SECTION 1. CHEMICAL PRODUCT AND COMPANY NAME

Lithium-Ion Rechargeable Battery Pack
BL1415NA

Safety Data Sheet

Makita U.S.A., Inc.
14930-C Northam Street
La Mirada, CA  90638

Prepared By:  Stan Rodrigues
Date Revised:  08/03/2016

EMERGENCY CONTACT INFORMATION

Telephone Number for Information:  MAKITA:  1-510-657-9881
Emergency Response
For Chemical Emergency
Spills, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night
Within USA and Canada 1-800-424-9300

SECTION 2. HAZARD IDENTIFICATION:

Route(s) of Entry:  There is no hazard when the measures for handling and storage are followed.
Signs and Symptoms of Exposure:  In case of cell damage, possible release of dangerous substances and a flammable gas mixture.
OSHA Hazard Communication:  This material is not considered hazardous by the OSHA Hazard Communication Standard 29CFR 1910.1200.
Carcinogenicity (NTP):  Not listed
Carcinogenicity (IARC):  Not listed
Carcinogenicity (OSHA):  Not listed
Special hazards for human health and environment:  There is no hazard when the measures for handling and storage are followed.
In case of cell damage, possible release of dangerous substances and a flammable gas mixture.

SECTION 3. COMPOSITION, INFORMATION OR INGREDIENTS

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Chemical Name</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1307-96-6</td>
<td>Cobalt oxide</td>
<td>&lt; 30 %</td>
</tr>
<tr>
<td>1313-13-9</td>
<td>Manganese dioxide</td>
<td>&lt; 30 %</td>
</tr>
<tr>
<td>1313-99-1</td>
<td>Nickel oxide</td>
<td>&lt; 30 %</td>
</tr>
<tr>
<td>7440-44-0</td>
<td>Carbon</td>
<td>&lt; 30 %</td>
</tr>
<tr>
<td></td>
<td>Electrolyte (*)</td>
<td>&lt; 20 %</td>
</tr>
<tr>
<td>24937-79-9</td>
<td>Polyvinylidene fluoride (PVdF)</td>
<td>&lt; 10 %</td>
</tr>
<tr>
<td>7429-90-5</td>
<td>Aluminum foil</td>
<td>2 - 10 %</td>
</tr>
<tr>
<td>7440-50-8</td>
<td>Copper foil</td>
<td>2 - 10 %</td>
</tr>
<tr>
<td></td>
<td>Aluminum and inert materials</td>
<td>5 - 10 %</td>
</tr>
</tbody>
</table>

Full text of each relevant R phrase can be found in Section 16
CONTINUED: SECTION 3. COMPOSITION, INFORMATION OR INGREDIENTS

For information purposes: (*) Main ingredients: Lithium hexafluorophosphate, organic carbonates

Because of the cell structure the dangerous ingredients will not be available if used properly. During charge process a lithium graphite intercalation phase is formed.

Mercury content: Hg < 0.1mg/kg
Cadmium content: Cd < 1mg/kg
Lead content: Pb < 10mg/kg
Wh rating: Under 100Wh
Anode (negative electrode): Based on intercalation graphite
Cathode (positive electrode): Based on lithiated metal oxide (Cobalt, Nickel, Manganese)

SECTION 4. FIRST AID MEASURE

<table>
<thead>
<tr>
<th>General information:</th>
<th>The following first aid measures are required only in case of exposure to interior battery components after damage of the external battery casing. Undamaged, closed cells do not represent a danger to the health.</th>
</tr>
</thead>
<tbody>
<tr>
<td>After inhalation:</td>
<td>Ensure of fresh air. Consult a physician.</td>
</tr>
<tr>
<td>After contact with skin:</td>
<td>In case of contact with skin wash off immediately with plenty of water. Consult a physician.</td>
</tr>
<tr>
<td>After contact with eyes:</td>
<td>Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Seek medical treatment by eye specialist</td>
</tr>
<tr>
<td>After ingestion:</td>
<td>Drink plenty of water. Call a physician immediately.</td>
</tr>
</tbody>
</table>

