

**SECTION 1: HAZARDS IDENTIFICATION****Preparation hazards and classification**

Under normal conditions of battery/device use, the internal components will NOT present a health hazard. The following information is provided for battery electrolyte and internal component exposure that may occur during battery production or container breakage due to extreme pressure deformation, high temperature exposure, overload, short-circuit condition, or disassembly.

**Primary Route(s) of Exposure**

These chemicals are contained in a sealed stainless steel enclosure or a sealed aluminum foil package. Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by inhalation, ingestion, eye contact and skin contact.

**Potential Health Effects:**

*ACUTE (short term):* See Section 8 for exposure controls. In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns.

*Inhalation:* The battery volatilizes no gas unless it is damaged. Damaged battery will volatilize little gas that may stimulate the respiratory tract or cause an anaphylaxis in serious condition.

*Ingestion:* Swallowing battery will be damaging to the digestive tract and cause chemical burns to the stomach; in serious conditions, it will cause permanent damage.

*Skin:* In normal condition, contact between the battery and skin will not cause any harm. Contact with a damaged battery may cause skin allergies or chemical burns.

**Eye:** In normal condition, contact between the battery and eyes will not cause any harms. However, the gas volatilized from a damaged battery may be harmful to eyes.

**CHRONIC (long term):** See Section 11 for additional toxicological data.

**Medical Conditions Aggravated by Exposure**

No information available

**Reported as Carcinogen**

No information available

**GHS Label elements, including precautionary statements:**



GHS02



GHS05



GHS06

**Signal word: Warning**

**Hazard statement(s):**

H242: Heating may cause a fire;

H311: Toxic in contact with skin;

H314: Causes severe skin burns and eye damage;

H302: Harmful if swallowed;

H332: Harmful if inhaled;

**Prevention:**

P264: Wash thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P261: Avoid breathing dust/fume/gas/mist/vapors/spray.

P271: Use only outdoors or in a well-ventilated area.

**Response:**

P312: Call a Poison center or doctor/physician if you feel unwell.

P302+P350 - IF ON SKIN: Gently wash with plenty of soap and water.

P301+P330+P331 - IF SWALLOWED: Rise mouth. Do NOT induce vomiting.

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.

**Disposal:**

P501: Dispose of contents/container in accordance with local/national regulations.

**Hazards not otherwise classified (HNOC)**

Not Applicable

## SECTION 2: INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Concentration %
Lithium Cobalt Dioxide (CoLiO <sub>2</sub> )	12190-79-3	37.8
Graphite	7782-42-5	23.7
Aluminum	7429-90-5	11.16
Copper	7440-50-8	10.8
Carbonate, Methyl Ethyl	623-53-0	9.94
Carbonate, Ethylene	96-49-1	3.4
Lithium Hexafluorophosphate(1-)	21324-40-3	2.34
Poly(vinylidene fluoride)	24937-79-9	0.6
Dimethyl Carbonate	616-38-6	.26

## SECTION 3: FIRST-AID MEASURES

### Description of First Aid Measures

*Inhalation:* Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice / attention if you feel unwell.

*Skin contact:* Remove contaminated clothes and rinse the skin with plenty of water. Get medical advice /attention if you feel unwell.

*Eye contact:* Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice / attention if you feel unwell.

*Ingestion:* Have victim drink at least two glasses (8-16 oz.) of water and DO NOT induce vomiting. Get medical aid.

### Most important symptoms/effects, acute and delayed

Contact with internal components may cause allergic skin sensitization (rash) and irritate eyes, skin, nose, throat, respiratory system. Cobalt and Cobalt compounds are considered to be possible human carcinogen(s).

### Immediate medical attention and special treatment

No information available.

## **SECTION 4: FIRE FIGHTING MEASURES**

### **Extinguishing media:**

*Suitable extinguishing media:* Use foam, dry powder or dry sand, CO<sub>2</sub> as appropriate.

*Unsuitable extinguishing media:* No information available.

