No.: AE-MSDS-2015-A-073

Material Safety Data Sheet

NAME OF SAMPLE: Lithium Polymer Rechargeable Battery

Type/Mode: AE922543P 3.7V 1050mAh 3.89Wh

ADVANCED ELECTRONICS ENERGY LIMITED

1、Chemical product and company identification	
Name of samples	Lithium Polymer Rechargeable Battery
Type/Model	AE922543P 3.7V 1050mAh 3.89Wh
Manufacturer	ADVANCED ELECTRONICS ENERGY LIMITED
Manufacturer address	NO. 6 HUA TIAN NAN YI RD, HI-TECH INDUSTRIAL ZONE, RONGGUI, SHUNDE, FOSHAN CITY, GUANG DONG PROVINCE, P. R. CHINA
Inspection according to	EEC Directive 93/112/EC UN "Recommendations on the TRANSPORT OF DANGEROUS GOODS"
Emergency telephone call	0757-28307929
Date of Issue	2015-Nov-10

2、Composition information			
Components	Approximate Percent of Total Weight	CAS Number	EINECS#
Aluminum	2-10%	7429-90-5	231-072-3
Aluminum (Various Forms)	5-15%	7429-90-5	231-072-3
Carbon (Various Forms)	10-30%	7440-44-0	231-153-3
Copper	5-15%	7440-50-8	231-159-6
Lithium Cobalt Oxide	20- 40%	12190-79-3	235-362-0
Lithium Salts	1-5%	21324-40-3	244-334-7
Nickel	0.5-5%	7440-02-0	231-111-4
Organic Carbonate	10-25%	102-09-0	203-005-8
Polymer	3-10%	9002-88-4	/

3、Hazards identification	
Explosive risk	This article does not belong to the explosion dangerous goods
Flammable risk	This article does not belong to the flammable material
Oxidation risk	This article does not belong to the oxidation of dangerous goods
Toxic risk	This article does not belong to the toxic dangerous goods
Radioactive risk	This article does not belong to the radiation of dangerous goods
Mordant risk	This article does not belong to the corrosion of dangerous goods
Other risk	This article is Polymer Lion Battery，which belong to the Lithium ion batteries (including lithium polymer batteries)

4、First aid measures

In case of contacting the materials from a damaged / ruptured cell or battery:

Eye contact: Rinse eyes with water at least 15 minutes and seek medical attention.

Skin Contact: Wash area thoroughly with soap and water and seek medical attention.

Inhalation of Vented Gas: Leave area immediately and seek medical attention.

Ingestion: Seek medical attention immediately.

5、First aid measures

General Hazard:

Battery or cell is not flammable but internal organic material will burn if the battery or cell is incinerated. Combustion product included, but not limited to hydrogen fluoride, carbon monoxide and carbon dioxide.

Extinguishing Media:

Use extinguishing media suitable for the materials that are burning.

Fire-Fighting Procedures:

Use self-contained breathing apparatus and protective clothing.

Unusual Fire and Explosion Hazards:

Toxic gases (HF, PF6) will be formed if cells or battery are involved in a fire. Cells or battery may flame or leak potentially hazardous organic vapors if exposed to excessive heat, fire or over-voltage conditions. Damaged or opened cells or batteries may result in rapid heat and the release of flammable vapors.

6、Accidental release measures

Steps to be taken in case Material is Released or Spilled:

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth,and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the battery to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

Waste Disposal Method:

It is recommended to discharge the battery to the end, to use up the metal lithium inside the battery, and to bury the discharged battery in soil..

7、Storage and Handling

Do not store batteries in a manner that allows terminals to short circuit.

Do not place batteries near heating sources, nor exposed to direct sunlight for long periods. Elevated temperatures can result in reduced battery service life.

Charging Battery:

Use only approved chargers and procedures. Improperly charging a cell or battery may cause the cell or battery to flame or damage.

Battery Disassembly:

Never disassemble a battery.Should a battery unintentionally be crushed, thus releasing its contents, rubber gloves must be used to handle all battery components. Avoid inhalation of any vapors that may be emitted.

Battery Short Circuit:

Do not short-circuit a battery. A short circuit can result in over-heating of the terminals and provide an ignition source.

More than a momentary short circuit will generally reduce the cell or battery service life and can lead to ignition of surrounding materials or materials within the cell or battery if the seal integrity is damaged.

Extended short-circuiting creates high temperature in the cell and at the terminals. Physical contact to high temperatures can cause skin burns. In addition, extended short-circuit may cause the cell or battery to flame.

Avoid reversing cell polarity within a battery assembly. Reversing cell polarity may cause the cell or battery to flame or to emit gases.

Mixed Batteries and Types:

Avoid using old and new cells or cells of different sizes; different chemistry or types in the same battery assembly.

