

Material / Product Safety Data Sheet (MSDS-PSDS)

 Date : 20/11/2013
 Rev : 04

SECTION I. PRODUCT IDENTIFICATION AND MANUFACTURER INFORMATION

PRODUCT: Li-ion Rechargeable Battery Pack
MODEL: 0 PI0281 2ICR18/65-5x110 7.4V 13Ah (96.2Wh)
 0 PI0282 2ICR18/65-2x044 7.4V 5.2Ah (38.48Wh)
 0 PI0283 2ICR18/65-5x110 7.4V 13Ah (96.2Wh)
 0 PI0284 2ICR18/65-5x110 7.4V 13Ah (96.2Wh)

MANUFACTURER: PROBATTERY - Baires Full Trading S.A.

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SECTION II. COMPOSITION / INFORMATION ON INGREDIENTS

Substance or preparation: Preparation
 Information about the chemical nature of product:

INGREDIENTS	%	CAS NUMBER
Lithium (metallic form)	0	N/A
Aluminum Foil	2-10	7429-90-5
Metal Oxide (proprietary)	20-50	Confidential
Polyvinylidene Fluoride (PVDF)	<5	24937-79-9
Styrene Butadiene Rubber (SBR)	<5	9003-55-8
Copper Foil	2-10	7440-50-8
Carbon (proprietary)	10-30	7440-44-0
Electrolyte (proprietary)	10-20	Confidential
Aluminum and inert materials	Remainder	N/A

SECTION III. HAZARDS IDENTIFICATION
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Do not short circuit, puncture, incinerate, crush, immerse in water, force discharge or expose to temperatures above the declared operating temperature range of the product: Risk of fire or explosion.

The chemical materials are stored in a hermetically sealed metal case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials' leakage.

However, if exposed to a fire, added mechanical shocks, decomposed, added electric stress by miss-use, the gas release vent will be operated. The battery cell case will be breached at the extreme, hazardous materials may be released. Moreover, if heated strongly by the surrounding fire, acrid gas may be emitted.

Most important hazard and effects

Human health effects

• **Inhalation:**

The steam of the electrolyte has an anesthesia action and stimulates a respiratory tract.

• **Skin contact:**

The steam of the electrolyte stimulates a skin. The electrolyte skin contact causes a sore and stimulation on the skin.

• **Eye contact:**

The steam of the electrolyte stimulates eyes. The electrolyte eye contact causes a sore and stimulation on the eye. Especially, substance that causes a strong inflammation of the eyes is contained.

• **Environmental effects:**

Since a battery cell remains in the environment, do not throw out it into the environment.

Specific hazards

If the electrolyte contacts with water, it will generate detrimental hydrogen fluoride.

Since the leaked electrolyte is inflammable liquid, do not bring close to fire.

SECTION IV. FIRST-AID MEASURES

Spilled internal cell materials

• **Inhalation:**

Make the victim blow his/her nose, gargle. Seek medical attention if necessary.

• **Skin contact:**

Remove contaminated clothes and shoes immediately. Wash extraneous matter or contact region with soap and plenty of water immediately.

• **Eye contact:**

Do not rub one's eyes. Immediately flush eyes with water continuously for at least 15 minutes.

Seek medical attention immediately.

• **Ingestion:**

Make the victim vomit. When it is impossible or the feeling is not well after vomiting, seek medical attention.

SECTION V. FIRE-FIGHTING MEASURE

• **Suitable extinguishing media:**

Plenty of water, carbon dioxide gas, nitrogen gas, chemical powder fire extinguishing medium and fire foam.

- **Specific hazards:**
Corrosive gas may be emitted during fire.
- **Specific methods of fire-fighting:**
When the battery burns with other combustibles simultaneously, take fireextinguishing method which correspond to the combustibles. Extinguish a fire from the windward as much as possible.
- **Special protective equipment for firefighters:**
Respiratory protection: Respiratory equipment of a gas cylinder style or protection-against-dust mask.
- **Hand protection:**
Protective gloves.
- **Eye protection:**
Goggle or protective glasses designed to protect against liquid splashes.
- **Skin and body protection:**
Protective cloth

SECTION VI.

ACCIDENTAL RELEASE MEASURES

Spilled internal cell materials, such as electrolyte leaked from a battery cell, are carefully dealt with according to the followings:

- **Precautions for human body:**
Remove spilled materials with protective equipment (protective glasses and protective gloves). Do not inhale the gas as much as possible. Moreover, avoid touching with as much as possible.
- **Environmental precautions:**
Do not throw out into the environment.
- **Method of cleaning up:**
The spilled solids are put into a container. The leaked place is wiped off with dry cloth.
- **Prevention of secondary hazards:**
Avoid re-scattering. Do not bring the collected materials close to fire.

SECTION VII.

HANDLING AND STORAGE

- **Handling**
Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods, which would end up into excessive heating. Do not directly heat or solder. Do not throw into fire.
Keep batteries in non-conductive (i.e. plastic) trays.
Do not disassemble, mutilate or mechanically abuse cells and batteries.

