



Amperex Technology Limited
新能源科技有限公司

3503, Wharf Cable TV Tower, 9 Hoi Shing Road, Tsuen Wan, N.T., HongKong
香港新界荃湾海盛路9号有线电视大楼35楼3号单位
Tel: 852-2498-0908 Fax: 852-2498-1101 <http://www.ATLbattery.com>

MATERIAL SAFETY DATA SHEET

According the European directive 2001/58/CE

Issue Date: 11/07/2011

Doc No.11072011-05A

1. Product & Company Identification

Product Description: Li-Ion Rechargeable Battery

Typical Shape: Square

UN Number: 3480

Proper Shipper Name: Lithium Ion Battery

Manufacturer: Dongguan Amperex Technology Limited

Address: 1West Industrial Road, North Zone of SSL Sci.& Tech. Industry Park,
Dongguan Guangdong, PRC523808

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 dust) | 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 |
| Nickel (CAS#7440-02-0) | 0.1 mg/m3 TWA | 0.02 mg/m3 TWA | 3-15 |
| Manganese (CAS#7439-96-5) | 0.1 mg/m3 TWA | 0.02 mg/m3 TWA | 3-15 |
| 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 |

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| | | | |
|---|------------------|------------------|------|
| 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:

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

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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, seek medical attention.

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.

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,

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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, the 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.

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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 soluble | Not Applicable | Melting Point | Not Applicable |
| Boiling Point | Not Applicable | Freezing Point | Not Applicable |

10. Stability & Reactivity

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.

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14. Transport Information

The battery models listed have aggregate equivalent lithium content is not more than 100Wh. And 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 | |
| 8 | Forced Discharge | N/A | For cell only |

The product is not classified as dangerous Goods according to the latest version 51st edition of IATA Dangerous Goods Regulations. And not regulated by IATA DGR. This product fully conforms to IATA Shipping PI 965,section II. Do not damage or mishandle this package. If package is damaged, batteries must be quarantined, inspected, and repacked. For emergency information, call: +86-769-88989338.

15. Regulatory Information

See ACGIH exposure limits information as noted in Section3.

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.

16. Charging and labeling

Charging: This battery is made to be charged many times. Use an Energizer 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

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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 ATL 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. 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.

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