

## Section 1 Identification

1.1	Product Name	Superior Lithium Polymer Battery (SLPB)
1.2	Battery Type	Rechargeable Battery
1.3	Model	SLPB Series  SLPB473048H5    SLPB1203048H    SLPB503435H4    SLPB353452V SLPB433452    SLPB283452H    SLPB523459    SLPB483459H3 SLPB593459H3    SLPB393459H    SLPB393459H3    SLPB533459H4 SLPB983478    SLPB563496H5    SLPB693496H5    SLPB803496H5 SLPB903496H5    SLPB603870H    SLPB723870H4    SLPB554374H SLPB834374H    SLPB654374    SLPB6143128M    SLPB8043128H SLPB5043128H3    SLPB8643128H5    SLPB8643128H4    SLPB11043140H4 SLPB8043140H5    SLPB9543140H5    SLPB10843140H5    SLPB11543140H5 SLPB8643140H5    SLPB526495    SLPB776495    SLPB396495 SLPB486495    SLPB356495    SLPB626495    SLPB396495H SLPB50106100
1.4	Electrochemical System	Negative Electrode - Carbon  Positive Electrode - Lithium Cobalt Oxide (LiCoO <sub>2</sub> ), Lithium Nickelate (LiNiO <sub>2</sub> )  Electrolyte - Solution of lithium hexafluorophosphate (LiPF <sub>6</sub> ) in a mixture of organic solvent ethylene carbonate + Ethyl methyl carbonate
1.5	Manufactured by	Kokam Co., Ltd  [Head office] 30-78, Gyeongsu-daero 1220beon-gil, Jangan-gu, Suwon-si, Gyeonggi-do, Republic of Korea, ZIP 16201 [Factory] 19, Gayagongdan-gil, Gayagok-myeon, Nonsan-si, Chungcheongnam-do, Republic of Korea, ZIP 32020
1.6	Emergency Situation	For Hazardous Materials [or Dangerous Goods] Incident  Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: +1-703-741-5970 CCN200262 Outside USA and Canada: +1 703-527-3887 (collect calls accepted)
1.7	Technical Information	+82-31-362-0100 or + 82-41-740-3800
1.8	Date of Prepared	August 21, 2006
1.9	Revision Date	March 16, 2018

## Section 2 Hazard(s) Identification

- 2.1 Classification of the substance or mixture; No classification according to EU CLP regulation, since the product is legally an article rather than chemical substance which is subject to EU CLP and/or to 67/548/EEC.
- 2.2 There is no hazard when the measures for handling and storage are followed.
- 2.3 In case of cell damage, possible release of dangerous substances and a flammable gas mixture.

## Section 3 Composition/Information on Ingredients

Chemical Name	CAS Number	% Content
Lithium Nickelate (LiNiO <sub>2</sub> ) Lithium Cobalt Oxide (LiCoO <sub>2</sub> ) Aluminium Oxide (Al <sub>2</sub> O <sub>3</sub> )	12031-65-1 12190-79-3 1344-28-1	20 ~ 50
Carbon (Graphite, Proprietary)	7782-42-5	15 ~ 35
PVDF (1,1-Difluoroethene homopolymer; Poly(vinylene fluoride))	24937-79-9	< 8
Aluminum Foil	7429-90-5	3 ~ 12
Copper Foil	7440-50-8	3 ~12
Electrolyte	EC: 96-49-1, EMC: 623-53-0 LiPF <sub>6</sub> : 21324-40-3	10 ~20
Al Film Cover	n/a	< 5

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## Section 4 First-Aid Measures

In the event of battery rupture or explosion, evacuate personnel from contaminated area and provide maximum ventilation to clear out fumes/gases. In all cases, seek immediate medical attention.

