



Add.	No.3492 Jinqian Road, Fengxian District, Shanghai, China	P.C	2019040801
TEL	021-57475847	FAX	021-57474370

**MATERIAL SAFETY DATA SHEET**

Issue date:2019-04-08 Rev: A.0  
MSDS REF. NO.: 2019040801

**LITHIUM-ION RECHARGEABLE BATTERY**

**SECTION 1 PRODUCT AND COMPANY IDENTIFICATION**

IDENTITY	Product Category	:	Rechargeable Li-ion Battery Pack
	Model Name	:	BT C01.450.UC (DLG1204A1 43V 10.4Ah 450Wh)
	Company	:	DLG (Shanghai) Electronic Technology Co., LTD
	Address	:	No.3492,Jinqian Road, Feng xian District, Shanghai, China
	Email	:	Zhengyang_liu@dlgbattery.cn
	Fax	:	0086-21-57474370-888
	Emergency Phone	:	0086-15821872805
	SDS Number	:	2019040801
	SDS Date	:	2019-04-08

**SECTION 2 HAZARDS IDENTIFICATION**

**Hazards Identification:**

Class 9, miscellaneous. The battery has passed the test items of UN Model Regulations, Manual of Test and Criteria Section UN 38.3.

**Emergency Overview:**

Caution: Avoid contact and inhalation the electrolyte contained inside the battery.

**SECTION 3 INFORMATION ON INGREDIENTS**

**Battery Cell :**

Important Note	:	The battery should not be opened or burned since the following ingredients contained within the product that could be harmful under some circumstance if exposed or misuse. The battery contains neither metallic lithium nor lithium alloy.
Cathode	:	Lithium Cobalt Dioxide (active material) Polyvinylidene Fluoride (binder) Graphite (conductive material)
Anode	:	Graphite (active material) Polyvinylidene Fluoride (binder)
Electrolyte	:	Organic Solvent (gel type electrolyte) Lithium Salt
Others	:	Heavy metals such as Mercury, Cadmium, Lead, and Chromium are not used in the batteries.



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- Substance or preparation: Preparation
- Information about the chemical nature of product: \*1

Portion	Material name	CAS No.	Concentration range (wt %)
Positive electrode	Lithium transition metal oxidate (Li[M] <sub>m</sub> [O] <sub>n</sub> *2)	12190-79-3 12057-17-9 182442-95-1	20~60
Positive electrode's base	Aluminum	7429-90-5	1~10
Negative electrode	Carbon	7782-42-5 7440-44-0	10~30
Negative electrode's base	Copper	7440-50-8	1~15
Electrolyte	Organic electrolyte principally involves ester carbonate	—	5~25
Outer case	Iron	7439-89-6	1~30

\*1 Not every product includes all of these materials.

\*2 The letter M means transition metal and candidates of M are Co, Mn, Ni and Al. One compound includes one or more of these metals and one product includes one or more of the compounds. The letter m and n means the number of atoms.

## SECTION 3 HAZARDS IDENTIFICATION

### PRIMARY ROUTES OF ENTRY

Skin contact, Skin absorption, Eye contact, Inhalation, and Ingestion : NO SYMPTOMS OF EXPOSURE

Skin contact: No effect under routine handling and use.

Skin absorption: No effect under routine handling and use.

Eye contact: No effect under routine handling and use.

Inhalation: No effect under routine handling and use.

REPORTED AS CARCINOGEN : Not applicable

## SECTION 4 FIRST-AID MEASURES

### Skin Exposure:

If the internal battery materials of an opened battery cell come into contact with the skin, immediately flush with plenty of water.

### Eye Exposure:

In case of the internal battery materials in contact with eyes, flush with copious amounts of water for at least 15 minutes,. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

### Inhalation Exposure:

If inhaled the internal materials of battery, remove immediately to fresh air and seek medical attention.

### Oral Exposure:

If swallowed the internal materials of battery, do not induce vomiting. Seek immediate medical attention.

## SECTION 5 FIRE FIGHTING MEASURE

### Extinguishing Media:

Suitable: Dry chemical, Sandy soil, Carbon dioxide or appropriate foam.

### Firefighting:

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.



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## SECTION 6 ACCIDENTAL RELEASE MEASURES

### Procedure of Personal Precaution:

If batteries show signs of leaking, avoid skin or eye contact with the material leaking from the battery. Use chemical resistant rubber gloves and non-flammable absorbent materials for clean up. Mix with inert material (e. g. dry sand, vermiculite) and transfer to sealed container for disposal.

