

# DONGGUAN GOLDEN CEL BATTERY CO., LTD.

## MATERIAL SAFETY DATA SHEET (MSDS)

According European Directive 2001/58/CE

Issue Date:03/01/2013

Rev: 2013-001G

### 1. Product & Company Identification

Product Description:	Li-Ion Polymer Battery UN3481	<b>DONGGUAN GOLDEN CEL BATTERY CO., LTD</b> <a href="http://www.celbattery.com">www.celbattery.com</a>	
Address:	YingHu industrial Zone, JiaoYiTang, TangXia Town, DongGuan		
Telephone:	+86-769-82195308	FAX:	+86-769-87982226

Product information:

Name: lithium-ion batteries Model: 523450

Nominal voltage: 3.7V Rated capacity: 1000 mAh Electric energy : 3.7Wh

### 2. Composition /Information on Ingredients:

Important note: The battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful.

MATERIAL OR INGREDIENT	PEL (OSHA)	TLV(ACGIH)	%/wt.
Graphite (CAS# 7782-42-5)	5 mg/m3 TWA (respirable fraction) 15 mg/m3 TWA (total)	2 mg/m3 TWA (respirable fraction)	7-25
Lithium Cobalt Oxide (CAS# 12190-79-3)	0.1 mg/m3 TWA (as Co)	0.02 mg/m3 TWA (as Co)	15-40
Hexafluoropropylene-vinylidene fluoride Copolymer (CAS#9011-17-0)	None established	None established	3-15
Lithium Hexafluorophosphate (CAS# 21324-40-3)	None established	None established	0-5
MATERIAL OR INGREDIENT	PEL (OSHA)	TLV(ACGIH)	%/wt.
Acetylene Black (CAS# 1333-86-4)	3.5 mg/m3 TWA (as carbon black)	3.5 mg/m3 TWA (as carbon black)	0-2
Diethyl Carbonate (CAS# 105-58-8)	None established	None established	0-15
Dimethyl Carbonate (CAS# 616-38-6)	None established	None established	0-15
Ethyl Methyl Carbonate (CAS# 623-53-0)	None established	None established	0-15
Propylene Carbonate (CAS# 108-32-7)	None established	None established	0-15
Ethylene Carbonate (CAS# 96-49-1)	None established	None established	0-15

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### 3. Hazardous Identification:

Chemical Nature: White color solid

CAS-No/EINECS NO.:N/A

INCI CTFA-Description: Lithium ion polymer rechargeable battery series

Ingestion: No effect under routine handling and use.

Inhalation: No effect under routine handling and use.

Skin contact: No effect under routine handling and use.

Eye contact: No effect under routine handling and use.

Skin absorption: No effect under routine handling and use.

Reported as carcinogen: Not applicable

### 4. First Aid Measures

Under normal conditions of use, the battery is hermetically sealed.

Ingestion: Swallowing a battery can be harmful. Contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract. If battery or open battery is ingested, do not induce vomiting or give food or drink. Seek medical attention immediately.

Inhalation: Contents of an open battery can cause respiratory irritation. Inhalation of vapors may cause irritation of the upper respiratory tract and lungs. Provide fresh air and seek medical attention.

Skin Absorption: Ethylene carbonate, diethyl carbonate and dimethyl carbonate may be absorbed through the skin causing localized inflammation.

Skin Contact: Contents of an open battery can cause skin irritation and/or chemical burns. Remove contaminated clothing and wash skin with soap and water. If a chemical burn occurs or if irritation persists,

Eye Contact: Contents of an open battery can cause severe irritation and chemical burns. Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the chemical remains. Seek medical attention.

Note: Acetylene black and cobalt compounds are listed as possible carcinogens by the International Agency for Research on Cancer (IARC).

### 5. Fire Fighting Measures

If fire or explosion occurs when batteries are on charge, shut off power to charger.

