

Celxpert Safety information for Lithium-Ion batteries

SECTION 1: IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY

PRODUCT NAME : Lithium Ion Rechargeable Battery Pack

CUSTOMER : Makita

CUSTOMER P/N :

CPT P/N : 912900042

MODEL NAME : BL1040B

DESCRIPTION : 3S2P SANYO 4.0Ah , 10.8V / 44Wh

MANUFACTURER : Celxpert(KunShan)Energy Co.,Ltd

ADDRESS : No1111.Hanpu Road .Hi-Tech industrial Park . kunshan. China

TELEPHONE : +86-512-57775999#2532

FAX : +86-512-5777-3839

SECTION 2: HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

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.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Battery Cell

HAZARDOUS INGREDIENTS	%	CAS NUMBER
Aluminum Foil	2-10	7429-90-5
Metal Oxide (proprietary)	20-50	

Polyvinylidene Fluoride (PVDF)	<5	24937-79-9
Copper Foil	2-10	7440-50-8
Carbon (proprietary)	10-30	7440-44-0
Electrolyte (proprietary)	10-20	
Stainless steel, Nickel and inert materials Remainder N/A	Remainder	N/A

Circuit Module

HAZARDOUS INGREDIENTS	%	CAS NUMBER
Lead	0.001	7439-92-1
Mercury	0	7439-97-6
Chromium	0	7440-47-3
Cadmium	0	7440-43-9
Plastic case and Si2O	0	N/A

Plastic Parts and Paints

HAZARDOUS INGREDIENTS	%	CAS NUMBER
Lead	<0.1	7439-92-1
Nickle	<0.01	7440-02-0
CFCs	0	75-69-4
Polychlorinated Biphenyls	0	1336-36-3

SECTION 4: FIRST AID MEASURES

INHALATION, EYE CONTACT, and SKIN CONTACT : Not a health hazard.

INGESTION

If swallowed, obtain medical attention immediately.

If exposure to internal materials within cell(pack) 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.

SECTION 5: FIRE- FIGHTING MEASURES

5.1 GENERAL HAZARD

Cell is not flammable but internal organic material will burn if the cell is incinerated. Combustion products include, but are not limited to hydrogen fluoride, carbon monoxide and carbon dioxide.

5.2 EXTINGUISHING MEDIA

Use extinguishing media suitable for the materials that are burning.

5.3 SPECIAL FIREFIGHTING INSTRUCTIONS

If possible, remove cell(s) from fire fighting area. If heated above 125°C, cell(s) can explode/vent.

5.4 FIREFIGHTING EQUIPMENT

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

SECTION 6: ACCIDENTAL RELEASE MEASURES**6.1 ON LAND**

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

6.2 IN WATER

If possible, remove from water and call local fire/police department.

SECTION 7: HANDLING AND STORAGE**7.1 HANDLING**

No special protective clothing required for handling individual cells.

7.2 STORAGE

Store in a cool, dry place.

SECTION 8: EXPOSURE CONTROLS//PERSONAL PROTECTION**8.1 ENGINEERING CONTROLS**

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

8.2 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 cells.

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

SECTION 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

SECTION 10: STABILITY AND REACTIVITY**10.1 REACTIVITY**

None

10.2 INCOMPATIBILITIES

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

10.3 HAZARDOUS DECOMPOSITION PRODUCTS

None during normal operating conditions. If cells are opened, hydrogen fluoride and carbon monoxide may be released.

10.4 CONDITIONS TO AVOID

Avoid exposure to heat and open flame. Do not puncture, crush or incinerate.

SECTION 11: TOXICOLOGICAL INFORMATION

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

Sensitization: NO Teratogenicity: NO Reproductive toxicity:NO Acute toxicity: NO

This product does not contain any kinds of the following substances and halogen-type flame retardants including Chlorine and Bromide type harmful flame retardants which are listed in Appendix of TCO documents and relevant international ECO requirements:

Polybromated Biphenyls (PBB)
Polybromated Diphenylethers (PBDE)
Polychlorinated Biphenyls (PCBs)
Polychlorinated Terphenyls(PCTs)
Polychlorinated Paphthalene(PCN)
Chlorinated Paraffins(C10-C13)
Chlorofluorocarbons(CFCs)
Polyvinyl Chloride(PVC)
Carbon Tetrachloride

None of the following substances will be exposed, leaked, or emitted during transportation, storage or any operation and any temperature condition:

Chlorinated Fluorohydrocarbon (FCKW)
Acrylonitrile
Styrol
Phenol
Benzol
Mercury of greater than 0.0001 wt% for alkaline battery
Mercury of greater than 0.0005 wt% for other battery
Lithium content of greater than 0.5g/battery cell
Cadmium, lead, and other harmful heavy metal

And will comply with the regulation of 49 CFR (DOT regulation), International Air Transport Association (IATA), and Deuche Forschungsgemeinschaft (DFG) regarding concentrations of emitted substances.

This product does not contain mercury and cadmium.

