 603-031-00-3), content < 3 % listed on REACH candidate list since June 2012*

For More details, refer to SAFT Battery information sheet

2.3. At Battery Pack Level

Depending on the type of battery pack the content may vary but will not exceed the given content ranges.

Refer to annex :

- NQ-205202D UN38.3 TEST SUMMARY REPORT - (S1863514-01) (BAT400)
- NQ-205201D UN38.3 TEST SUMMARY REPORT - (S1865514-01) (BAT800)

3. HAZARD IDENTIFICATION

Not chemically dangerous with normal use in accordance with Saft recommendations as stated in the user manuals or other similar documentation. Under normal conditions of use, the electrode materials and electrolyte they contain are not released to the outside, provided that the battery integrity is maintained and seals remain intact. Exposure to the ingredients contained within or their combustion products could be harmful.

Risk of exposure only in case of abuse (mechanical, thermal, electrical) which leads to the activation of safety valves and/or the rupture of the battery containers. In particular, the battery should not be opened, burned or stored/used above the specified temperature range (for more details see Section 4). Electrolyte leakage or battery venting/explosion/fire may follow, depending upon the circumstances.

3.1. Protection from charging :

Whenever lithium batteries are not the single power source in a circuit, the following measures recommended by Underwriters Laboratories are relevant. The cells should not be connected with an electrical power source that would increase the load through the cells. The electronic circuit shall include one of the following:

- Two suitable diodes or the equivalent in series with the cells to prevent any reverse (charging) current. The second diode is used to provide protection in the event that one would fail. Quality control, or equivalent procedures, shall be established by the device manufacturer to check that the diode polarity is correct for each unit. Or:
- A blocking diode or the equivalent to prevent any reverse (charging) current and a resistor to limit current in case of diode failure. The resistor should be sized to limit the reverse (charging) current to the maximum value according to the data sheet of the cell.

3.2. Hazards in case of opened cells by released material:

EYE CONTACT : Can cause eye irritation. Dust may cause inflammation of eyelids.

SKIN CONTACT : Can cause skin irritation.

INHALATION: Can cause respiratory tract and mucus membrane irritation. If gas is generated during battery disassembly, throat irritation may occur.

INGESTION: Can be poisoning if swallowed.

4. FIRST AID MEASURES

EYE CONTACT :

Exposure to materials from a ruptured or otherwise damaged cell or battery may cause eye irritation.

Flush immediately with copious amounts of water for at least 15 minutes; consult a physician immediately.

SKIN CONTACT :

Exposure to materials from a ruptured or otherwise damaged cell or battery may cause skin irritation.

Flush immediately with water and wash affected area with soap and water.

INHALATION :

Avoid inhaling any vented gases.

Remove to fresh air immediately.

If breathing is difficult, seek emergency medical attention.

INGESTION :

Consult a physician or local poison control center immediately.

5. FIRE FIGHTING MEASURES

Extinguishing Media :

Copious amounts of cold water or water-based foam may be used to cool burning cells or batteries. Do not use warm or hot water.

A carbon dioxide (CO_2) extinguisher is also effective.

For fires involving exposed, raw lithium metal (characterized by deep red flames), use only metal (Class D) fire extinguishers.

Do not use Halon type extinguishing material.

Special Fire Fighting Procedures :

Use a positive pressure self-contained breathing apparatus (SCBA) if cells or batteries are involved in a fire.

Full fire fighting protective clothing is necessary.

During water application, caution is advised as burning pieces of flammable particles may be ejected from the fire.

6. ACCIDENTAL RELEASE MEASURES

In the event a cell, battery or beacon is crushed; releasing its contents, rubber gloves must be used to handle all battery components.

Avoid inhalation of any vapors that may be emitted.

Damaged batteries or beacons that are not hot or burning should be placed in a sealed plastic bag or container.

7. HANDLING AND STORAGE

Precautions for Safe Handling :

Batteries are not designed to be recharged.

Battery pack could not be disassembled without breaking. Never disassemble a battery pack More than a momentary short circuit will cause temporary battery voltage loss until the battery is subjected to a charge. Batteries with fuses will no longer be functional after being shorted.

Extended short-circuiting creates high temperatures in the cell.

High temperatures can cause burns in skin or cause the cell to flame.

Conditions for Safe Storage and Incompatibility :

Batteries should be separated from other materials and stored in a non-combustible, well ventilated structure with sufficient clearance between walls and battery stacks. Do not place batteries near heating equipment, nor expose to direct sunlight for long periods.

