

## MATERIAL SAFETY DATA SHEET

### 1. PRODUCT AND COMPANY IDENTIFICATION

#### A. PRODUCT IDENTIFICATION

Lithium ion Rechargeable Battery Pack

#### B. Battery Product Matrix

##### Customer (HP)

| <u>Battery Name</u> | <u>RMN</u>    | <u>Customer P/N</u> | <u>KS P/N</u>       | <u>Cell applied</u> |
|---------------------|---------------|---------------------|---------------------|---------------------|
| DV04046XL           | HSTNH-W612-DP | 863693-2C1          | DAK126180-W0P0703HT | COSLIGHT            |
|                     |               |                     | DAK126180-W0P0702HA | CA2662C0G           |
| DV04046XL           |               | 863693-2B1          | DAK126180-W0H0703HT | Lishen              |
|                     |               |                     | DAK126180-W0H0702HA | SP2763C1SF          |

Notice 1: CL – Cylindrical type; PM – Prismatic type; PY – Polymer type

Notice 2:

- \* Lithium ion cells and batteries may be offered for transport if they meet the following :
- \* for cells, the Watt-hour rating is not more than 20 Wh;
- \* for batteries, Watt-hour rating is not more than 100 Wh. The Watt-hour rating must be marked on the outside of the battery case except those manufactured before 1 January 2009 which may be transported without this marking until 31 December 2010;

#### MANUFACTURER

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**2. Hazards Identification**

Primary routes of entry: Skin contact. Skin absorption, eye contact, inhalation and ingestion:  
NO

Symptoms of exposure: Skin contact. No effect under routine handling and use.

Skin absorption: No effect under routine handling and use.

Eye contact: No effect under routine handling and use.

Inhalation: No effect under routine handling and use.

Reported as carcinogen: Not applicable

**3.Composition/information on ingredients**

## Composition

CAS number: Not specified (A-1 and A-2):

A-1. Cases: Plastic or Metal Not dangerous

A-2. Printed Circuit Board Assembly Not dangerous

A-3. Lithium Ion Cell:

|                                |     |   |     | CAS No.  |
|--------------------------------|-----|---|-----|--|
| Aluminum                       | 2%  | - | 10% | 7429-90-5  |
| Metal Oxide (proprietary)      | 20% | - | 50% | 12190-79-3   |
| Polyvinylidene fluoride (PVDF) | 0%  | - | 5%  | 24937-79-9   |
| Copper                         | 2%  | - | 10% | 7440-50-8  |
| Carbon (proprietary)           | 10% | - | 30% | 1333-86-4  |
| Electrolyte (proprietary)      | 10% | - | 20% | Main Component:<br>96-49-1,<br>623-53-0,<br>108-32-7 |

**4. First Aid Measures****IF EXPOSURE TO INTERNAL MATERIALS WITHIN CELL DUE TO DAMAGED OUTER CASING , THE FOLLOWING ACTIONS ARE RECOMMENDED.**

Inhalation: Leave area immediately and seek medical attention.

Eye contact: Rinse eyes with water for 15 minutes and seek medical attention.

Skin contact: Wash area thoroughly with soap and water and seek medical attention.

Ingestion: Drink milk/water and induce vomiting; seek medical attention

## 5. Fire Fighting Measures

Extinguishing Media: Use extinguishing media suitable for the materials that are burning. Use metal fire extinction powder or dry sand if only few cells are involved.

Firefighting Equipment: Use NIOSH/MSHA approved full-face self-contained breathing apparatus ( SCBA) with full protective gear.

## 6. Accidental Release Measures

On Land: Place material into suitable containers and call local fire/police department.

In water: If possible. Remove from water and call local fire/police department

## 7. Handling and Storage

### Handling:

Do not expose the battery to excessive physical shock or vibration. Short-circuiting should be avoided. However, accidental short-circuiting for a few seconds will not seriously affect the battery. Prolonged short circuits will cause the battery to rapidly lose energy, could generate enough heat to burn skin. Sources of short circuits include jumbled batteries in bulk containers, coins, metal jewelry, metal covered tables, or metal belts used for assembly of batteries in devices. To minimize risk of short-circuiting, the protective case supplied with the battery should be used to cover the terminals when transporting or storing the battery. Do not disassemble or deform the battery. Should an individual cell within a battery become ruptured, do not allow contact with water.

