

## Section 1 Identification

1.1	Product Name	Superior Lithium Polymer Battery (SLPB) in Pack
1.2	Battery Type	Rechargeable Battery
1.3	Description	Lithium Cobalt Manganese Nickel Oxide
1.4	Model	SLPB Series
1.5	Electrochemical System	Negative Electrode - Carbon  Positive Electrode - Lithium Cobalt Manganese Nickel Oxide (LiMnNiCoO <sub>2</sub> )  Electrolyte - Solution of lithium hexafluorophosphate (LiPF <sub>6</sub> ) in a mixture of organic solvent ethylene carbonate + ethyl methyl carbonate
1.6	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
1.7	Emergency Situation	For Hazardous Materials [or Dangerous Goods] Incident  Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: +1-800-424-9300 CCN200262 Outside USA and Canada: +1 703-741-5970 (collect calls accepted)
1.8	Technical Information	+82-31-362-0100 or + 82-41-740-3800
1.9	Date of Prepared	April 18, 2017
1.10	Revision Date	

## 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	ACGIH TLV	% Content
Lithium Cobalt Manganese Nickel Oxide(LiMnNiCoO <sub>2</sub> )	182442-95-1	0.02mg/m <sup>3</sup> as Co 0.2mg/m <sup>3</sup> as Mn 0.2mg/m <sup>3</sup> as Ni	20-50
Carbon (Graphite, Proprietary)	7782-42-5	2mg/m <sup>3</sup> (R)	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

### 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.

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## Section 8 Exposure Controls and Personal Protection

No engineering controls are required for handling 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 3481
- Class 9
- Proper shipping name: LITHIUM ION BATTERIES

### 14.2 International Conventions

#### 14.2.1 ADR/RID – Carriage by rail / road

- UN 3481
- Class 9
- Proper shipping name : LITHIUM ION BATTERIES
- Packing instruction : P903

#### 14.2.2 IMDG – Transportation at sea

- UN 3481
- Class 9
- Proper shipping name : LITHIUM ION BATTERIES
- Packing instruction : P903
- Emergency Schedule : F-A, S-I
- Marine pollutant : No

#### 14.2.3 IATA – Transportation by air

- UN 3481
- Class 9
- Proper shipping name : LITHIUM ION BATTERIES
- Packing instruction : 966 Section I

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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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