Do not store batteries above 60°C (140°F) or below -40°C (-40°F). Store batteries in a cool (below 25°C (77°F)), dry area that is subject to little temperature change. Elevated temperatures can result in reduced battery service life. Battery exposure to temperatures in excess of 130°C (266°F) will result in the battery venting flammable liquid and gases.

Do not store batteries in a manner that allows terminals to short circuit.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls and Work Practices :

Under conditions of normal use, batterie packs or beacons do not emit hazardous or regulated substances.

No engineering controls are required for handling battery packs that have not been damaged.

Personal Protective Equipment :

Personal protective equipment for damaged battery pack should include chemical resistant gloves and safety glasses.

In the event of a fire, SCBA should be worn along with thermally protective outer garments.

9. PHYSICAL AND CHEMICAL PROPORTIES

The lithium-MnO2 cells or batteries described by this Battery Information Sheet are sealed units when offered for sale. They are manufactured "articles" and do not expose the user to hazardous chemicals when used in accordance with manufacturer specifications.

10. STATIBILITY AND REACTIVITY

Product is stable under conditions described in Section 4.

The following hazards may occur under abuse conditions in case of cell opening:

HAZARDOUS REACTIONS : Lithium released from the cell may react with water in the atmosphere and produce hydrogen, which is a highly flammable gas.

HAZARDOUS DECOMPOSITION PRODUCTS : Thermal decomposition of the cell may release electrolyte liquid and vapour, harmful materials, and dusts.

MATERIALS TO AVOID : Oxidizing agents, bases, water.

11. TOXICOLOGICAL INFORMATION

Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur.

1,2-Dimethoxyethane (EGDME) may impair fertility and may cause harm to unborn child. EGDME is listed on the REACH candidate list as SVHC since June 2012.

12. ECOLOGICAL INFORMATION

No ecological impacts expected under normal use conditions.

Information on the ecological impact of internal battery pack components has not been included in this document.

13. DISPOSAL CONSIDERATION

Do not dispose in fire. Battery pack disposal regulations vary on national, state/provincial and local bases.

Disposal must be conducted in accordance with the applicable regulations.

These battery packs contain recyclable materials and recycling is encouraged over disposal.

14. TRANSPORTATION INFORMATION

14.1. For ELTS only

Class:	9
UN Number:	UN3091
IATA packing instruction for air:	970 Section I
Packing instruction for road and sea:	P903
Proper shipping Name:	Lithium metal batteries contained in equipment
Packin Group:	II

14.2. For Battery Kits (Kits not yet available)

Class:	9
UN Number:	UN3090
IATA packing instruction for air:	968 Section IA
Packing instruction for road and sea:	P903
Proper shipping Name:	Lithium metal batteries
Packin Group:	II

14.3. For ELTs shipped with spare batteries

Class:	9
UN Number:	UN3091
IATA packing instruction for air:	969 Section I
Packing instruction for road and sea:	P903
Proper shipping Name:	Lithium metal batteries packed with equipment
Packin Group:	II

15. DISPOSAL INFORMATION

DO NOT INCINERATE

DO NOT DISCARD IN DOMESTIC WASTE

At the end of the product's useful life, it is vital that the battery packs be disconnected from the main unit to prevent false alarms. False alarms cause expensive disruption to Search and Rescue services and may endanger lives as a consequence.

Instructions on battery removal can be found in the End of Life Statement in the product User manual. This Operation should only be performed by qualified service personnel.

This product should be disposed of in a sensible and considerate manner, and in accordance with local regulations. Take it to a civil recycling facility, or contact SafranED Beacons for advice.

Marking Consideration
European Union: According to directive 2006/66/EC, the batteries have to be marked with the crossed wheel bin symbol.

16. OTHER INFORMATION

16.1. GREEN PASSPORT: SHIP RECYCLING INFORMATION

SafranED Beacons hereby declares potentially hazardous content in some of its electronic products.

Small amounts of the following substances may be present: Berylium oxide, lithium, lead, brominated flame retardants.

In keeping with European directive 2002/96/EC (Waste Electronic and Electrical Equipement), SafranED Beacons strongly recommends that its products, including any battery packs, be disposed of in a consideral and legal manner. Additional information, concerning the disposal of equipment can also be found in the relevant equipment User Manual.