SECTION 5. FIRE FIGHTING MEASURES

| Suitable extinguishing media: | Cold water and dry powder in large amount are applicable. Use metal fire extinction powder or dry sand if only few cells are involved. |
| Special hazards arising from the chemical: | May form hydrofluoric acid if electrolyte comes into contact with water. In case of fire, the formation of the following flue gases cannot be excluded: Hydrogen fluoride (HF), Carbon monoxide and carbon dioxide. |
| Protective equipment and precautions for firefighters: | Wear self-contained breathing apparatus and protective suit. |
| Additional information: | If possible, remove cell (s) from firefighting area. If heated above 125°C, cell (s) can explode/vent. Cell is not flammable but internal organic material will burn if the cell is incinerated. |

SECTION 6. ACCIDENTAL RELEASE MEASURES

| Personal precautions: | Use personal protective clothing. Avoid contact with skin, eyes and clothing. Avoid breathing fume and gas. |
| Environmental precautions: | Do not discharge into the drains/surface waters/groundwater. Methods for cleaning up/taking up Take up mechanically and send for disposal. |
SECTION 7. HANDLING AND STORAGE

**Handling**

**Advice on safe handling:**
Avoid short circuiting the cell. Avoid mechanical damage of the cell. Do not open or disassemble.
Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition.

**Storage**

**Requirements for storage rooms and vessels:**
Storage at room temperature (approx. 20°C) at approx. 20-60% of the nominal capacity (OCV approx. 3.6 - 3.9 V/cell).
Keep in closed original container.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Risk Codes</th>
<th>Safety Description</th>
<th>Hazard</th>
<th>Exposure Controls/Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt oxide</td>
<td>R22, R43, R50/53</td>
<td>S24; S37; S60; S61</td>
<td>Xn (Harmful)N</td>
<td>0.1 mg/m³ (TWA)</td>
</tr>
<tr>
<td>Manganese (VI) oxide</td>
<td>R20/22</td>
<td>S25</td>
<td>Xn (Harmful)</td>
<td></td>
</tr>
<tr>
<td>Nickel oxide</td>
<td>R43, R49, R53</td>
<td>S45, S53, S61</td>
<td>T(Toxic)</td>
<td></td>
</tr>
<tr>
<td>Carbon</td>
<td>R36/37/38</td>
<td>S22; S24/25</td>
<td>F(Highly Flammable)</td>
<td></td>
</tr>
<tr>
<td>Aluminum foil</td>
<td>R17, R15, R36/38, R10, R67, R65, R62, R51/53, R48/20, R38, R11, S7/8, S43, S26, S62 S61, S36/37, S33, S29, S16, S9</td>
<td></td>
<td>F (Highly Flammable)</td>
<td></td>
</tr>
</tbody>
</table>

**Airborne Exposure Limits:**

- OSHA Permissible Exposure Limit (PEL): 5 mg/m³ Ceiling for manganese compounds as Mn
- ACGIH Threshold Limit Value (TLV): 0.2 mg/m³ (TWA) for manganese, elemental and inorganic compounds as Mn

- For Nickel, Metal and Insoluble Compounds, as Ni:
  - OSHA Permissible Exposure Limits (PEL) - 1 mg/m³ (TWA).
  - ACGIH Threshold Limit Value (TLV) - 1.5 mg/m³ (TWA), A5 - Not suspected as a human carcinogen.
  - For Nickel, Insoluble Compounds, as Ni:
    - ACGIH Threshold Limit Value (TLV) - 0.2 mg/m³ (TWA), A1 - Confirmed human carcinogen

- OSHA Permissible Exposure Limits (PELs): activated carbon (graphite, synthetic): Total particulate = 15 mg/m³

- OSHA Permissible Exposure Limit (PEL): 15 mg/m³ (TWA) total dust and 5 g/m³ (TWA)

