

**Material Safety Data Sheet**

**Model No.: All Li-ion polymer rechargeable batteries**

IDENTITY (As Used on Label and List) All Danionics Li-ion Polymer Rechargeable batteries	Note: Blank spaces are not permitted if any item is not applicable or no information is available, the space must be marked to indicate that.
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**Section I – Information of Manufacturer**

Manufacturer's Name Danionics (Shenzhen) Limited	Emergency Telephone Number 86-755-84637788
Address (Number, Street, City State, and ZIP Code) A1 building, Hai Xiang Industrial Park, Lan Zhu Road, Export Processing Zone, Shenzhen Grand Industrial Zone, Guangdong, China	Telephone Number for information 86-755-84637788
	Date of prepared and revision 08/10/2004, rev. 0
	Signature of Preparer (optional)

**Section II - Hazardous Ingredients / Identity Information**

Hazardous Components:

Description:	CAS No.	PEL	TLV
Lithium cobaltite (LiCoO <sub>2</sub> )	: 12190-7-3	0.05 mg/m <sup>3</sup>	0.02 mg/m <sup>3</sup>
Graphite (C)	: 7782-42-5	2.5 mg/m <sup>3</sup> (as dust)	2.5 mg/m <sup>3</sup> (as dust)
Organic solvent	:	None established	None established
Lithium salt	:	None established	None established
Poly(vinylidene difluoride) (PVdF)	: 24937-79-9	None established	None established
Aluminum (Foil & Bag)	: 07429-90-5	10 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>
Copper (Foil)	: 7440-50-8	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>

**Section III - Physical / Chemical Characteristics**

Boiling Point N.A.	Specific Gravity (H <sub>2</sub> O=1) N.A.
Vapor Pressure (mm Hg) N.A.	Melting Point N.A.
Vapor Density (AIR=1) N.A.	Evaporation Rate (Butyl Acetate) N.A.
Solubility in Water N.A.	
Appearance and Odor	Geometric solid object, odorless

**Section IV – Hazard Classification**

Classification

N.A.

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**Section V – Reactivity Data**

Stability	Unstable		Conditions to Avoid
	Stable	X	

Incompatibility (Materials to Avoid)

**Hazardous Decomposition or Byproducts**

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

**Section VI - Health Hazard Data**

Route(s) of Entry	Inhalation?	Skin?	Ingestion?
	N.A.	N.A.	N.A.

**Health Hazard (Acute and Chronic) / Toxicological information**

- In case of electrolyte leakage, skin will be itchy when contaminated with electrolyte.
- In contact with electrolyte can cause severe irritation and chemical burns.
- Inhalation of electrolyte vapors may cause irritation of the upper respiratory tract and lungs.

**Section VII – First Aid Measures**

**First Aid Procedures**

- If electrolyte leakage occurs and makes contact with skin, wash with plenty of water immediately.
- If electrolyte comes into contact with eyes, wash with copious amounts of water for fifteen (15) minutes, and contact a physician.
- If electrolyte vapors are inhaled, provide fresh air and seek medical attention if respiratory irritation develops. Ventilate the contaminated area.

**Section VIII - Fire and Explosion Hazard Data**

Flash Point (Method Used)	Ignition Temp.	Flammable Limits	LEL	UEL
N.A.	N.A.	N.A.	N.A.	N.A.

**Extinguishing Media**

Carbon Dioxide, Dry Chemical or Foam extinguishers

**Special Fire Fighting Procedures**

N.A.

**Unusual Fire and Explosion Hazards**

- Do not dispose of battery in fire - may explode.
- Do not short-circuit battery - may cause burns.

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**Section IX – Accidental Release or Spillage**

Steps to Be Taken in Case Material is Released or Spilled

Batteries that are leakage should be handled with rubber gloves.

Avoid direct contact with electrolyte.

Wear protective clothing and a positive pressure Self-Contained Breathing Apparatus (SCBA).

**Section X – Handling and Storage**

Safe handling and storage advice

Batteries should be handled and stored carefully to avoid short circuits.

Do not store in disorderly fashion, or allow metal objects to be mixed with stored batteries.

Never disassemble a battery.

Do not breathe cell vapors or touch internal material with bare hands.

Keep batteries between -30°C and 35°C for prolong storage.

**Section XI – Exposure Controls / Person Protection**

Occupational Exposure Limits: LTEP

N.A.

STEP

N.A.

Respiratory Protection (Specify Type)

N.A.

Ventilation

Local Exhausts

N.A.

Special

N.A.

Mechanical (General)

N.A.

Other

N.A.

Protective Gloves

N.A.

Eye Protection

N.A.

Other Protective Clothing or Equipment

N.A.

Work / Hygienic Practices

N.A.

**Section XII – Ecological Information**

N.A.

**Section XIII – Disposal Method**

Dispose of batteries according to government regulations.

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**Section XIV – Transportation Information**

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All DANIONICS lithium ion batteries comply with the necessary testing requirements under the UN Manual of Tests and Criteria as referenced in the following transportation regulations:

1. UN Recommendations on the Transport of Dangerous Goods Model Regulations
2. U.S. Department of Transportation hazardous materials regulations (HMR),
3. International Civil Aviation Organization (ICAO) Technical Instructions,
4. International Air Transport Association (IATA) Dangerous Goods Regulations, and
5. International Maritime Dangerous Goods (IMDG) Code.

DANIONICS Batteries are exempted from these regulations since they meet all UN Testing requirements and contain no more than 8 grams of equivalent lithium content. (See 49 CFR 173.185 of the U.S. HMR, Special Provision A45 of the ICAO Technical Instructions and IATA Dangerous Goods Regulations, and Special Provision 188 of the IMDG Code and UN Model Regulations.)

**Equivalent Lithium Content Calculation:**

Under the UN Manual of Tests and Criteria (ST/SG/AC.10/11/Rev.3), to determine the equivalent lithium content of a lithium ion cell (and battery), multiply the rated capacity in ampere-hours of each cell by 0.3. (Under this formula, every ampere-hour in a lithium ion cell would be equivalent to 0.3 grams of lithium metal.)

**Example:** A lithium ion cell in a laptop battery pack may have a rated capacity of 2.2 ampere-hours. Applying a conversion factor of 0.3, a battery pack with 9 of these cells contains 5.94 grams of equivalent lithium content. ( $2.2 \times 0.3 \times 9 = 5.94$  grams of equivalent lithium content)

Batteries should be packaged in accordance with these transportation regulations. It is especially important to ensure that batteries are packed in such a way to prevent short circuits.

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**Section XV – Regulatory Information**

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Special requirement be according to the local regulatory.

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**Section XVI – Other Information**

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The data in this Material Safety Data Sheet relates only to the specific material designated herein.

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