SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT AND MANUFACTURER INFORMATION

Date of issue ： 2018/05/04
IDENTITY *(As Used on label and list)*
Product name: Lithium Ion and Polymer Cells
Common Name: Lithium Ion Cell/Lithium Polymer Cell
Chemical System: LiCoO2/C
Model: All rechargeable Lithium Ion and Polymer Batteries

Manufacturer Name:
Company name: Expocell Group Inc.
Tel: 909-923-0872 (USA) Fax: 909-923-0874 (USA)
Address: USA - 2002 E Locust Ct. Ontario, California 91761 USA
China - XINQING TECHNOLOGY PARK, ZHUFENG AVENUE, JING AN TOWN, DOUMEN DISTRICT, ZHUHAI CITY, GUANGDONG PROVINCE, PRC

SECTION 2. HAZARDS IDENTIFICATION

Routes of Entry:
Inhalation: Yes Skin: Yes Eye: Yes Ingestion: Yes

Inhalation: The steam of the electrolyte can cause respiratory irritation.
Skin contact: The steam of the electrolyte can cause skin irritation.
Eye contact: The steam of the electrolyte can cause eye irritation. Sore and inflammation of the eyes may occur.
Ingestion: If the battery case is breached in the digestive tract, the electrolyte may cause localized burns.

Health Hazards (Acute and Chronic):
For the battery cell, chemical materials are stored in a hermetically sealed aluminum laminate case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials leakage.

However, if exposed to a fire, added mechanical shocks, decomposed, or added electric stress by misuse the cell case will be breached and hazardous materials may be released. Moreover, if heated strongly by the surrounding fire, acrid gas may be emitted.

Carcinogenicity:
NTP: None **IARC Monograph:** None **OSHA Regulated**: None
Medical Conditions Generally Aggravated by Exposure: An acute exposure will not generally aggravate any medical condition.
Specific hazards: Hydrogen fluoride gas/hydrofluoric acid may be produced as combustion by-product during fire.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS:

Active Materials:	**Approximate Percent of Total Weight (%)**	**CAS No:**
Lithium Cobalt Oxide ($LiCoO_2$)	48	12190-79-3
Graphite (C)	21.2	7782-42-5
Organic Electrolyte:	15.7	
LiPF6 (F6LiP)		21324-40-3
PC (（$C_{15}H_{16}O_2.CH_2O_3$)x)		25037-45-0
EMC ($C_4H_8O_3$)		623-53-0
DEC ($C_5H_{10}O_3$)		105-58-8

Passive Materials:	**Approximate Percent of Total Weight (%)**	**CAS No:**
Polypropylene (C_3H_6)	0.8	9003-07-0
Copper (Cu)	8.7	7440-50-8
Aluminum (Al)	5.6	7429-90-5

Weight of metallic lithium per cell: 0g. There is no metallic lithium in the lithium polymer battery.
The lithium polymer battery is with a Watt-hour rating ≤ 20 Wh/Cell (cell), ≤ 100 Wh (battery pack).

SECTION 4. FIRST AID MEASURES

Inhalation contact: Remove from exposure and move to fresh air immediately. Use Oxygen if available. Seek medical attention if necessary.

Skin contact: Flush immediately with plenty of water

Eye contact: Do not rub eyes. Immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention.

Ingestion: Immediately seek medical attention.

SECTION 5 FIRE-FIGHTING MEASURES

Extinguishing Media:
CO_2 gas, nitrogen gas, chemical powder fire extinguishing medium and fire foam.

Specific methods of fire-fighting:
When the battery burns with other combustibles simultaneously, take fire extinguishing method which corresponds to the specific combustibles.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate personal protective equipment as specified.

Methods of Clean up: The preferred response is to leave the area and allow the batteries to cool and the vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

SECTION 7. HANDLING AND STORAGE

Handling and Storage:
The batteries should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients they contain in the hermetically sealed container. DO NOT short circuit terminals or over charge the battery, forced over-discharge or throw to fire. DO NOT crush or puncture the battery, or immerse in liquids. Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. DO NOT place the battery near heating equipment, nor expose to direct sunlight for long periods.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment
Respiratory protection (Specify Type): Not necessary under conditions of normal use.
Ventilation: Not necessary under conditions of normal use.
Protective Gloves: Not necessary under conditions of normal use.
Eye protection: Not necessary under conditions of normal use.
Other Protective (Clothing or Equipment): Not necessary under conditions of normal use.

Personal protection is recommended for venting batteries: Respiratory Protection Protective Gloves, Protective Clothing and safety glass with side shields.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Solid
Form:	Prismatic (Laminated)
Color:	Metallic color
Odor:	No odor
PH	N/A
Explosion properties	N/A
Solubility	Insoluble in water

SECTION 10. STABILITY AND REACTIVITY

Stability: Stable

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.

Hazardous Decomposition or By-products: Acid or harmful gas is emitted during fire. Hazardous polymerization will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

Copper:
60-100mg sized coarse particulate causes a gastrointestinal disturbance with nausea and inflammation.
Toxicity Data:
Hypodermic - Rabbit 375mg/kg

Organic electrolyte LD50:
Harmful if ingested.
Toxicity Data:
Oral – Rat LD50 ≥ 2,000mg/kg

Aluminum:
The long-term inhalation of coarse particulate or fume, it is possible to cause lung damage.

Lithium Cobaltate:
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.

Graphite:
Long-term inhalation of high levels of graphite coarse particulate may cause lung disease or a tracheal disease.

SECTION 12. ECOLOGICAL INFORMATION

Environmental Precautions:
When properly used and disposed, the Lithium batteries do not present environmental hazard.

SECTION 13. DISPOSAL CONSIDERATIONS

Lithium Ion and polymer cells shall be disposed of or re-cycled properly in accordance with all applicable state and federal laws and regulations. DO NOT INCINERATE or subject battery cells to temperatures in excess of 212° F. Such treatment can vaporize the liquid electrolyte causing cell rupture.

SECTION 14. TRANSPORT INFORMATION

Expocell Li-ion/Li-polymer cells pass the tests defined in UN model regulation section 38.3. Cells and batteries are packed according to instruction PI965-PI967 section II of the IATA 56th Edition of the IATA Dangerous Goods Regulations (DGR) or the special provision 188 of IMDG.

SECTION 15. REGULATORY INFORMATION

1. International Air Transport Association (IATA) pursuant to Packing Instruction PI965-PI967, Section II
2. International Maritime Dangerous Goods Code (IMDG) pursuant to Special Provisions A188 and A230.
3. U.S. hazardous materials regulations pursuant to 49 CFR 173.185 and Special Provision A188.

SECTION 16. OTHER INFORMATION

DISCLAIMER:
The information contained in this Material Safety Data Sheet is based on data considered to be accurate. However, Expocell Group, Inc., makes no warranty, either express or implied, with respect to this information and disclaims all liability from reliance and reference on it.