- 4.1 Eye Contact Flush with plenty of water (eyelids held open) for at least 15 minutes.
- 4.2 Skin Contact Remove all contaminated clothing and flush affected areas with plenty of water and soap for at least 15 minutes. Do not apply grease or ointments.
- 4.3 Ingestion Dilute by drinking plenty of water and seek immediate medical attention. If substances are swallowed, be sure that aspiration of

vomit does not occur. Ensure that mucus does not obstruct the airway. Do not prescribe oral medication/aid to an unconscious person.

#### 4.4 Inhalation

Ventilate the contaminated area and evacuate affected personnel. Provide oxygen or artificial respiration, if necessary.

## Section 5 Fire-Fighting Measure

### 5.1 Fire and Explosion Hazards

The battery can leak and/or release vaporized or decomposed and combustible electrolyte fumes when exposed to temperatures above 60°C when improperly handled; or due to the environment. Cells or batteries may flame or leak potentially hazardous vapors if exposed to excessive heat or fire. Fire, excessive heat, or over voltage can potentially be hazardous and lead to decomposition of products. Damaged or opened cells or batteries can result in rapid heating and the release of flammable vapors. Vapors may be heavier than air and may travel on ground or be moved by ventilation to an ignition source and flash back. Use a positive pressure self-contained breathing apparatus if batteries are contained in a fire. Full protective clothing is necessary. During water application, caution is advised as burning pieces of flammable particles may be ejected from the fire.

### 5.2 Extinguishing Media

Suitable: CO<sub>2</sub>, Water, Dry chemical or Foam extinguishers or Type D extinguishers

### 5.3 Special Exposure Hazards

If cells overheat due to an external source or improper use, electrolyte leakage or battery container rupture may occur and release inner component/material in the environment.

#### 5.3.1 Eye Contact

The electrolyte solution contained in the battery is an irritant and can damage ocular tissues.

#### 5.3.2 Skin Contact

The electrolyte solution contained in the battery causes skin irritation.

#### 5.3.3 Ingestion

The ingestion of electrolyte solution causes tissue damage to throat and gastro/respiratory tract.

#### 5.3.4 Inhalation

Contents of a leaking or ruptured battery can cause respiratory tract mucus, membrane irritation and edema.

### 5.4 Special Protective Equipment

Use self-contained breathing apparatus to avoid breathing irritant fumes. Wear protective clothing and wash the body with an electrolyte solution.

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## Section 6 Accidental Release Measure

The material contained within the batteries can only be expelled under abusive conditions. Using a shovel or broom cover the battery or expelled substances with dry sand or vermiculite. Place the battery in a separate container (after cooling, if necessary) and dispose in accordance with local regulations.

## Section 7 Handling and Storage

Batteries should not be disassembled, destroyed or incinerated as they may leak, rupture and release chemicals into the environment.

### 7.1 Handling

Batteries are designed to be recharged. However, improperly charging a cell or battery may cause the cell or battery to ignite. Use only approved chargers and follow standard operating procedures. Never disassemble a battery or bypass any safety device. Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods. Do not directly heat or solder. Do not throw into fire. Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in non conductive (i.e. plastic) trays.

### 7.2 Storage

Do not store batteries above 60°C. Store batteries in a cool (below 25°C), dry area that is subject to little temperature change. Elevated temperatures can result in reduced battery service life. Do not store batteries in a manner that allows terminals to short circuit. Extended short-circuiting creates high temperatures in the cell. High temperatures can cause skin irritation or cause the cell to flame. Avoid reversing battery polarity within the battery assembly. Doing so may cause the cell to ignite or to leak. Do not place batteries near heating equipment, or expose to direct sunlight for long periods.

### 7.3 Other

Follow the manufacturer's recommendations regarding maximum recommended currents and operating temperature range. Applying pressure to the battery may cause disintegration, releasing irritant materials that are hazardous to the eye, skin, and throat.

## Section 8 Exposure Controls and Personal Protection

No engineering controls are required for handing batteries that have not been damaged.

### 8.1 Respiratory Protection

It is not necessary under normal use. In event of battery rupture, use self-contained full-face respiratory equipment.