Technical measures:

Prevention of user exposure: Not necessary under normal use.
Prevention of fire and explosion: Not necessary under normal use.
Precaution for safe handling: Do not damage or remove the external tube.
Specific safe handling advice: Never throw out cells in a fire or expose to high temperatures. Do not soak cells in water or seawater. Do not expose to strong oxidizers. Do not give a strong mechanical shock or fling. Never disassemble, modify or deform. Do not connect the positive terminal to the negative terminal with electrically conductive material. In the case of charging, use only dedicated charger or charge according to the conditions specified by Probattery.





- **Storage**

Technical measures:

Storage conditions (suitable, to be avoided): Avoid direct sunlight, high temperature, high humidity.
Store in cool place (temperature: -20 ~ 35 degree C, humidity: 45 ~ 85%).
Incompatible products: Conductive materials, water, seawater, strong oxidizers and strong acids
Packing material (recommended, not suitable): Insulate and tear proof materials are recommended.

SECTION VIII. EXPOSURE CONTROLS & PERSONAL PROTECTION

Keep away from heat and open flame. Store in a cool dry place

	Respiratory protection	In all fire situations, use self-contained breathing apparatus.
	Hand protection	In the event of leaking or ruptured cells, wear gloves.
	Eye protection	Safety glasses are recommended in case of leaking or ruptured cells
	Other	In the event of leakage or ruptured cells, wear chemical apron.

SECTION IX. PHYSICAL AND CHEMICAL PROPERTIES

State	Solid
Odor	Odorless (unless in case of damaged product with leaking electrolyte)
PH	N/A
Vapor pressure	N/A
Vapor density	N/A
Boiling point	N/A
Solubility in water	Insoluble (unless inner components are exposed)
Specific gravity	N/A
Density	> 2 g/cm ³

SECTION X. STABILITY AND REACTIVITY

The product is stable under conditions described in Section VII.

Conditions to avoid.

Heating above 70°C or incinerate. Deformation. Mutilation. Crushing. Piercing. Disassembly. Short circuiting. Exposition over a long period to humid conditions.

Materials to avoid	Strong mineral acids, alkali solutions, strong oxidizing materials and conductive materials
Hazardous decomposition Products	HF, CO, CO ₂

SECTION XI. TOXICOLOGICAL INFORMATION

Signs & symptoms	None, unless battery ruptures. In the event of exposure to internal contents, corrosive fumes will be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.
Inhalation	Lung irritant.
Skin contact	Skin irritant.
Eye contact	Eye irritant.
Ingestion	Tissue damage to throat and gastro-respiratory tract if swallowed.
Medical conditions generally aggravated by exposure	In the event of exposure to internal contents, eczema, skin allergies, lung injuries, asthma and other respiratory disorders may occur.

SECTION XII. ECOLOGICAL INFORMATION

Mammalian effects	None known if used/disposed of correctly.
Eco-toxicity	None known if used/disposed of correctly.
Bioaccumulation	None known if used/disposed of correctly.
Environmental fate	None known if used/disposed of correctly.

SECTION XIII. DISPOSAL CONSIDERATIONS

Do not incinerate, or subject cells to temperatures in excess of 70°C. Such abuse can result in loss of seal, leakage, and/or cell explosion. Dispose of or recycle in accordance with appropriate local regulations.

SECTION XIV. TRANSPORT INFORMATION

In the case of transportation, avoid exposure to high temperature and prevent the formation of any condensation. Take in a cargo of them without falling, dropping and breakage. Prevent collapse of cargo piles and wet by rain. The container must be handled carefully. Do not give shocks that result in a mark of hitting on a battery. Please refer to *Section VII - HANDLING AND STORAGE* also.

The battery packs stated in this document and manufactured by PROBATTERY, are in accordance with the UN Model Regulations, Manual of Tests and Criteria, Part III, subsection 38.3

The rechargeable Lithium-Ion battery pack stated in this document (< 100Wh) are made in compliance to the requirements stated in the latest edition of the IATA Dangerous Goods Regulations Packing Instruction 965 section II such that they can be transported as a **NOT RESTRICTED** (nonhazardous/non-dangerous) goods. However, if those lithium-ion battery packs 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 II of either Packing Instruction 966 or 967 in order for that consignment to be declared as **NOT RESTRICTED** (non-hazardous/non-Dangerous).

Regulation depends on region and transportation mode:

- **Worldwide, air transportation**
IATA-DGR ["packing instruction 965 section II" (or "packing instruction 966 section II" or "packing instruction 967 section II").
- **Worldwide, sea transportation**
IMO-IMDG Code [special provision 188].
- **Europe, road transportation**
ADR [special provision 188].

SECTION XV. REGULATORY INFORMATION

Regulations specifically applicable to the product:

- ACGIH and OSHA: see exposure limits of the internal ingredients of the battery in *Section II*.
- IATA/ICAO (air transportation): UN 3480 or UN 3481.
- IMDG (sea transportation) : UN 3480 or UN 3481.
- Transportation within the US-DOT, 49 Code of Federal Regulations.

SECTION XVI. OTHER INFORMATION

The information contained in this Safety data sheet is based on the present state of knowledge and current legislation. This safety data sheet provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.