8、Exposure Controls / Personal Protection

Respiratory Protection:

Not necessary under normal use. In case of battery rupture, use self-contained full-face respiratory equipment.

Hand Protection:

Not necessary under normal use. Use Viton rubber gloves if handling a leaking or ruptured battery.

Eye Protection:

Not necessary under normal use. Wear safety goggles or glasses with side shields if handling a leaking or ruptured battery.

Skin Protection:

Not necessary under normal use. Use rubber apron and protective in case of handling of a ruptured battery.

9、Physical and chemical properties

Appearance:

(Physical shape and color as supplied) Metal squares, hermetically sealed and fitted with an external plastic box.

Temperature Range:

Discharge: -20- + 60° C

Charging: -0- +45° C

Storage: -20- + 45° C (for less than 1 month); -20- + 35° C (for less than 6 month)

Specific Energy: ≈ 135 Wh/kg

Specific Pulse Power: ≈ 300 Wh/kg

Mechanical Resistance: As defined in relevant IEC standard.

10、Stability and reactivity

Conditions to Avoid: Heat above 70° C or incinerate. Deform, mutilate, crush, pierced, disassembled, short circuit and prolonged exposure to humid conditions.

Materials to Avoid : N/A.

Hazardous Decomposition Products: Corrosive/Irritant Hydrogen fluoride (HF) is produced in case of reaction of lithium hexafluorophosphate (LiPF6) with water. Combustible vapors and formation of Hydrogen fluoride (HF) and phosphorous oxides during fire.

11、Toxological Information

In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.

Inhalation: Lung irritant.

Skin contact: Skin irritant.

Eye contact: Eye irritant.

Ingestion: Poisoning if swallowed..

Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, moderate to server irritation, burning and dryness of the skin may occur, Target organs nerves, liver and kidneys.

12、Ecological Information

When properly used or disposed AE Energy Lithium Polymer Rechargeable batteries do not present environmental hazard.

13、Disposal procedures

AE Energy lithium polymer rechargeable battery contains no toxic metals, only naturally occurring trace elements. It is advisable to consult with local authorities as disposal regulations may vary dependent on location.

14、Transportation Information

The rechargeable lithium ion battery pack or cells are make in compliance to the requirement stated in the latest edition of 56th edition 2015 IATA DGR Dangerous Goods Regulations Packing Instruction 965-967 section II (shown table):

Packing Instruction	**PI965 IA**	**PI965 IB**	**PI965** section II	**PI966** section II	**PI967** section II
Standard	Cell: >20Wh Battery : >100Wh	Cell: ≤ 20Wh Battery : ≤ 100Wh			
Packages Requirement	Class 9 label Consignments require DGD UN Specification Package Required: PAXlimit:5kgG/package CAOlimit:35KgG/package	Class 9 label Lithium battery label Required:10kg G/package	Lithium battery label Required:No more than 8pcs/package	Lithium battery label Required:5kg G/package	Lithium battery label Required:5kg G/package

If Cell: 20Wh / cell or Battery / pack: 100Wh， The batteries are also considered to be non-dangerous by the INTERNATIONAL MARITIME DANGEROURS GOODS regulation (IMDG) code. The battery is secured effectively to prevent short

circuit and movement leading to short circuit. The battery is also over packed with strong packaging materials.

If Cell: >20Wh / cell or Battery / pack: >100Wh， The batteries are considered to be dangerous by the INTERNATIONAL MARITIME DANGEROURS GOODS regulation (IMDG) .The batteries shall meet the requirement of "Recommendations on the Transport of Dangerous Good - Manual of Tests and Criteria, Part III, sub-section 38.3. Batteries shall be shipped as class 9 hazardous materials.

However, if those lithium ion battery or cells are pack with or contained in an equipment, then it is the responsibility of the shipper to ensure that the consignment are packed in compliance to the latest edition of the IATA Dangerous Goods Regulations section I or II of either Packing Instruction 966 or 967 in order for that consignment to be declared as “NOT RESTRICTED” (non-hazardous / non-dangerous) or “DANGEROUS GOODS”.

15、 Regulation Information

With regards to transport, the following regulations are cited and considered:

15.1、The International Civil Aviation Organization (ICAO) Technical Instructions (2015-2016Edition).

15.2、The International Air Transport Association (IATA) Dangerous Goods Regulations (Edition 56th 2015 of the IATA regulation.)

15.3、The International Maritime Dangerous Goods (IMDG) Code (36-12 Edition).

15.4、US Hazardous Materials Regulations 49 CFR (Code of Federal Regulations) Sections 173 -185 Lithium batteries and cells.

15.5、The UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria 38.3 lithium batteries,5th revised edition (UN3480,UN3481).

15.6、The United Nations special provisions concerning the carriage of dangerous goods by SP188.

16、 Other Information

For further information, please contact Advanced Electronics Energy sales representative.