

25 February 2019

Subject: Safety Data Sheets (SDS) for Lithium Metal Batteries installed in Dukane Seacom Products

To Whom It May Concern:

Dukane Seacom currently uses multiple lithium metal batteries sizes for DK series units depending on battery code listed on outside of unit. This designation can be found on the outside label of the beacon. All batteries have passed testing required by UN38.3 standards. All items listed below are considered “Cells” by IATA standards and should be packaged and shipped in accordance with current IATA and local regulatory requirements. Air Carriers may impose restrictions beyond the IATA requirements. Check with your Air Carrier for any additional requirements.

Reference the guide below to identify the proper battery code. Attached to this document is the SDS and UN38.3 testing information from the cell manufacturer.

NOTE: For shipping purposes, any DK series beacon should be considered “Lithium Metal Batteries Contained in Equipment” not “Lithium Metal Batteries”.

| Reference Type | Dukane Battery Code | Dukane Part Number | | Battery MFG Model Number | Number of Cells per Unit | Li Metal Content (g) | Battery Weight (g) | UN Shipping Information | UN 38.3 Testing |
|----------------|---------------------|----------------------------------|--|--------------------------|--------------------------|----------------------|--------------------|----------------------------|-----------------|
| Beacons | C | DK100 DK120 DK130 DK140 | DKM120 DKM480 | BR-A | 1 | 0.6 | 18 | UN3091 PI970 Section II | PASSED |
| Battery Kits | C | 810-2008/K | 810-2013/K 810-2019/K | BR-A | 1 | 0.6 | 18 | UN3090 PI968 Section IB | PASSED |
| Beacons | B | DK100/90 DK120 N15B217B | DK470 DK228 DK485 DKM502/90 | BR-C | 1 | 1.7 | 42 | UN3091 PI970 Section I | PASSED |
| Battery Kits | B | 810-2007/K | 810-2010/K 810-2017/K 810-2018/K 810-2020/K | BR-C | 1 | 1.7 | 42 | UN3090 PI968 Section IA | PASSED |
| Beacons | E | DK502 DK504 | | BR-AG | 1 | 0.7 | 18 | UN3091 PI970 Section II | PASSED |
| Battery Kits | E | 810-2016/K | | BR-AG | 1 | 0.7 | 18 | UN3090 PI968 Section IB | PASSED |
| Beacons | F | DK120/90 DK180 | | BR-C | 1 | 1.7 | 42 | UN3091 PI970 Section I | PASSED |
| Battery Kits | F | 810-2042/K | | BR-C | 1 | 1.7 | 42 | UN3090 PI968 Section IA | PASSED |

Should you require any additional information, please do not hesitate to contact me at stancey@rpcaero.com or the telephone number listed above.

Sincerely,



Sean Tancey

Director of Quality

4 First aid measures (in case of electrolyte leakage from the battery)

- Eye contact : Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing. Get immediate medical treatment. If appropriate procedures are not taken, this may cause eye injury.
- Skin contact : Wash the contact areas off immediately with plenty of water and soap. If appropriate procedures are not taken, this may cause sores on the skin.
- Inhalation : Remove to fresh air immediately. Get medical treatment immediately.

5 Firefighting measures

- Fire extinguishing agent : Alcohol-resistant foam and dry sand are effective.
- Extinguishing method : Since vapor, generated from burning batteries may make eyes, nose and throat irritates, be sure to extinguish the fire on the windward side. Wear the respiratory protection equipment in some cases.

6 Accidental release measures (in case of electrolyte leakage from the battery)

- Take up with absorbent cloth, treat cloth as inflammable.
Move the battery away from the fire.

