

### 1) CHEMICAL PRODUCT AND COMPANY NAME

## Lithium-Ion Rechargeable Battery Pack

# Material Safety

## Data Sheet

Complies with the OSHA Hazard  
Communication Standard :  
29 CFR 1910 1200

Makita U.S.A., Inc.  
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### 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

### 2) COMPOSITION, INFORMATION ON INGREDIENTS

The battery pack should not be opened or burned since the following ingredients contained within the cell that could be harmful under some circumstance if exposed or misused.

The cell contains neither metallic lithium nor lithium alloy

**Cathode:** Lithium Nickel Cobalt Oxides (active material)  
Polyvinylidene Fluoride (binder)  
Graphite (conductive material)

**Anode:** Graphite (active material)  
Polyvinylidene Fluoride (binder)

**Electrolyte:** Organic Solvent (non-aqueous liquid)  
Lithium Salt

**Others:** Heavy metals such as Mercury, Cadmium, Lead, and Chromium are not used in the cell.

**Enclosure:** Plastic (PC)

**UN number:** UN3480

**Watt-hour rating:** No more than 100Wh for each battery pack

### 3) HAZARD IDENTIFICATION

**Class Name:** Not applicable for regulated class

**Hazard:** It may cause heat generation or electrolyte leakage if battery terminals contact with other metals. Electrolyte is flammable. In case of electrolyte leakage, move the battery from fire immediately.

**Toxicity:** Vapor generated from burning batteries, may make eyes, skin and throat irritate.

#### 4) FIRST AID MEASURE

The product contains organic electrolyte. In case of electrolyte leakage from the battery, actions described below are required.

- Eye Contact:** Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing, and call a doctor. If appropriate procedures are not taken; this may cause an eye irritation.
- 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, and call a doctor.

#### 5) FIRE FIGHTING MEASURES

- Use specified extinguishers (gas, foam, powder) and extinguishing system under the Fire Defense Law.
- Since corrosive gas may be produced at the time of fire extinguishing, use an air inhalator when danger is predicted.
- Use a large amount of water as a supportive measure in order to get cooling effect if needed. (Indoor/outdoor fire hydrant)
- Carry away flammable materials immediately in case of fire.
- Move batteries to a safer place immediately in case of fire.

#### 6) ACCIDENTAL RELEASE MEASURES

- Wipe off with dry cloth
- Keep away from fire
- Wear safety goggles, safety gloves as needed

#### 7) HANDLING AND STORAGE

- Storage:** Store within the recommended limit of -30°C to 45°C (-22°F to 113°F), well-ventilated area. Do not expose to high temperature (60°C/140°F). Since short circuit can cause burn hazard or safety vent to open, do not store with metal jewelry, metal covered tables, or metal belt.
- Handling:** Do not disassemble, alter, or solder. Do not short + and - terminals with metal.  
Do not open the battery pack.
- Charging:** Charge within the limits of 0°C to 40°C (32°F to 104°F) temperature. Charge with specified charger designed for this battery pack
- Discharging:** Discharge within the limits of -20°C to 60°C (-4 °F to 140°F) temperature.
- Disposal:** Dispose in accordance with applicable federal, state and local regulations.
- Caution:** Do not incinerate. Do not disassemble.  
Do not expose to high temperatures. (140°F/60°C) Do not impact, pierce or crush the battery.  
Use specified charger only. Dispose of properly.

#### 8) EXPOSURE CONTROLS AND PERSONAL PROTECTION

(In case electrolyte is leaked from battery)

- Acceptable Concentration:** Not specified in ACGIH.
- Facilities:** Provide appropriate ventilation such as local ventilation system in the storage.
- Protective Clothing:** Gas mask for organic gases, safety goggle, safety glove.

## 9) PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** Lithium-ion rechargeable cells are set in a resin case.

## 10) STABILITY AND REACTIVITY

External short-circuit, deformation by crush, high temperature (over 100°C) exposure of the battery may cause generation of heat and ignition.

## 11) TOXICOLOGICAL INFORMATION

**Acute Toxicity:** No information as a battery

**Local Effects:** No information as a battery

## 12) ECOLOGICAL INFORMATION

If battery is buried in the ground, corrosion may occur on the outer plastic case of battery and the electrolyte may leak out. There is no information on environmental influence.

## 13) DISPOSAL CONSIDERATIONS

When battery is disposed, isolate positive (+) and negative (-) terminals of the battery to avoid those terminals from touching each other. Batteries may be short-circuited when piled up or mixed with the other batteries. Dispose in accordance with applicable federal, state and local regulations.

## 14) TRANSPORT INFORMATION

- 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)

Section II 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 within the allowance permitted in Section II, Table 965-11.

**COINTINUED: TRANSPORT INFORMATION**

**TABLE 965-II**

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

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.

**15) REGULATORY INFORMATION**

- IMDG Code: International Maritime Dangerous Goods (IMDG) Code 2012 Edition
- ICAO TI: International Civil Aviation Organization (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air 2013-2014 Edition
- IATA DGR: International Air Transport Association (IATA) Dangerous Goods Regulations 54th Edition

**16) OTHER INFORMATION**

The information contained within is provided for your information only. The information and recommendations set forth herein are made in good faith and are believed to be accurate as of the date of preparation. However, Makita U.S.A, Inc. MAKES NO WARRANTY, EITHER EXPRESSED OR IMPLIED, WITH RESPECT TO THIS INFORMATION AND DISCLAIMS ALL LIABILITY FROM RELIANCE ON IT.