



# MATERIAL SAFETY DATA SHEET

Product Name: Li-Ion Rechargeable Battery

436 Kato Terrace, Fremont, CA 94539 U.S.A.

Tel: 510.687.0388 Fax: 510.687.0328

[www.TenergyBattery.com](http://www.TenergyBattery.com)



**Model: Lithium-Ion Rechargeable Battery**

**Number: 5RD-4/3D700**

<b>Prepared by</b>	<b>Approved by</b>
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Date: Jan 10, 2014	Date: Jan 10, 2014

1. Chemical product and company identification

**PRODUCT IDENTIFICATION**

**Tenergy Lithium-Ion/ Polymer Cell/Battery**

Norminal Voltage 3.7 V Equivalent Lithium content : ≤20Wh

Testing Period Jan 3, 2012 to Jan 25, 2013

**MANUFACTURER**

Tenergy Corporation

436 Kato Terrace, Fremont, CA 94539

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2. COMPOSITION INFORMATION

<b>INGREDIENTS</b>	<b>%</b>	<b>CAS NUMBER</b>
Lithium Cobaltate	30.60%	12190-79-3
Graphite powder	15.06%	7782-42-5
Rubber	10.36%	69028-37-1
Carbon black	0.79%	1333-86-4
Styrene-butadiene rubber (SBR)	0.71%	61789-96-6
Polypropylene	1.74%	9003-07-0
Polyethylene	1.27%	9002-88-4
Lithium hexafluorophosphate	1.27%	21324-40-3
Ethylene carbonate (EC)	6.34%	96-49-1
Diethyl carbonate (DEC)	4.76%	105-58-8
Propylene carbonate (PC)	1.11%	108-32-7

Specifications and data are subject to change without notice. Contact Tenergy for latest information.

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Polycaprolactam (NYLON 6)	1.11%	25038-54-4
Copper	9.65%	7440-50-8
Aluminium	4.12%	7429-90-5
Nickel	1.27%	7440-02-0
Polymide Film	0.43%	58698-66-1

### 3. HAZARDS IDENTIFICATION

#### PRIMARY ROUTES OF ENTRY

Skin contact, Skin absorption, Eye contact, Inhalation, and Ingestion : NO

#### SYMPTOMS OF EXPOSURE

Skin contact, Skin absorption, Eye contact, Inhalation

No effect under routine handling and use.

### 4. FIRST AID

INHALATION, EYE CONTACT, and SKIN CONTACT: Not a health hazard.

#### INGESTION

If swallowed, obtain medical attention immediately.

If exposure to internal materials within cell due to damaged outer casing, the following actions are recommended

#### INHALATION

Leave area immediately and seek medical attention

#### EYE CONTACT

Rinse eyes with water for 15 minutes and seek medical attention.

#### SKIN CONTACT

Wash area thoroughly with soap and water and seek medical attention

#### INGESTION

Drink milk/water and induce vomiting; seek medical attention

### 5. FIRE FIGHTING MEASURE GENERAL HAZARD

Cell is not flammable but internal organic material will burn if the cell is incinerated.

Combustion products include, but are not limited to hydrogen fluoride, carbon monoxide and carbon dioxide.



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## **EXTINGUISHING MEDIA**

Use extinguishing media suitable for the materials that are burning

## **SPECIAL FIREFIGHTING INSTRUCTIONS**

If possible, remove cell(s) from fire fighting area. If heated above 125°C, cell(s) can explode/vent

## **FIREFIGHTING EQUIPMENT**

Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear.

## **6. ACCIDENTAL RELEASE MEASURE ON LAND**

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 AND STORAGE HANDLING**

No special protective clothing required for handling individual cells.

## **STORAGE**

Store in a cool, dry place

## **8. Exposure controls/personal protection**

### **ENGINEERING CONTROLS**

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

### **PERSONAL PROTECTION**

Respirator: Not required during normal operations. SCBA required in the event of a fire.

Eye/face protection: Not required beyond safety practices of employer

Gloves: Not required for handling of cells.

Foot protection: Steel toed shoes recommended for large container handling.



**9. Physical and chemical properties**

<b>State</b>	Solid	<b>Odor</b>	N/A
<b>PH</b>	N/A	<b>Vapor pressure</b>	N/A
<b>Vapor density</b>	N/A	<b>Boiling point</b>	N/A
<b>Solubility in water</b>	Insolubl	<b>Specific gravity</b>	N/A
<b>Density</b>	N/A		N/A

**10. STABILITY AND REACTIVITY**

**REACTIVITY**

None

**INCOMPATIBILITIES**

None (during normal operation), Avoid exposure to heat, open flame, and corrosives.

