CREUP TECHNOLOGIES LTD.

MATERIAL SAFETY DATA SHEET

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SECTION 1. SUPPLIER AND PRODUCT IDENTIFICATION	
Supplier's Name	CREUP TECHNOLOGIES LTD. NO.73, TONGFUYU INDUSTRY PARK, BAOAN, SHENZHEN, CHINA
Phone	+86-755-81875026
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Product Name	Lithium Polymer Rechargeable Battery
Model	For cell capacity≤5400mAh

SECTION 2. COMPOSITION INFORMATION ON COMPONENTS

CAS#	Components	Approximate Percent of Total Weight	EINECS#
91728-14-2	Aluminum	2-10%	231-072-3
91728-14-2	Aluminum(Various Forms)	5-15%	231-072-3
82600-58-8	Carbon(Various Forms)	10-30%	231-153-3
7440-50-8	Copper	5-15%	231-159-6
12190-79-3	Lithium Cobalt Oxide	20-40%	235-362-0
7790-69-4	Lithium Salts	1-5%	224-772-5
7440-02-0	Nickel	0.5-5%	231-111-4
102-09-0	Organic Carbonate	10-25%	203-005-8
9002-88-4	Polymer	3-10%	201-622-7

The materials contained in the battery may only become a hazard if the battery or the cell is disintegrated of if the battery is physically or electrically abused.

SECTION 3. PHYSICAL AND CHEMICAL PROPERTIES

3.1 Physical:

The lithium polymer rechargeable batteries described in this Material Safety Data Sheet are sealed units which are not hazardous when used according to the recommendations of the manufacturer. Under normal conditions of use, the solid electrode materials and Gel electrolyte they contain are non-reactive provided the battery integrity is maintained and seals remain intact.

3.2 Chemical:

Classification of dangerous substances contained into the product as per directive 67/548/EEC

Substance		Melting Point	Boiling Point	Classification

CAS N°	Chemical Symbol			Exposure Limit	Indication Of danger	Special Risk (1)	Safety Advices (2)
12190-79-3	LiCoO2	> 1000°C	N/A	0.1 mg/m3 OSHA		R22 R43	S2 S22 S24 S26 S36 S37 S43 S45
EC : 96-49-1 DMC:616-38-6 DEC:105-58-8	Organic Solvents (DC-DMC DEC)	EC : 38°C DMC: 4°C DEC:-43°C	EC:243°C DMC:90°C DEC:127°C	None established OSHA	Flammable	R21 R22 R41 R42/43	S2 S24 S26 S36 S37 S45
21324-40-3	LiPF6	N/A (decomposes at 160°C)	N/A	None established OSHA	Irritant Corrosive	R14 R21 R22 R41 R43	S2 S8 S22 S24 S26 S36 S37 S45

1 – Nature of special risks:
R 14 Reacts with water.
R 21 Harmful in contact with skin.
R 22 Harmful if swallowed.
R 41 Risk of serious damage to the eye.
R42/43 May cause sensitization by inhalation and skin contact.
R 43 May cause sensitization by skin contact.

2 – Safety advices:
S 2 Keep out of reach from children.
S 8 Keep away from moisture.
S 22 Do not breathe dust.
S 24 Avoid contact with skin.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical attention.
S 36 Wear suitable protective clothing.
S 37 Wear suitable gloves.
S 45 In case of incident seek medical attention.

SECTION 4. EMERGENCY AND FIRST AID INFORMATION

In case of contacting the materials from a damaged or ruptured cell or battery:
Eye Contact: Washing immediately with plenty of water and soap or for at least 15 minutes. Get medical attention.
Skin Contact: Washing immediately with water and soap.
Inhalation of Vented Gas: Remove to fresh air. Get medical attention.
Ingestion: Get medical attention immediately.

SECTION 5. FIRE AND EXPLOSION DATA

Extinguishing Media: Dry chemicals, water.
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.

SECTION 6. ACCIDENTAL RELEASE MEASURES

The material contained within the batteries would only be expelled under abusive conditions. Using shovel or broom, cover battery or spilled substances with dry sand or vermiculite, place in approved container (after cooling if necessary) and dispose in accordance with local regulations.

SECTION 7. STORAGE AND HANDLING/USE

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

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

7.3 Charging Battery

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

7.4 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.

7.5 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.

7.6 Mixed Batteries and Types

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

SECTION 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 working in case of handling of a ruptured battery.

SECTION 9. CELL PROPERTIES

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

9.2 Temperature range:

Discharge: -20°C ～ +60°C

Charging: 0°C ～ +45°C

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

9.3 Specific energy: ≈135Wh/kg(Note: Wh=Nominal voltage*Rated Ah as defined in IEC standard No

285.kg=Average battery weight)
9.4 Specific pulse power: ≈300Wh/kg
9.5 Mechanical resistance: As defined in relevant IEC standard
9.6 Other: -

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid: Heat above 70°C or incinerate. Deform, mutilate, crush, pierce, disassemble, Short circuit. 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.

SECTION 11. TOXOLOGICAL INFORMATION

CREUP lithium polymer rechargeable battery does not contain toxic materials.

SECTION 12. ECOLOGICAL INFORMATION

When properly used or disposed CREUP lithium polymer rechargeable batteries do not present environmental hazard.

SECTION 13. DISPOSAL PROCEDURES

CREUP 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.

SECTION 14. TRANSPORTATION

Packaging sign, class and method for the batteries in relating to the dangerous goods transportation are not applicable because they are considered to be non-dangerous by the INTERNATIONAL CIVIL AVATION ORGANISATION (ICAO) and the 51th edition of INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA). The batteries meet all the requirements of special provision PI965 as described by both organizations. UN number, packing instructions and shipping name are UN3480, PI965 and “Lithium ion batteries” respectively under the ICAO Technical Instructions. 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. Quantity per package is less than 10Kg (gross) – for UN3480.

SECTION 15. REGULATION INFORMATION

The transport of lithium polymer rechargeable battery is regulated by various bodies(IATA, IMO, ADR, US-DOT) that follow the united nations” Recommendations on the Transport of Dangerous Goods, Model Regulations, 13th Revised edition-2003-Ref. ST/SG/AC.10/1 Rev. 13”. Depending on their lithium metal equivalent weight content, design, and ability to pass safety tests defined by the UN in the “Recommendations on the Transport of Dangerous Good-Manual of Tests and Criteria Part III, sub-section 38.3 – 3rd Revised edition -2002-Ref. ST/SG/AC.10/11 Rev. 3 Amendment 1<<Lithium Batteries>>”, the lithium polymer rechargeable battery packs are not infringing the Class-9 regulation, which means it is considered as non-dangerous goods and not restricted for air transportation. Individual lithium polymer rechargeable battery and pack with respectively not more than 20Wh and 100Wh that passes the UN defined safety tests, is not restricted for air transportation. Battery also fulfills the requirement of Special Provision SP188 under IMDG code.

SECTION 16. OTHER INFORMATION

The information contained herein is based on the data available to us and believed to be correct. However, CREUP makes no warranty, expressed or implied. Users should consider the 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.