### Storage:

The lithium ion battery should be between 25% and 75% of full charge when stored for a long period of time. Store in a cool, dry, well ventilated area. And temperature above 100 degrees Celsius can result in loss of battery performance, leakage, or rust. Do not expose the battery to open flames.

## 8. Exposure Controls / Personal Protection

Engineering Controls : Keep away from heat and open flame. Store in a cool dry place.

### Personal Protection :

Respirator : Not required during normal operations. SCBA required in the event of a fire.

Eye/Face Protection : Not required beyond safety practices of employer.

Gloves : Not required for handling of battery

Foot Protection: Steel toed shoes recommended for large container handling.

## 9. Physical and Chemical Properties

|                     |           |
|---------------------|-----------|
| State               | solid     |
| Odor                | N/A       |
| PH                  | N/A       |
| Vapor pressure      | N/A       |
| Vapor density       | N/A       |
| Boiling point       | N/A       |
| Solubility in water | Insoluble |
| Specific gravity    | N/A       |
| Density             | N/A       |

## 10. Stability and Reactivity

Reactivity: None

Incompatibilities: None during normal operation. Avoid exposure to heat, open flame, and corrosives.

Conditions To Avoid: Avoid exposure to heat and open flame. Don not puncture, crush or incinerate.

## 11. Toxicological Information

This product does not elicit toxicological properties during routine handling and use.

## 12. Ecological Information

Lithium ion battery pack can be disposable in accordance with appropriate federal, state and local regulations.

## 13. Disposal Considerations

Recommended methods for safe and environmentally preferred disposal:

Product(waste from residues)

Do not throw out a used battery. Recycle it through the recycling company.

Contaminated packaging

Neither a container nor packing is contaminated during normal use. When internal

materials leaked from a battery contaminates, dispose as industrial wastes subject to special control.

#### **14. Transport Information**

Lithium ion batteries containing no more than 1.5g/cell and 8g/battery pack and also power is no more than 20Wh/cell and 100Wh/battery pack of lithium can be treated as “Non-dangerous goods” under the United Nations Recommendations on the Transport of Dangerous Goods, Special Provision 188, provided that packaging is strong and prevent the products from short-circuit.

With regard to air transport, the following regulations are cited and considered:

- The International Civil Aviation Organization (ICAO) Technical Instructions (2015-2016 Edition)
- The International Air Transport Association (IATA) Dangerous Goods Regulations (57<sup>th</sup> Edition, 2016) Special Provisions A154, A164& package instruction Section II of 965, 966 and 967 for lithium ion batteries), or package instruction Section IB of 965.
- The International Maritime Dangerous Goods (IMDG) Code (2014 Edition), Special Provision 188.
- The US Hazardous Materials Regulation (HMR) pursuant to a final rule issued by RSPA (Part 49 CFR Sections 100-185),
- The Office of Hazardous Materials Safety within the US Department of Transportation’s (DOT) Research and Special Programs Administration (RSPA), and
- The UN Recommendations on the Transport of Dangerous Goods Model Regulations and the Manual of Tests and Criteria.

Our products are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to all the applicable international and national governmental regulations, not limited to the above mentioned. We further certify that the enclosed products have been tested and fulfilled the requirements and conditions in accordance with UN Recommendations 38.3 (T1-T8) on the Transport of Dangerous Goods Model Regulations and the Manual of Testes and Criteria that can be treated as “Non-Dangerous Goods”.

Lithium ion batteries only transport by air in accordance with PI965 at a state of charge (SOC) not to exceed 30 percent of rated design capacity.

#### **15. Regulatory Information**

OSHA Hazard communication standard (29 CFR 1910.1200)

\_\_\_\_\_ Hazardous                        √   Non-hazardous

**16. Other information -- UN Test Result**

There is no hazards in accordance with the UN recommendations tests (Manual of Tests and Criteria , Part III , sub-section 38.3 )

| No | ITEMS               | RESULT | REMARKS       |
|----|---------------------|--------|---------------|
| 1  | Altitude Simulation | Pass   |               |
| 2  | Thermal Shock       | Pass   |               |
| 3  | Vibration           | Pass   |               |
| 4  | Shock               | Pass   |               |
| 5  | External Short      | Pass   |               |
| 6  | Impact              | Pass   | For cell only |
| 7  | Overcharge          | Pass   |               |
| 8  | 1.2m packing drop   | Pass   |               |