

DONGGUAN GOLDEN CEL BATTERY CO., LTD.

MATERIAL SAFETY DATA SHEET (MSDS)

According European Directive 2001/58/CE

Issue Date: 9/1/2010

Rev: 2010-010G

1. Product & Company Identification

Product Description:	Li-Ion Polymer Rechargeable Battery UN3481 with PI967	DONGGUAN GOLDEN CEL BATTERY CO., LTD www.celbattery.com	
Address:	YingHu industrial Zone, Jiao Yi Tang, Tang Xia Town, DongGuan		
Telephone:	+86-769-82195308	FAX:	+86-769-87982226

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/m ³ TWA (respirable fraction) 15 mg/m ³ TWA (total)	2 mg/m ³ TWA (respirable)	7-25
Lithium Cobalt Oxide (CAS# 12190-79-3)	0.1 mg/m ³ TWA (as Co)	0.02 mg/m ³ TWA (as)	15-40
Hexafluoropropylene-vinylidene	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/m ³ TWA (as carbon black)	3.5 mg/m ³ 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

3. Hazardous Identification:

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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

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.

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. CO₂, 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

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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.

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 solube	Not Applicable	Melting Point	Not Applicable

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Boiling Point	Not Applicable	Freezing Point	Not Applicable
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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

Shipment contains no item listed under IATA DGR Special Provision A154 and meets all requirements under UN Manual of Tests and Criteria Part III, subsection 38.3.

NO	ITEMS	RESULT	REMARKS
1	Altitude simulation	Pass	Test 1 to 5 must be conducted in sequence on the same cell or battery
2	Thermal test	Pass	
3	Vibration	Pass	
4	Shock	Pass	
5	External short circuit	Pass	
6	Impact	Pass	
7	Overcharge	Pass	Only battery do need this test item
8	Forced Discharge	Pass	

The product is not classified as dangerous under the current edition of the IATA dangerous goods regulations and according to packing Instruction section II 965-970 of IATA product is safe for air transportation and not regulated by IATA DGR.

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During transportation, avoid exposure to high temperature (above 100 C) and prevent the formation of any condensation. Handle with care, do not drop or crush. Prevent collapse of by excessive cargo weight and wet by rain. The container must be handled carefully. Do not mechanically shock which results in damage. Please also refer to Section 7-HANDLING AND STORAGE.

UN classification 3480: This product is classified as "Lithium-ion Batteries" (or UN3481 "Lithium-ion Batteries packed with equipment" or "Lithium-ion Batteries contained in equipment"), it is NOT recognized as "DANGEROUS GOODS" when its transport condition accords with "special provision A99 of IATA-DGR" or "special provision 188 of IMO-IMDG Code".

15. Regulatory Information

See ACGIH exposure limits information as noted in Section 3.

US: This MSDS meets/exceeds OSHA requirements.

International: This MSDS conforms to European Union (UN), the International Standards Organization (ISO) and the International Labor Organization (ILO) and as documental 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:

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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), 2010 IATA Dangerous Goods regulations 51th edition Packing Instruction PI967 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 2010

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.

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 - 51ST Edition effective 1 Jan 2010: International Air Transport Association (IATA)

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

RTECS (CD-ROM)

MSDS of raw materials prepared by the manufacturers.

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