### **Special hazards arising from the chemical:**

Under fire conditions, batteries may burst and release hazardous decomposition products when exposed to a fire situation. This could result in the release of flammable or corrosive materials.

Hazardous combustion products: CO, CO<sub>2</sub>, Metal oxides, Irritating fumes.

### **Special protective equipment and precautions for fire-fighters:**

Firefighters must wear fire resistant protective equipment and appropriate breathing apparatus. The staff must equip with filter mask (full mask) or isolated breathing apparatus. The staff must wear the clothing protective against fire and toxic gas. Put out the fire in the upwind direction. Remove the container to an open space as soon as possible. Spray water on the containers exposed to fire to keep them cool until the fire is extinguished.

## **SECTION 5: ACCIDENTAL RELEASE MEASURES**

### **Personal precautions, protective equipment and emergency procedures:**

If the Lithium Polymer Battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area, dispose the container after the batteries cool and vapors dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors.

### **Environmental Precautions:**

Prevent material from contaminating soil and from entering sewers or waterways.

### **Methods and materials for containment and cleaning up:**

If battery casing is dismantled, small amounts of electrolyte may leak. Collect all released material in a plastic lined container. Dispose of according to the local law and rules. Avoid allowing leached substances to contaminate the ground or water.

## **SECTION 6: HANDLING AND STORAGE**

### **Precautions for safe handling:**

Always follow the warning information on the battery, the device and in the device's operating manual. The battery should not be opened, destroyed or incinerated. Keep batteries and devices away from children. Do not swallow batteries. Do not throw batteries into water. Do not throw batteries into fire. Avoid deep discharge. Do not short circuit batteries. Follow recommended charging time and current.

### **Conditions for safe storage, including any incompatibilities:**

If the Lithium Polymer Battery is subject to storage for such a long term as more than 3 months, it is recommended to recharge the Lithium Polymer Battery periodically. Store in a cool, dry place – ideal storage temperature is 20°C. Do not store Lithium Polymer Batteries haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.

## SECTION 7: EXPOSURE CONTROL AND PERSONAL PROTECTION

### Engineering Controls

Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor. Keep away from heat and open flame. Store in a cool, dry place.

### Personal Protective Equipment

*Respiratory Protection:* Not necessary under normal conditions.

*Skin and body Protection:* Not necessary under normal conditions. Wear protective clothing when using to jump start a vehicle. Wear neoprene or nitrile rubber gloves if handling an open or leaking battery.

*Hand protection:* Not necessary under normal conditions. Wear neoprene or natural rubber material gloves if handling an open or leaking battery.

*Eye Protection:* Not necessary under normal conditions. Wear safety glasses if handling an open or leaking battery or when using to jump start a vehicle.

### Other Protective Equipment

Have a safety shower and eye wash fountain readily available in the immediate work area.

### Hygiene Measures

Do not eat, drink, or smoke in work area.

## SECTION 8: PHYSICAL/CHEMICAL PROPERTIES

(a) Appearance	Blue, Solid
(b) Odor	If leaking, smells of medical ether.
(c) Odor threshold	Not available.
(d) pH	Not available.
(e) Melting point/freezing point	Not available.
(f) Initial boiling point and boiling range	Not available.
(g) Flash point	Not available.
(h) Evaporation rate	Not available.
(i) Flammability	Not available.
(j) Upper/lower flammability or explosive limits	Not available.
(k) Vapor pressure	Not available.
(l) Vapor density	Not available.
(m) Relative density	Not available.
(n) Solubility(ies)	Insoluble in water.
(o) Partition coefficient: n-octanol/water	Not available.
(p) Auto-ignition temperature	Not available.
(q) Decomposition temperature	Not available.
(r) Viscosity	Not available.

## SECTION 9: STABILITY AND REACTIVITY

**Reactivity:** Stable under recommended storage and handling conditions.

**Chemical stability:** Stable under normal conditions.

**Possibility of hazardous reactions:** When heated above 70 °C, the risk of rupture occurs. Due to special safety construction, rupture implies continuous release of pressure without ignition.