### 8.2 Hand Protection

It is not necessary under normal use. Use gloves when handling a leaking or ruptured battery.

### 8.3 Eye Protection

It is not necessary under normal use. Wear safety goggles/glasses with side shields if handling a leaking or ruptured battery.

- 8.4 Skin Protection It is not necessary under normal use. Use rubber protective working when handling of a ruptured battery.

## Section 9 Physical and Chemical Properties

- 9.1 State Solid
- 9.2 Odor n/a
- 9.3 PH n/a
- 9.4 Vapor pressure n/a
- 9.5 Vapor density n/a
- 9.6 Boiling point n/a
- 9.7 Solubility in water Insoluble
- 9.8 Specific gravity n/a
- 9.9 Density n/a

## Section 10 Stability and Reactivity

- 10.1 Conditions to avoid :
- Heat above 60°C
  - Deform, mutilate, crush, pierce, disassemble
  - Short circuit
  - Prolonged exposure to humid conditions
- 10.2 Materials to avoid : n/a
- 10.3 Hazardous Decomposition Products; None(during normal operating conditions). If cells are opened, hydrogen fluoride(HF) and carbon monoxide(CO) may be released.

## Section 11 Toxicological Information

- 11.1 Irritancy The electrolytes contained in this battery can irritate eyes with any direct contact. Prolonged contact with the skin or mucous membranes may cause irritation.
- 11.2 Sensitization No information is available at this time.
- 11.3 Carcinogenicity No information is available at this time.
- 11.4 Reproductive toxicity No information is available at this time.

- 11.5 Teratogenicity No information is available at this time.
- 11.6 Mutagenicity No information is available at this time.

## Section 12 Ecological Information

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

## Section 13 Disposal Consideration

- 13.1 Dispose in accordance with applicable regulations according to country (in most countries, the disposal of used batteries is forbidden and the end-users are invited to dispose them properly, eventually through not-for-profit or profit organizations, mandated by the local government or organized on a voluntary basis by professionals).
- 13.2 Batteries should be completely discharged prior to disposal and/or the terminals taped or capped to prevent short circuit. When completely discharged, it is not considered hazardous.
- 13.3 This product does not contain any materials listed by the United State EPA as requiring specific waste disposal requirements. These are exempted from the hazardous waste disposal standards under Universal Waste Regulations. Disposal of large quantities of Lithium-ion batteries or cells may be subject to federal, state, or local regulations.
- 13.4 Consult your local, state and provincial regulations regarding disposal of these batteries.

## Section 14 Transporting Product

- 14.1 United Nations
- UN 3480
  - Class 9
  - Proper shipping name: LITHIUM ION BATTERIES
- 14.2 International Conventions
- 14.2.1 ADR/RID – Carriage by rail / road
- UN 3480
  - Class 9
  - Proper shipping name : LITHIUM ION BATTERIES
  - Packing instruction : P903
- 14.2.2 IMDG – Transportation at sea
- UN 3480
  - Class 9
  - Proper shipping name : LITHIUM ION BATTERIES
  - Packing instruction : P903

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- Emergency Schedule : F-A, S-I
- Marine pollutant : No

#### 14.2.3 IATA – Transportation by air

- UN 3480
- Class 9
- Proper shipping name : LITHIUM ION BATTERIES
- Packing instruction : 965 Section IB

#### 14.2.4 USA Code of Federal Regulation

- 49 CFR Ch.1 § 173-185
- Label



## Section 15 Regulatory Information

- 15.1 The transport of rechargeable Lithium-ion batteries are regulated by the United Nations as detailed in the “UN Recommendations on the Transport of Dangerous Goods – Model Regulations, ST/SG/AC.10/1/19(2015)”. Batteries conform to “UN Recommendations on the Transport of Dangerous Goods - Manual of Tests and Criteria, ST/SG/AC.10/11/Rev.6, Chapter 38.3”.

## Section 16 Other Information

- 16.1 This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (ether expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein.
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