Material Safety Data Sheet

▯ MSDS No. HE-190213-01

MODEL : LIP306B

SECTION 1[Identification: Product identifier and chemical identity]

Chemical Products

Item	Li-ion Battery Pack	
Product Identification	LIP306B	AEC405396MS
Nominal Voltage	3.7V	1S
Nominal Capacity	6.3Ah	3P
Wh-Capacity	23.31 Wh (for Pack)	

Company Identification

Manufacturer	Hi-end
Address	#502, 464, Dunchon-daero, Jungwon-gu, Seongnam-si, Gyeonggi-do, Republic of Korea E-mail: seungsky80@naver.com
Emergency Telephone No.	82-31-731-7445
Telephone No. for Information	82-31-731-7446
Date Prepared	2019. 02. 13

SECTION 2 [Hazard(s) IDENTIFICATION]

Substance or mixture in polymer Li-ion cell:

Aluminum(Al)

Nickel(Ni)

Copper(Cu)

Lithium Cobaltate(LiCoO2)

Graphite

Electrolyte : Lithium hexafluorophosphate; Solvent

Substances above are not on the list of SVHC and are non-hazardous. SVHC29

SECTION 3 [Composition and information on ingredients]

Ingredient Name		Composition Material	CAS No.	Concentration
Energy Value		…	…	7.77 Wh/pcs
Equivalent Max Lithium Content		…	…	0.63 g/pcs
Positive	Tab	Aluminum(Al)	7429-90-5	0.12%
		Polypropylene	9003-07-0	0.03%
	Slurry	Li(NiCoMn)O2	…	38.23%
		NMP	872-50-4	1.51%
	Aluminum(Al)		7429-90-5	4.81%
Negative	Tab	Nickel(Ni)	7440-02-0	0.41%
		Polypropylene	9003-07-0	0.03%
	Slurry	Graphite	7782-42-5	22.43%
		Carbon black	1333-86-4	1.18%
	Cu		7440-50-8	8.43%
Septum (PP/PE)		PP	9003-07-0	0.00%
		PE	9002-88-4	3.05%
		Aluminum(Al)	7429-90-5	1.54%
		Polypropylene	9003-07-0	0.58%
		O-Ny	24937-16-4	0.96%
		lithium Salt	21324-40-3	2.19%
		Solvent	confidetial	14.44%
		Polyimide PI	25038-81-7	0.05%
		Silicone	63148-58-3	0.02%
Inert components			…	balance

SECTION 4 [First- Aid Measures]

- Inhalation: Make the victim blow his/her nose, gargle.Seek medical attention if necessary
- Skin contact: Remove contaminated clothes and shoes immediately. Immediately wash extraneous matter or contact region with soap and plenty of water.
- Eye contact: Do not rub eyes. Immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention.

A battery cell and spilled internal cell materials

- Ingestion: Make the victim vomit. Immediately seek medical attention.

SECTION 5 [Fire-fighting measures]

・ Suitable extinguishing media: Plenty of water, carbon dioxide gas,nitrogen gas, chemical powder fire extinguishing medium and fire foam.

Specific hazards: Corrosive gas may be emitted during fire.

simultaneously, take fire extinguishing method which corresponds to the combustibles.

Extinguish a fire from the windward as much as possible.

・ Special protective equipment for firefighters. Respiratory protection:Respiratory equipment of a gas cylinder style or protection-against-dust mask. Hand protection: Protective gloves. Eye protection: Goggle or protective glasses designed to protect against liquid splashes. Skin and body protection: Protective clothes.

SECTION 6 [Accidental release measures]

Emergency Procedures

Minor Spills of Cell Materials

・Remove all ignition sources.

・Clean up all spills immediately.

・Avoid contact with skin and eyes.

・Control personal contact by using protective equipment.

・Use dry clean up procedures and avoid generating gas or volatile.

・Ventilate the storage area.

・Discharge the cell to Zero Voltage by a over 5 Ohm resistance, before place into waste container.

・Place in a suitable labeled container for waste disposal.