**Conditions to avoid:** Do not subject Lithium Polymer Battery to mechanical shock. Keep away from open flames, high temperature.

**Incompatible materials:** Strong oxidizer, strong acid, water.

**Hazardous decomposition products:** Under fire conditions, can generate toxic fumes and the electrode materials can form carcinogenic nickel and cobalt oxides.

## SECTION 10: TOXICOLOGICAL INFORMATION

### Information on the likely routes of exposure

*Inhalation:* Heavy inhalation of vapors or fumes released due to heat may cause respiratory distress.

*Ingestion:* Ingestion of battery contents may cause mouth, throat and intestinal burns/damage.

*Skin contact:* Contact with battery electrolyte may cause burns and skin irritation.

*Eye contact:* Contact with battery electrolyte may cause burns. Eye damage is possible.

Under normal conditions (during charge and discharge), release of ingredients does not occur.

If accidental release occurs, see information in Sections 2 and 4. Swallowing of a battery can be harmful. Call the local Poison Control Centre for advice and follow-up.

### Information on toxicological characteristics

*Acute toxicity* (no exposure under normal usage, transport or storage):

LD/LC50 Levels that are relevant for classification:

96-49-1 ethylene carbonate

Oral | LD50 | 1000mg/kg (rat)

616-38-6 dimethyl carbonate

Oral | LD50 | 13000mg/kg (rat)

Dermal | LD50 | 5000mg/kg (rabbit)

*Skin corrosion/irritation:* Irritant to skin and mucous membranes.

*Serious eye damage/irritation:* Irritating effect.

*Respiratory sensitization:* Sensitization possible through skin contact.

**Carcinogenic categories** (no exposure under normal usage, transport or storage):

IARC (International Agency for Research on Cancer) – 12190-79-3

NTP (National Toxicology Program) – None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration) – None of the ingredients is listed.

## **SECTION 11: ECOLOGICAL INFORMATION**

**Ecotoxicity:** Water hazard class 1 (self-assessment): slightly hazardous for water.

**Persistence and Degradability:** No information available.

**Bioaccumulative potential:** No information available.

**Mobility in soil:** No information available.

**Other adverse effects:** No information available.

## **SECTION 12: DISPOSAL CONSIDERATIONS**

### **Safe handling and methods of disposal:**

Should not be disposed with household garbage – disposal should be in accordance with applicable regional, national and local laws and regulations. Observe all local, state and federal laws and regulations. Local regulations may be more stringent than regional or national requirements. Product disposal recommendation: Discharge battery completely prior to recycling / disposal. Packaging disposal recommendation: Be aware discarded batteries may cause fire: tape the battery terminals to insulate them. Don't disassembly the battery. There are potential effects on the environment and human health of the substances used in batteries if not disposed of properly. Dispose of waste batteries according to regulations and sort into a separate collection to facilitate treatment and recycling.

## **SECTION 13: TRANSPORT INFORMATION**

According to PACKING INSTRUCTION 965 ~ 970 of IATA DGR 56th Edition for transportation, special provision 188 of IMDG (inc Amdt 35-10), the batteries should be securely packed and protected against short-circuits. Review whether the packaging of the product is uncompromised and secure before transport. Ensure there is no sign of damage, stress, or breakage. Do not combine in a shipment with oxidizers or food chemicals. During transport, prevent exposure to rain and high temperature. For stopovers, the vehicle should be away from fire and heat sources. When transported by sea, products should be isolated from the engine room, power and fire source. Under the condition of Road Transportation, the driver should drive in accordance with regulated route, avoiding stop overs in residential areas and congested areas.

**UN number:** 3481

**UN Proper shipping name:** LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT

**Transport hazard class(es):** 9

**Packing group (if applicable):** II

**Marine pollutant (Yes/No):** No

**Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code):** Not applicable.

**Special precautions:** No information available.

Per IATA Packing Instructions 967 Section II; based upon the watt-hour rating of the unit, it may be shipped without a Shipper's Declaration for Dangerous Goods, following the specific instructions listed in the regulations. See JNC311 shipping instructions for further details.