- ACGIH Threshold Limit Value (TLV): 10 mg/m³ (TWA) Aluminum metal dusts

3
CONTINUED: SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Risk Codes</th>
<th>Safety Description</th>
<th>Hazard</th>
<th>Exposure Controls/Personal Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper foil</td>
<td>R11 R36 R37 R38</td>
<td>S5, S26, S16, S61, S36/37</td>
<td>F (Highly Flammable) N (Dangerous for the environment) Xn (Harmful) Xi (Irritant)</td>
<td>Copper Dust and Mists, as Cu: - OSHA Permissible Exposure Limit (PEL) - 1 mg/m³ (TWA) - ACGIH Threshold Limit Value (TLV) - 1 mg/m³ (TWA) Copper Fume: - OSHA Permissible Exposure Limit (PEL) - 0.1 mg/m³ (TWA) - ACGIH Threshold Limit Value (TLV) - 0.2 mg/m³ (TWA)</td>
</tr>
</tbody>
</table>

Polyvinylidene fluoride (PVdF) | S22;S24/25 | |

Additional advice on limit values: During normal charging and discharging there is no release of product.

Occupational exposure controls: No specific precautions necessary.

Protective and hygiene measures: When using do not eat, drink or smoke. Wash hands before breaks and after work.

Respiratory protection: No specific precautions necessary.

Hand protection: No specific precautions necessary.

Eye protection: No specific precautions necessary.

Skin protection: No specific precautions necessary.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form: Solid
Color: Various
Odor: Odourless

Important health, safety and environmental information

Test method

pH Value: n.a.
Flash point: n.a.
Lower explosion limits: n.a.
Vapour pressure: n.a.
Density: n.a.
Water solubility: Insoluble
Ignition temperature: n.a.
### SECTION 10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Stability:</th>
<th>Stable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions to avoid:</td>
<td>Keep away from open flames, hot surfaces and sources of ignition. Do not puncture, crush or incinerate.</td>
</tr>
<tr>
<td>Materials to avoid:</td>
<td>No materials to be especially mentioned.</td>
</tr>
<tr>
<td>Hazardous decomposition products:</td>
<td>In case of open cells, there is the possibility of hydrofluoric acid and carbon monoxide release.</td>
</tr>
<tr>
<td>Possibility of Hazardous Reactions:</td>
<td>Will not occur</td>
</tr>
<tr>
<td>Additional information:</td>
<td>No decomposition if stored and applied as directed.</td>
</tr>
</tbody>
</table>

### SECTION 11. TOXICOLOGICAL INFORMATION

| Empirical data on effects on humans: | If appropriately handled and if in accordance with the general hygienic rules, no damages to health have become known. |

### SECTION 12. ECOLOGICAL INFORMATION

| Further information: | Ecological injuries are not known or expected under normal use. Do not flush into surface water or sanitary sewer system. |

### SECTION 13. DISPOSAL CONSIDERATIONS

| Advice on disposal: | For recycling consult manufacturer. |
| Contaminated packaging: | Disposal in accordance with local regulations. |

### SECTION 14. TRANSPORT INFORMATION

- The cells in these batteries have been tested and meet the requirements for the UN Manual of Tests and Criteria, Part III, subsection 38.3.

- When a number of batteries are transported by ship, vehicle and railroad avoid high temperature and dew condensation.

- Avoid transportation which may cause damage of package.

- Lithium-ion batteries are not subject to dangerous goods regulation for the purpose of transportation by the International Maritime Dangerous Goods regulations (IMDG). For Lithium-ion batteries, the Watt-hour rating is no more than 20Wh/cell and 100Wh/battery pack can be treated as "non-dangerous goods" by the United Nations Recommendations on the Transport of Dangerous Goods/Special Provision 188, provided that the products are prevented from being short-circuited with each other and are packaged in an appropriate condition which satisfies Packing Group II performance level.