## SECTION 7 HANDLING AND STORAGE

### Handling:

Keep away from ignition sources, heat and flam. Such batteries must be packed in inner packages in such a manner as to effectively prevent short circuits and to prevent movement which could lead to short circuits. Avoid mechanical or electrical abuse. More than a momentary short circuit will generally reduce the battery service life. Avoid reversing battery polarity within the battery assembly. In case of a battery unintentionally be crushed, rubber gloves must be used to handle all battery components. Avoid contact with eyes, skin. Avoid inhalation. No smoking at working site. Materials to Avoid: Strong oxidizing agents, Corrosives.

### Storage:

Store in a cool, well-ventilated area. Keep away from ignition sources, heat and flame. Such batteries must be packed in inner packages in such a manner as to effectively prevent short circuits and to prevent movement which could lead to short circuits. Materials to Avoid: Strong oxidizing agents, Corrosives.

## SECTION 8 EXPOSURE CONTROL/PPE

### Engineering Controls:

Use ventilation equipment if available. Safety shower and eye bath.

### Personal Protective Equipment:

Respiratory System: Not necessary under conditions of normal use.

Eyes: Not necessary under conditions of normal use.

Clothing: Wear appropriate protective clothing.

Hand: Safety gloves.

### Other Protect:

No smoking, drinking and eating at working site. Wash thoroughly after handling.

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

### Appearance:

Black metal shell

### Odor:

Odorless

### Melting Point/°C:

>300°C

### Solubility:

Partial soluble in water

## SECTION 10 STABILITY AND REACTIVITY

### Stability:

Stable under normal temperatures and pressures.

### Conditions to Avoid:

Avoid exposure to heat and open flame. Avoid mechanical or electrical abuse. Prevent short circuits. Prevent movement which could lead to short circuits.



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**Materials to Avoid:**

Strong oxidizing agents, Corrosives

**Hazardous Polymerization:**

Will not occur.

**Hazardous Decomposition Products:**

Metal oxides, CO, CO<sub>2</sub>

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**SECTION 11 TOXICOLOGICAL INFORMATION**

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**Toxicity Data:**

Not available.

**Irritation Data:**

The internal battery materials may cause irritation to eyes and skin

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**SECTION 12 ECOLOGICAL INFORMATION**

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No data available.

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**SECTION 13 DISPOSAL CONSIDERATIONS**

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**Appropriate Method of Disposal of Substance:**

Lithium batteries are best disposed of as a non-hazardous waste when fully or mostly discharged. Contact a licensed professional waste disposal service to dispose of large quantities materials.

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**SECTION 14 TRANSPORT INFORMATION**

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**IATA:**

- Proper Shipping Name : Lithium ion batteries.
- UN Number : UN 3480
- Hazard class : 9
- The product shall meet the General Requirements and section IA of Packaging Instruction 965(IATA DGR)

**IMO:**

- Proper Shipping Name : Lithium ion batteries.
- UN Number : UN 3480
- Hazard class : 9
- EmS No: F-A, S-I

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**SECTION 15 REGULATORY INFORMATION**

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**ICAO:**

- Unless be exempted according to ICAO TI, the lithium ion cell/batteries (UN3840, pi 965) and lithium metal cell/batteries (UN3090, PI 968) are forbidden for carriage on passenger aircraft .
- Unless be approved according to ICAO TI, lithium ion cells/ batteries (UN3840, pi 965) must be offered for transport at a state of charge (SOC) not exceeding 30% of their rated design capacity .
- A shipper is not permitted to offer for transport more than one (1) package prepared according to Section II of PI 963 in any single consignment. Not more than one (1)



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package prepared in accordance with Section II of PI 965 and PI 968 may be placed into an over pack.

- Packages prepared according to Section II of PI 965 and PI 968 must be offered to the operator separately from other cargo and must not be loaded into a unit load device (ULD) before being offered to the operator.

## SECTION 16 OTHER INFORMATION

**Date:**

2009-04-08

**Department:**

Shanghai Research Institute of Chemical Industry Testing Centre  
Tel (Fax): 8621-52815377

**Revision:**

0

**Other Information:**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. We make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigation to determine the suitability of the information for their particular purposes. In no way shall we be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising from using the above information.