



## Disposal

P413 Store bulk masses greater than 10kg / 22lbs at temperatures not exceeding 40°C / 104°F

P420 Store away from other materials

P510 Dispose of contents/container according to regulations.

**C. Other hazards (according to the NFPA Rating System)**

Health	1
Flammability	1
Reactivity	0

**3. Composition & Information on Ingredients**

Chemical Identity	Common Name	CAS Number	% Volume
Lithium Cobaltite(LiCoO <sub>2</sub> )	-	12190-79-3	25~30%
Graphite Powder	-	7440-44-0	10~15%
Copper Foil	-	7440-50-8	15~20%
Aluminum Foil	-	7429-90-5	4~6%
LiPF <sub>6</sub>	-	21324-40-3	3~5%
Ethylene glycol carbonate PP or PE	-	96-49-1 /	10~15%

**4. First Aid Measures**

<b>A. Eyes</b>	N/A
<b>B. Skin</b>	N/A
<b>C. Inhalation</b>	N/A
<b>D. Ingestion</b>	N/A
<b>E. Notes to Physicians</b>	N/A

**5. Fire Fighting Measures****A. Appropriate Extinguishing Media**

Use extinguishing media suitable for the materials burning in fire.  
(Foam dry powder, carbon dioxide(CO<sub>2</sub>), sand)

**B. Specific hazard arising from the chemical**

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.

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

**C. Special protective equipment & Precautions for firefighters**

Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear. Stay away in a safe distance from the fire while extinguishing.

**6. Accidental Release Measures**

**A. Protective equipment & Emergency procedures**

Give special attention to chemical materials and conditions that must be avoided.

**B. Environmental precautions**

Prevent the inflow of this product to waterways, drains, basements, and confined spaces.

**C. Purification / Removal Method**

Dispose of the product as medical waste.

**7. Handling & Storage****A. Safe handling**

Follow all prevention measures on the SDS/labels.

Handle and store with care.

Give special attention to chemical materials and conditions that must be avoided.

Wear personal protective equipment while handling the product.

**B. Conditions for Safe Storage**

Keep in a dry, cool and well-ventilated place, preferably in the temperature range of +5 to +25C at 65% ( $\pm 5\%$ ) relative humidity.

Keep away from heat and sources of ignition.

Keep away from water

Ensure battery terminals are protected during storage. Store in a cool, dry place.

**8. Exposure control & Personal protection**

<b>A. Exposure Limits for Chemical Substances &amp; Biological Exposure Limits</b>	N/A
<b>B. System Design (Proper Engineering Controls)</b>	N/A
<b>C. Personal protective equipment</b>	Not required under normal use.
Respiratory protection	N/A
Eye protection	N/A
Hand protection	N/A
Skin & body protection	N/A

**9. Physical & Chemical Properties****A. Appearance**

Physical state

Color

Solid

Blue

**B. Odor**

Odorless

**C. Odor threshold value**

N/A

**D. pH**

N/A

**E. Melting point/Freezing point**

N/A

**F. Initial boiling point & Boiling range**

N/A

**G. Flash point**

N/A

**H. Evaporation rate**

N/A

**I. Flammability (solid, gas)**

N/A

**J. Maximum / minimum of the flammable or explosive limits**

N/A

**K. Vapor pressure**

N/A

**L. Solubility**

Insoluble

**M. Vapor density**

N/A

**N. Relative density**

N/A

**O. Partition coefficient: n-Octanol/water**

N/A

<i>P. Auto-ignition temperature</i>	N/A
<i>Q. Decomposition temperature</i>	N/A
<i>R. Viscosity</i>	N/A
<i>S. Molecular weight</i>	N/A

## 10. Stability & Reactivity

<i>A. Chemical stability &amp; Possibility of hazardous reactions</i>	Stable under normal conditions.
<i>B. Conditions to avoid</i>	Avoid heat and open flame. Do not puncture, crush or incinerate.
<i>C. Incompatible materials</i>	Exposure to moisture.
<i>D. Hazardous decomposition or byproduct</i>	None during normal operating conditions. If cells are opened, hydrogen fluoride and carbon monoxide may be released.

## 11. Toxicological Information

<i>A. Possible routes of exposure</i>	N/A
<i>B. Information on harmful health effects</i> (Symptoms related to the physical, chemical and toxicological characteristics)	
<b>Acute toxicity</b>	
Oral	N/A
Dermal	N/A
Inhalation	N/A
2. H Skin corrosion/Irritation	N/A
Serious Eyes damage/Irritation	N/A
4. F Respiratory sensitization	N/A
Skin sensitization	N/A
Carcinogenicity	N/A
Industrial Safety and Health Act	N/A
Notification of the Ministry of Employment and Labor	N/A
IARC	N/A
OSHA	N/A
ACGIH	N/A
NTP	N/A
EU CLP	N/A
Germ cell mutagenicity	N/A
Reproductive Toxicity	N/A
Specific Target Organ Toxicity (Single Exposure)	N/A
Specific Target Organ Toxicity (Repeated Exposure)	N/A
Aspiration Toxicity	N/A

## 12. Ecological information

<i>A. Ecotoxicity</i>	
Fish	N/A
Shellfish	N/A
Birds	N/A
<i>B. Persistence &amp; Degradability</i>	
Persistence	N/A
Degradability	N/A

**C. Bioaccumulative potential**

Accumulation N/A

Biodegradability N/A

**D. Mobility in soil**

N/A

**E. Other adverse effects**

N/A

**13. Disposal Considerations****A. Product Disposal**

If stated in the Wastes Control Act, dispose of the contents and container accordingly.

**B. Precautions for Disposal**

Dispose of the content according to the related regulations.

**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 965 section II such that they can be transported as a NOT RESTRICTED (non-hazardous/non-dangerous) goods. However, if those lithium-ion battery packs are pack with or 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 (2011-2012 Edition),
- The International Air Transport Association (IATA) Dangerous Goods Regulations (52nd Edition, 2011)
- The International Maritime Dangerous Goods (IMDG) Code (2010 Edition),
- US Hazardous Materials Regulations 49 CFR (Code of Federal Regulations) Sections 173-185 Lithium batteries and cells, *Measures*
- The UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria 38.3 Lithium batteries, 5th revised edition
- UN No. 3480

**15. Regulatory Information****A. Regulations according to the Industrial Safety and Health Act**

N/A

**B. Regulations according to the Toxic Chemicals Control Act**

N/A

**C. Regulations according to the Safety Control of Dangerous Substances Act**

N/A

**D. Regulations according to the Safety Wastes Control Act**

N/A

**E. Other regulations according to domestic and foreign laws**

- Follow the regulations of the KFDA (Korea Food & Drug Administration).
- Follow the regulations of the Directive 93/42/EEC and 2007/42/EC.

**16. Other Information****A. Source of Data**

N/A

**B. Date of Creation**

06 / 15 / 2015

**C. Revision Number and Revision Date**

Revision Number

2

Date of Last Revision

03 / 28 / 2017

**E. Other Information**

N/A

This SDS is taken from raw material SDS and manufacturer's knowledge and experience. It is intended to describe our products from the point of view of safety requirements and is not intended to guarantee any particular properties.