- IATA (International Air Transport Association): Dangerous Goods Regulation Packing Instruction 965 (Lithium ion or lithium polymer cells and batteries without electronic equipment) went into effect April 1, 2016: Lithium ion cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity. UN 3480, PI 965, Section IA and IB and II will be restricted to carriage on cargo aircraft. All packages must bear the Cargo Aircraft Only label in addition to the other marks and labels required by the Regulations.
CONTINUED: SECTION 14. TRANSPORT INFORMATION:

TABLE 965-II

<table>
<thead>
<tr>
<th>Contents</th>
<th>Lithium-ion cells and/or batteries with a Watt-hour rating of 2.7 Wh or less</th>
<th>Lithium-ion cells with a Watt-hour rating of more than 2.7Wh but not more than 20Wh</th>
<th>Lithium-ion batteries with a Watt-hour rating of more than 2.7Wh but not more than 100Wh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of cells / batteries per package</td>
<td>No limit</td>
<td>8 cells</td>
<td>2 Batteries</td>
</tr>
<tr>
<td>Contents</td>
<td>Lithium-ion cells and/or batteries with a Watt-hour rating of 2.7 Wh or less</td>
<td>Lithium-ion cells with a Watt-hour rating of more than 2.7Wh but not more than 20Wh</td>
<td>Lithium-ion batteries with a Watt-hour rating of more than 2.7Wh but not more than 100Wh</td>
</tr>
<tr>
<td>Maximum net quantity per package</td>
<td>2.5 kg</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Lithium-ion cells and batteries meeting the requirements in this section are not subject to other additional requirements of these Regulations except for:

- Each cell and battery is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3;
  - cells and batteries must be manufactured under a quality management program;
  - for batteries, The Watt-hour rating must be marked on the outside of the battery case;
  - Each package must be capable of withstanding a 1.2m drop test in any orientation without:
    - damage to cells or batteries contained therein;
    - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
    - release of contents.
- Each package must be labeled with a lithium battery handling label.

Section IB requirements apply to lithium-ion cells with a Watt-hour rating not exceeding 20 Wh and lithium-ion batteries with a Watt-hour rating not exceeding 100 Wh packed in quantities that exceed the allowance permitted in Section II, Table 965-II.

Quantities of lithium-ion cells or batteries that exceed the allowance permitted in Section II, Table 965-II must be assigned to Class 9 and are subject to all of the applicable provisions of Regulation.

Even classified as lithium batteries packed with equipment (UN3481), IATA Dangerous Goods Regulations packing instruction 966 is applied.

Even classified as lithium batteries installed in equipment (UN3481), IATA Dangerous Goods Regulations packing instruction 967 is applied.

SECTION 15. REGULATORY INFORMATION

U.S. Regulations

National Inventory TSCA: All of the components are listed on the TSCA inventory.

SARA: To the best of our knowledge this product contains no toxic chemicals subject to the supplier notification requirements of Section 313 of the Superfund Amendments and Reauthorization Act (SARA/EPCRA) and the requirements of 40 CFR Part 372.

SECTION 16. OTHER INFORMATION

Hazardous Materials Information Label (HMIS)

Health: 0
CONTINUED: SECTION 16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>Flammability:</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Hazard:</td>
<td>0</td>
</tr>
</tbody>
</table>

NFPA Hazard Ratings

<table>
<thead>
<tr>
<th>Health:</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability:</td>
<td>0</td>
</tr>
<tr>
<td>Reactivity:</td>
<td>0</td>
</tr>
</tbody>
</table>

Unique Hazard:

Full text of R-phrases referred to under Sections 2 and 3

R10 Flammable.
R20/22 Harmful by inhalation and if swallowed.
R22 Harmful if swallowed.
R34 Causes burns.
R40 Limited evidence of a carcinogenic effect.
R43 May cause sensitization by skin contact.
R48/23 Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R49 May cause cancer by inhalation.
R50 Very toxic to aquatic organisms.
R53 May cause long-term adverse effects in the aquatic environment

Further Information

Data of Sections 4 to 8, as well as 10 to 12, do not necessarily refer to the use and the regular handling of the product (in this sense consult package leaflet and expert information), but to release of major amounts in case of accidents and irregularities. The information describes exclusively the safety requirements for the product(s) and is based on the present level of our knowledge. This data does not constitute a guarantee for the characteristics of the product(s) as defined by the legal warranty regulations. "(n.a. = not applicable; n.d. = not determined)"

The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor’s safety data sheet.