Major Spills of Cell Materials

・Clean up all spills immediately.

・Wear protective clothing, safety glasses, dust mask, gloves.

・Secure load if safe to do so. Collect recoverable product.

・Use dry clean up procedures and avoid generating gas or volatile.

・Ventilate the storage area.

・Discharge the cell to Zero Voltage by a over 5 Ohm resistance, before place into waste container.

・Collect remaining material in containers with covers for disposal.

・Flush spill area with water.

Protective Actions for Spill

SECTION 7 [Handling and storage, including how the chemical may be safely used]

Steps to be Taken in Case Material is Released or Spilled : The preferred response is to leave the area and allow the batteries to cool and the vapors to dissipate. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate

Waste Disposal Method: Open cells should be disposed of in accordance with local regulations

Precautions to be Taken in Handling and Storing: Avoid mechanical or electrical abuse. Batteries may explode or causeburns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

Storage: Avoid direct sunlight, high temperature, high humidity.Store in cool place (emperature:-20 ~ 45℃,humidity:45 ~ 85%)

SECTION 8 [Exposure controls and personal protection]

Personal protective equipment

Respiratory protection: Respirator with air cylinder, dust mask

Hand protection: Protective gloves

Eye protection:Goggle or protective glasses designed to protect against liquid splashes

Skin and body protection: Working clothes with long sleeve and long trousers

SECTION 9 [Physical and chemical properties]

Appearance

Physical state : Solid,

Form : Geometric solid

Color: Metallic color :

Odor: No odor :

• pH: NA pH : NA

• Specific temperatures/temperature ranges at which changes in physical state occur. There is no useful information for the product as a mixture.

• Flash point: NA : NA

• Explosion properties: NA : NA

• Density: NA : NA

• Solubility, with indication of the solvent(s): Insoluble in water

SECTION 10 [Stability and reactivity]

Stability:Stable under normal conditions of use

Conditions to Avoid: Hazardous reactions occurring under specific conditions

• Conditions to avoid: When cell is exposed to an external short-circuit, crushes, deformation, high temperature above 100 degree C, it will cause heat generation and ignition. Avoid direct sunlight and high humidity.

• Materials to avoid: Conductive materials, water, seawater, strong oxidizers and strong acids.

• Hazardous decomposition products: Acrid or harmful gas is emitted during fire.

SECTION 11 [Toxicological information]

Lithium cobalt Oxide - LiCoO2

・ Acute toxicity: No applicable data.

Reference : cobalt: LDLo, oral - Guinea pig 20mg/kg

・ Local effects: Unknown.

・ Sensitization: The nervous system of respiratory organs may be stimulated sensitively.

・ Chronic toxicity/Long term toxicity:

By the long-term inhalation of coarse particulate or vapor of cobalt, it is possible to cause the serious respiratory-organs disease. Skin reaction or a lung disease for allergic or hypersensitive person may be caused.

・ Skin causticity: Although it is very rare, the rash of the skin and allergic erythema may result.

Manganese

・ When manganese's concentration is 0.1 mg/L in water, make BOD5 reduced

・ Mainly for chronic poisoning,damage to the central nervous system especially extrapyramidal system

LD50 : 9000 mg/kg(through the rats mouth),LC50 : No data

・ LD50 : 9000 mg/kg, LC50 :

Aluminum

・ Local effects: Aluminum itself has no toxicity. When it goes into a wound, dermatitis may be caused.

・ Chronic toxicity/Long term toxicity: By the long-term inhalation of coarse particulate or fume, it is possible to cause lung damage (aluminum lungs).

Copper

• Acute toxicity: 60-100mg sized coarse particulate causes a gastrointestinal disturbance with nausea and inflammation. TDLo, hypodermic - Rabbit 375mg/kg

• Local effects:

Coarse particulate stimulates nose and tracheal. When it goes into one's eyes, reddening and pain may occur.

• Sensitization: Sensitization of the skin may be caused by long-term or repetitive contact.