Mercury content: N/A

Cadmium content: N/A

If the cells are opened through misuse or damage, discard immediately. Internal components of cell are irritants and sensitizers.

SECTION 12: ECOLOGICAL INFORMATION

Some materials within the cell are bio-accumulative. Under normal conditions, these materials are contained and pose no risk to persons or the surrounding environment.

SECTION 13: DISPOSAL CONSIDERATIONS

CALIFORNIA REGULATED DEBRIS

RCRA Waste Code: Non regulated

Dispose of according to all federal, state, and local regulations.

SECTION 14: TRANSPORT INFORMATION

- The International Civil Aviation Organization (ICAO) Technical Instructions (2013-2014 Edition).
- The International Air Transport Association (IATA) Dangerous Goods Regulations (55th Edition, 2014). Packing instruction 965 Section IB or II for Lithium Ion battery.
- The International Maritime Dangerous Goods (IMDG) Code (2012 Edition) with special provision 188 & 230.
- US Hazardous Materials Regulations 49 CFR(Code of Federal Regulations)Sections 173-185 Lithium batteries and cells.
- The UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria 38.3 Lithium batteries, 5th revised edition(UN3480) .

SECTION 15: REGULATORY INFORMATION

OSHA hazard communication standard (29 CFR 1910.1200)

___ Hazardous

___V___ Non-hazardous

SECTION 16: OTHER INFORMATION

Package if damaged: do not load or transport.

Celxpert contact window: J.D. Chen

For more information,call 1-800-424-9300

SECTION 17: UN MANUAL OF TEST CRITERIA

All battery pack model pass UN383 test and drop test.

Item	Test Item	Test specification
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T1	Altitude Simulation (UN38.3-1)	1-1. All samples weight are measured. The voltage and internal resistance are measured and recorded. 1-2. All samples are put into the oven and evacuated to less than 11.6Kpa(8.7mmHg) for 6.5Hours at $20\pm5^{\circ}\text{C}$. Vacuum is released. All samples weight are measured. The charged packs voltage are measured and recorded.
Item	Test Item	Test specification
T2	Thermal test (UN38.3-2)	2-1. Packs are stored for 6 hours at $75\pm2^{\circ}\text{C}$, followed by storage for 6 hours at $-40\pm2^{\circ}\text{C}$. The maximum time interval between test temperature extremes is 30 minutes. 2-2.Repeat 2-1 for 10 times. Then store the packs at ambient for 24 hours. All packs weight are measured. The charged battery voltage are measured and recorded.
T3	Vibration test (UN38.3-3)	3-1. Packs are firmly secured to the platform of the vibration machine without distorting the packs in such a manner as to faithfully transmit the vibration. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 and 200 Hz and back to 7 Hz traversed in 15 minutes. This cycle shall be repeated 12 times for a total of 3 hours for each of 3 mutually perpendicular to the terminal face. 3-2. The logarithmic frequency sweep is as follows: 7-18 Hz → 1gn 18-50 Hz → 0.8mm amplitude 50-200 Hz → 8gn 3-3. All packs weight are measured. The charged packs voltage are measured and recorded.
T4	Shock test (UN38.3-4)	4-1. Packs shall be secured to the testing machine by means of a rigid mount which will support all mounting surfaces. 4-2. Packs shall be subjected to a half-sine shock of peak acceleration 150gn and pulse duration of 6 milliseconds. Each pack shall be subjected to 3 shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicularly mounting positions of the pack for a total of 18 shocks.
T5	Short Circuit Test (UN38.3-5,	5-1.Packs are placed in to a $55\pm2^{\circ}\text{C}$ oven, and exterior packs temperature are monitored 5-2.When packs exterior reach $55\pm2^{\circ}\text{C}$, they are shorted by connecting terminals with a copper wire of resistance less than 100 mOhm. 5-4. The short was continued for more than 1hour or the cell temperature return to 55°C. The packs are observed for a further 6 hours.
T6	Impact test (UN38.3-6)	6-1. The test sample is to be placed on a flat surface. A 15.8mm diameter bar is to be placed across the center of the sample. A 9.1 Kg mass is to be dropped from a height of $61\pm2.5\text{cm}$ onto the sample. 6-2. A cylindrical or prismatic cell is to be impacted with its longitudinal axis parallel to the flat surface.

T7	Overcharge test (UN38.3-7)	7-1. The charge current shall be twice the SPEC's recommended maximum continuous charge current. 7-2. The minimum voltage of the test shall be as follows: (a) When the SPEC's recommended charge voltage is not more than 18V, the minimum voltage of the test shall be the lesser of two times the maximum charge voltage of the battery or 22V. (b) When the SPEC's recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage. 7-3. Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours.
T8	Forced discharge test-cell only (UN38.3-8)	8-1. Ten rechargeable cells, at first cycle in fully discharged states 8-2. Ten rechargeable cells after fifty cycles ending in fully discharged states

Package Drop Test

Test specification: Height :120cm.