7 Handling and storage

- Handling :
 - When packing the batteries, do not allow battery terminals to contact each other, or contact with other metals. Be sure to pack batteries by providing partitions in the packaging box, or in a separate plastic bag so that the single batteries are not mixed together.
 - Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation.
 - Do not short-circuit, recharge, deform, throw into fire or disassemble.
 - Do not mix different type of batteries.
 - Do not solder directly onto batteries.
 - Insert the battery correctly in electrical equipment.
- Storage :
 - Do not let water penetrate into packaging boxes during their storage and transportation.
 - Do not store the battery in places of the high temperature or under direct sunlight.
 - Please also avoid the places of high humidity. Be sure not to expose the battery to condensation, rain or frozen condition

8. Exposure controls and personal protection

Acceptable concentration : Not specified about Lithium Battery.
Facilities : Nothing in particular.

Protective Equipment (in case of electrolyte leakage from the battery)

Respiratory Protection : Self-Contained Breathing Apparatus for organic gases
Hand Protection : Safety gloves.
Eye Protection : Safety goggle

9. Physical and chemical properties

Appearance : Cylindrical shape
Nominal Voltage : 3 V

10. Stability and reactivity

Since batteries utilize a chemical reaction they are actually considered a chemical product.

As such, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, the various usage conditions such as discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage.

11. Toxicological information (in case of electrolyte leakage from the battery)

Acute toxicity : Oral(rat) LD50 > 2000mg/kg (estimated)
Irritation : Irritating to eye and skin.
Mutagenicity : Not specified.
Chronic toxicity : Not specified.

12. Ecological information

In case of the worn out battery was disposed in land, the battery case may be corroded, and leak electrolyte. However, there is no environmental impact information.
Mercury (Hg), Cadmium (Cd) and Lead (Pb) are not used in cell.

13. Disposal considerations

When the battery is worn out, dispose of it under the ordinance of each local government.

14. Transport information

During the transportation of a large amount of batteries by ship, trailer or railway, do not leave them in the places of high temperatures and do not allow them to be exposed to condensation.

During the transportation do not allow packages to be dropped or damaged.

Proper shipping name : Lithium metal batteries

UN Number, UN Class : UN3090, Class9 (for the Air transport by PI968 Section IA or IB)
: Exemption (for the Marine transport and the Air transport by Section II of PI 968, 969 or 970)
Even though the cells are classified as lithium metal batteries (UN3090 or UN3091), they are not subject to some requirements of

Dangerous Goods Regulations because they meet the following:

1. for cells, the lithium content is not more than 1g ;
2. each cell is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, PartIII, sub-section 38.3.
3. each cell is manufactured in ISO9001 certified factory.

Please refer to the following reference information about concrete ways of transportation. Actual content of packaging label and shipping documents varies by shipping companies. Make sure to confirm in advance with your shipping company.

Information of reference

| | Reference | Packing Instruction(PI)/ Special provision(SP) | Note |
|------------------|-----------|---|---|
| Air transport | IATA DGR | PI 968 Section I A | Cells, Cargo Aircraft only; Net quantity per package Max. 35kg |
| | | PI 968 Section I B | Cells, Cargo Aircraft only; net quantity per package Max. 2.5kg |
| | | PI 968 Section II | Cells, on Cargo Aircraft only, not more than one package in any single consignment. Maximum number of cells per package; 8 cells |
| | | PI 969 Section II | Cells packed with equipment |
| | | PI 970 Section II | Cells contained in equipment |
| Marine transport | IMDG Code | SP 188 | |

15. Regulatory information

- IATA Dangerous Goods Regulations 60th Edition (IATA DGR)
- IMO International Maritime Dangerous Goods Code 2016 and 2018 Edition (IMDG Code)
- UN Recommendations on the Transportation of Dangerous Goods, Model Regulations
- UN Recommendations on the Transportation of Dangerous Goods, Manual of Tests and Criteria
- EU Battery Directive (2006/66/EC, 2013/56/EU)
- Regulation (EC) No. 1907/2006 on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)
- State of California Regulations - Best management practices for Perchlorate Materials
- Act on Preventing Environmental Pollution of Mercury (Japan)

16. Other information

This PSDS is provided to customers as reference information in order to handle batteries safely. It is necessary for the customer to take appropriate measures depending on the actual situation such as the individual handling, based on this information.

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