• Reproductive toxicity: TDLo, oral - Rat 152mg/kg Nickel

• Local effects: Through the pores and sebaceous glands penetrate into the skin, causing skin allergies inflammation, Its clinical manifestations is dermatitis and eczema

Graphite

• Acute toxicity: Unknown.

• Local effects: When it goes into one's eyes, it stimulates one's eyes; conjunctivitis, thickening of corneal epithelium or edematous inflammation palpebra may be caused.

• Chronic toxicity/Long term toxicity: Long-term inhalation of high levels of graphite coarse particulate may cause lung disease or a tracheal disease.

Carcinogenicity:

Graphite is not recognized as a cause of cancer.

Organic Electrolyte

Acute toxicity:

LD50, oral - Rat 2,000mg/kg or more, 2,000mg/kg

60-100

• Local effects: Unknown.

• Skin irritation study: Rabbit - Mild

• Eye irritation study: Rabbit - Very severe

SECTION 12 [Ecological information]

Marine Pollutant: Not Determined

No data for Polymer Lithium-ion Battery.

Kindly Reminder :

• Disallow material discharge or abandon a natural environment that have no government's permission .

• The lithium ion battery disposal must, in accordance with professional treatment : Enterprise treat hazardous waste and transport the waste must accord with the gove-rnment and local government requirements, Don't allow individuals to burn the battery.

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 rechargeable Lithium-Ion battery pack as stated in Appendix are made in compliance to the requirements stated in the latest edition of the IATA Dangerous Goods Regulations Packing Instruction 966 sectionI such that they can be transported as a DANGEROUS goods. However, if those lithium-ion battery packs are contained in an equipment, then it is the responsibility of the shipper to ensure that the consignment are packed in compliance to the latest edition of the IATA Dangerous Goods Regulations section II of either Packing Instruction 966 or 967 in order for that consignment to be declared as NOT RESTRICTED (non-hazardous/non-Dangerous).
With regard to transport, the following regulations are cited and considered:
- The International Civil Aviation Organization (ICAO) Technical Instructions, Packing Instruction 965, Section II (2013-2014 Edition),
- The International Air Transport Association (IATA) Dangerous Goods Regulations, Packing Instruction 965, Section II (55th Edition, 2014)
- The International Maritime Dangerous Goods (IMDG) Code (2012 Edition),
- US Harzardous 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, Rev.5, Amend.1
- UN3480, P.I. 965(Lithium Ion Battery only)
- UN3481, P.I. 966(Lithium Ion Batteries packed with equipment)
- Un3481, P.I 967(Lithium Ion Batteries contained in equipment)
Our products are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to all the applicable international and national governmental regulations, not limited to the above mentioned. We further certify that the enclosed products have been tested and fulfilled the requirements and conditions in accordance with UN Recommendations (T1 – T8) on the Transport of Dangerous Goods Model Regulations and the Manual of Testes and Criteria that can be treated as “Non-Dangerous
Test Results of the UN Recommendation on the Transport of Dangerous Goods.

Manual of Test and Criteria(38.3 Lithium battery)

No.	Test Item	Test Results	Remark
T1	Altitude Simulation	Passed	
T2	Thermal Test	Passed	
T3	Vibration	Passed	
T4	Shock	Passed	
T5	External Short Circuit	Passed	
T6	Impact	Passed	
T7	Overcharge	Passed	for pack only
T8	Forced Discharge	Passed	for cell only

SECTION 15 [Regulatory information]

OSHA hazard communication standard (29 CFR 1910.1200)

☐Hazardous ■ Non- hazardous

SECTION 16 [Any other relevant information]

CLASS 9 – MISCELLANEOUS DANGEROUS GOODS

Miscellaneous dangerous goods are substances and articles which during transport present a danger or hazard not covered by other classes. This class encompasses, but is not limited to, environmentally hazardous substances, substances that are transported at elevated temperatures, miscellaneous articles and substances, genetically modified organisms and micro-organisms and (depending on the method of transport) magnetized materials and aviation regulated substances.

Remark.

The batteries are safe for transportation, and it is advised to use dry power fire extinguisher in case of explosion or inflammation