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In case of fire where lithium ion batteries are present, flood the area with water. If any batteries are burning, water may not extinguish them, but will cool the adjacent batteries and control the spread of fire. CO<sub>2</sub>, dry chemical, and foam extinguishers are preferred for small fires, but also may not extinguish burning lithium ion batteries. Burning batteries will burn themselves out. Virtually all fires involving lithium ion batteries can be controlled with water. When water is used, however, hydrogen gas may be evolved which can form an explosive mixture with air. LITH-X (powdered graphite) or copper powder fire extinguishers, sand, dry ground dolomite or soda ash may also be used. These materials act as smothering agents. Fire fighters should wear self-contained breathing apparatus. Burning lithium ion batteries can produce toxic fumes including HF, oxides of carbon, aluminum, lithium, copper, and cobalt. Volatile phosphorus pent fluoride may form at a temperature above 230° Fahrenheit.

### 6. Accidental Release Measures

On hand: Place material into suitable containers and call local fire/police department.

In water: If possible. Remove from water and call local fire/police department.

### 7. Handling & Storage

Handling: Do not expose the battery to excessive physical shock or vibration. Short-circuiting should be avoided; however, accidental short-circuiting for a few seconds will not seriously affect the battery. Prolonged short circuits will cause the battery to rapidly lose energy, could generate enough heat to burn skin. Sources of short circuits include jumbled batteries in bulk containers, coins, metal jewelry, metal covered tables, or metal belts used for assembly of batteries in devices. To minimize risk of short-circuiting,

protective case supplied with the battery should be used to cover the terminals when transporting or storing the battery. Do not disassemble or deform the battery. Should an individual cell within a battery become ruptured, do not allow contact with water.

Storage: The lithium ion battery should be between 25% and 75% of full charge when stored for a long period of time. Stored in a cool, dry, and well ventilated area. Elevated temperatures can result in loss of battery performance, leakage, or rust. Do not expose the battery to open flames.

### 8. Exposure Control/Personal Protection

Engineering Control: Keep away from heat and open flame. Stored in a cool dry place.

#### **Personal Protection:**

Respiratory Protection: Not necessary under normal conditions.

Eye/Face Protection: Not necessary under normal conditions. Wear safety glasses with side shields if handling an open or leaking battery.

Gloves: Not necessary under normal conditions. Use neoprene or natural rubber gloves if handling an open or leaking battery.

Foot Protection: Steel toed shoes recommended for large container handling.

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### 9. Physical/Chemical Properties

Physical state	Solid	Solubility in water:	Not Applicable
Color	White	Vapor pressure	Not Applicable
Odor	NO	Explosion limit	Not Applicable
Flash point	Not Applicable	Auto flammability	Not Applicable
Solubility in ethanol soluble	Not Applicable	Melting Point	Not Applicable
Boiling Point	Not Applicable	Freezing Point	Not Applicable

### 10. Stability & React

Stability: Good stability at standard temperature.

Reactivity: None

Avoid contact with water and acids. Hazardous decomposition products: If Al package foil of battery is damaged, the battery should avoid to contact strong oxidizer, acids and high temperature, and the electrolyte will be formed HF.

### 11. Toxicological information

This product does not elicit toxicological properties during routine handling and use.

### 12. Ecological information

If the battery is scrapped, it should be selected and disposed by professional company.

### 13. Disposal considerations

Do not dispose of battery into environment or sewerage. It should be recycled and disposed basing on your local legislation and regulations.

### 14. Transport Information

According to packing instruction 966 section II of IATA DGR 54<sup>th</sup> Edition for transportation, or the special provision 188 of IMDG . The products are not subject to dangerous goods.

More information concerning shipping, testing ,marking and packaging can be obtained from Label master at <http://www.labelmaster.com> .

Separate lithium-ion batteries when shipping to prevent short-circuiting. They should be packed in strong packaging for support during transport. Take in a cargo of them without falling, dropping and breakage.

Prevent collapse of cargo piles and wet by rain.

Transport fashion : by air, by sea.

### 15. Regulatory Information

See ACGIH exposure limits information as noted in Section 3.