17. APPENDIX – UN 38.3 Test Summary Report from Williamson Electronique

UN 38.3 TEST SUMMARY REPORT

☐ Cell ☒ Battery ☐ Product

Tested type part: WILPA2851D
Customer type part: S1865514-01 & S1865590-01
Same type part: WILPA2851E, WILPA2851F, WILPA2851G, WILPA2851H, WILKI0217A

Unique report ID : NQ205201D

Report date : 2022.01.07

Manufacturer :
Williamson Electronique
Pôle industriel d'innovation Jules Verne
8 rue du Moulin Cassé, BP 61211
44340 Bouguenais Cedex - France
T. +33 (0) 2.40.18.80.00
https://www.williamson-electronique.fr

Test laboratory :
Laboratoire Central des IndustriesElectriques (LCIE)
33 Avenue du Général Leclerc
92 260 Fontenay Aux Roses
France
T. +33 (0) 1.40.95.60.60
www.lcie.fr

☐ Li-ion battery (rechargeable) ☒ Li-metal battery (primary)

Description : assembled from 2 blocks of four LM17500 cells in series

Battery weight : 400 g

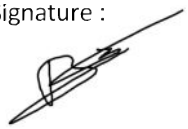
☐ Nominal Energy : Watt-hour **or** ☒ Lithium content : 8 g

☐ Cell ☒ Battery ☐ Product. Model number/part number : 4s1p-2 LM17500

List of tests conducted	Results (Pass / Fail / N.A.)	Test record reference
T1 : Altitude simulation	PASS	168660-755034 v01
T2 : Thermal test	PASS	168660-755034 v01
T3 : Vibration	PASS	168660-755034 v01
T4 : Shock	PASS	168660-755034 v01
T5 : External short circuit	PASS	168660-755034 v01
T6 : Impacted/crush (cell only test)	PASS	10154
T7 : Overcharge (N.A for Li-metal only)	PASS	N.A
T8 : Forced discharge (cell only test)	PASS	10154
Battery assembly : ☒ Not applicable. ☐ UN38.3.3 (f) ☐ UN38.3.3 (g)		
Test reference : UN manual of tests and criteria, part III sub-section 38.3. 7th revised edition		

PRODUCT CLASSIFICATION FOR TRANSPORT (According to UN-DGP)

UN Classification / Proper shipping name : **UN3090 / Lithium metal batteries**

Signatory A. Date : 2023.07.28	Signatory B. Date : 2023.07.28
Name : Cécile Burlot	Name : Thierry Bouessay
Title : Quality Manager	Title : Technical Director
Signature : 	Signature : 

UN 38.3 TEST SUMMARY REPORT

☐ Cell ☒ Battery ☐ Product Tested type part : WILPA2918C Customer type part : S1863514-01 & S1863590-01 Same type part : WILPA2918F, WILPA2918G, WILKI0216A	Unique report ID : NQ205202D Report date : 2020.12.22
Manufacturer : Williamson Electronique Pôle industriel d'innovation Jules Verne 8 rue du Moulin Cassé, BP 61211 44340 Bouguenais Cedex - France T. +33 (0) 2.40.18.80.00 https://www.williamson-electronique.fr	**Test laboratory :** Laboratoire Central des IndustriesElectriques (LCIE) 33 Avenue du Général Leclerc 92 260 Fontenay Aux Roses France T. +33 (0) 1.40.95.60.60 www.lcie.fr

☐ Li-ion battery (rechargeable) ☒ Li-metal battery (primary)

Description : assembled from four LM17500 cells in series

Battery weight : 400 g

☐ Nominal Energy : Watt-hour **or** ☒ Lithium content : 4 g

☐ Cell ☒ Battery ☐ Product. Model number/part number : 4s1p LM17500

List of tests conducted	Results (Pass / Fail / N.A.)	Test record reference
T1 : Altitude simulation	PASS	168660-755033 v02
T2 : Thermal test	PASS	168660-755033 v02
T3 : Vibration	PASS	168660-755033 v02
T4 : Shock	PASS	168660-755033 v02
T5 : External short circuit	PASS	168660-755033 v02
T6 : Impacted/crush (cell only test)	PASS	10154
T7 : Overcharge (N.A for Li-metal only)	PASS	N.A
T8 : Forced discharge (cell only test)	PASS	10154
Battery assembly : ☒ Not applicable. ☐ UN38.3.3 (f) ☐ UN38.3.3 (g)		
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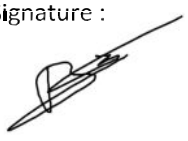
Signature : 	Signature : 

Important! The above signatory / signatories affirm that this document is a true and correct summary of the original individual tests and test data. The original test data is confidential information available to competent state authorities with valid identification and only upon their formal request. Disclosure of the original test data to any other entity upon its request will be considered by Williamson Electronique and, should Williamson Electronique consider this request is with merit, may subject to prior execution of a nondisclosure agreement.