US: This MSDS meets/exceeds OSHA requirements.



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International: This MSDS conforms to European Union (UN), the International Standards Organization (ISO) and the International Labor Organization (ILO) and as documented in ANSI (American National Standards Institute) Standard Z400.1-1993.

Regulations specifically applicable to the product:

IATA-DGR (air transportation)

IMO-IMDG Code (sea transportation)

US Department of Transportation 49 Code of Federal Regulations [USA]

Wastes Disposal and Public Cleaning Law [Japan]

Law for Promotion of Effective Utilization of resources [Japan]

### 16. Charging and labeling

Charging: This battery is made to be charged many times. Use an CEL Battery approved battery charger. Never use a modified or damaged battery charger. A backup charge termination based on time is recommended to prevent overcharging. The charging temperature should be between 0° C and 45° C (32° F and 113° F). The battery pack will be normally warm during charging.

Charging Voltages and Currents: Charging voltages are prevented from exceeding the specified limits by an internal battery protection circuit. Never use a battery that shows signs of a damaged protection circuit or broken case. (Such damage to the protection circuit may be indicated by voltages at the battery terminals outside of their specified ranges.) Adhere to all specified charging and discharging voltages and currents. Do not use battery if its voltage drops below the specified minimum voltage.

Labeling: If the CEL label or package warnings are not visible, it is important to provide a package and/or device label stating:

**WARNING: CHARGE ONLY WITH SPECIFIED CHARGERS ACCORDING TO DEVICE MANUFACTURER'S INSTRUCTIONS. DO NOT OPEN BATTERY, DISPOSE OF IN FIRE, OR SHORT CIRCUIT - MAY IGNITE, EXPLODE, LEAK, OR GET HOT CAUSING PERSONAL INJURY.**

Disposal: Dispose in accordance with all applicable federal, state and local regulations.

### 17.UN Classes:

Classified as Lithium ion batteries (UN3481), 2013IATA Dangerous Goods regulations 54<sup>th</sup> edition Packing Instruction PI966 Section II is applied. The product is handled as Non-Dangerous Goods by meeting the following requirements. (1)

Lithium ion cells and batteries offered for transport are not subject to other additional requirements of the UN Regulations if they meet the following: (1) (3)

1. for cells, the watt-hour rating is not more than 20Wh;
2. for batteries, the watt-hour rating is not more than 100Wh.

The Watt-hour rating must be marked on outside of the battery case except those manufactured before 1 January 2009 which may be transported without this marking until 31 December 2012

3. each cell or battery is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria Part III subsection 38.3.

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All Li Polymer batteries with the necessary testing requirements under the UN38.3 Manual of Tests and Criteria as referenced in the following transportation regulations.

1. UN recommendations on the Transport of Dangerous Goods Model Regulations.
2. U.S Department of Transportation of Dangerous Goods Model Regulations.
3. International Civil Aviation Organization (ICAO) Technical Instructions
4. International Maritime Dangerous Goods (IMDG) code

Li Polymer Battery are exempted from these regulations since they meet all UN testing requirements and contain no more than 8 grams of equivalent lithium content (see 49 CFR 173.185 of the US HMR, IATA Dangerous Goods Regulations and Special Provision 188 of the IMDG Code and UN model Regulations.

### 18. Other information

The information contained herein is furnished without warranty of any kind. Users should consider this data only as a supplement to other information gathered by them and must make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.

#### Reference

Chemical substances information: Japan Advanced Information center of Safety and Health  
International Chemical Safety Cards (ICSCs): International Occupational Safety and Health

#### Information

Centre (CIS)

2002 TLVs and BEIs: American Conference of Governmental Industrial Hygienists (ACGIH)  
Dangerous Goods Regulations -The 54<sup>th</sup> edition (January 2013: International Air Transport Association (IATA)

IMDG Code - 2006 Edition: International Maritime Organization (IMO)

RTECS (CD-ROM)

MSDS of raw materials prepared by the manufacturers.

End