**HAZARDOUS DECOMPOSITION PRODUCTS**

None (during normal operating conditions). If cells are opened, hydrogen fluoride and carbon monoxide may be released.

**CONDITIONS TO AVOID**

Avoid exposure to heat and open flame. Do not puncture, crush or incinerate.

**11. TOXCOLOGICAL INFORMATION**

This product does not elicit toxicological properties during routine handling and use

Sensitization: No	Teratogenicity: No	Reproductive toxicity: No	Acute toxicity: No
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This product does not contain any kinds of the following substances and halogen-type flame



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retardants including Chlorine and Bromide type harmful flame retardants which are listed in Appendix of TCO documents and relevant international ECO requirements:

Polybromated Biphenyls	(PBB)
Polybromated Biphenyl Ethers	(PBBE)
Polybromated Biphenyl Oxides	(PBBO)
Polybromated Diphenylethers	(PBDE)
Polybromated Diphenylethers	(PBDE)
Polychlorinated Biphenyl	(PCB)
Polychlorinated Diphenylethers	(PCDE)
Tetrabromobisphenol A	(TBBPA)

Asbestos, Antimonytrioxide, Dioxine

None of the following substances will be exposed, leaked, or emitted during transportation, storage or any operation and any temperature condition:

Chlorinated Fluorohydrocarbon (FCKW)

Acrylonitrile, Styrol, Phenol, Benzol

Mercury of greater than 0.0001 wt% for alkaline battery Mercury of greater than 0.0005 wt% for other battery

Lithium content of greater than 0.5g/cell, 1.5g/battery Cadmium, lead, and other harmful heavy ion

This product does not contain mercury, cadmium and lithium-ion.

Mercury content: N/A

Lithium-ion :

Cadmium content: N/A

If the cells are opened through misuse or damage, discard immediately. Internal components of cell are irritants and sensitizers.

## 12.ECOLOGICAL INFORMATION

Some materials within the cell are bioaccumulative. Under normal conditions, these materials are contained and pose no risk to persons or the surrounding environment.

## 13.DISPOSAL CONSIDERATIONS

CALIFORNIA REGULATED DEBRIS

RCRA Waste Code: Non-regulated



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Dispose of according to all federal, state, and local regulations.

#### **14.REGULATORY INFORMATION**

OSHA hazard communication standard (29 CFR 1910.1200)

Hazardous

Non-hazardous

#### **15.Transport information**

For the international transport of lithium batteries, they must comply with these regulations: the International Maritime Dangerous Goods (IMDG) Code by International Maritime Organization (IMO), Dangerous Goods Regulations (DGR) by International Air Transport Association (IATA) and Technical Instructions for the Safe Transport of Dangerous Goods by Air (TI) by International Civil Aviation Organization (ICAO). These regulations are based on the UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria.

Lithium batteries which meet the requirements of UN38.3 (UN Manual of Tests and Criteria, Part III, subsection 38.3) could be transported by air and by sea as ordinary goods, otherwise should be transported according to Class 9, Packing Group II hazardous goods.

As the published of the UN Recommendations on the Transport of Dangerous Goods, all these regulations have added some new contents to regulate the transport of lithium ion batteries. And they should be complied since 1 January 2009.

1. For lithium ion batteries, UN ID number is 3480. For lithium ion batteries contained in equipment or lithium ion batteries packed with equipment, UN ID number is 3481.
- 2.The consignment should be fully described by proper shipping name and packed, marked and in proper condition for carriage by air. The consignment is not classified as dangerous under the current edition of the IATA 55<sup>th</sup> Effective, Dangerous goods regulation and all applicable carrier and government regulations.
3. For transported by air, Lithium-ion Cells/Batteries shipped as “Not Restricted” Cargo:Must comply with Section II of PI965 accordingly; For cells, the Watt-hour rating should not be more than 20Wh; For batteries, the



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Watt-hour rating should not be more than 100Wh. Watt- hour rating must be marked on the outside of the battery case (marked by manufacturer). (Except those manufactured before January 1, 2009, which may be transported without this marking until December 31, 2010).

4. Each consignment must be accompanied with a document such as an air waybill with an indication. For those Lithium ion cells/ batteries contained in equipment, the equipment must be equipped with an effective means of preventing accidental activation. The telephone number for additional information for Tenergy products is (510) 687-0388.
5. Quantity per package shall not exceed 10kg.
6. Each package must be capable of withstanding a 1.2m drop test in any orientation without damage of cells or batteries contained therein.
7. Lithium batteries which meet the requirements of A154 could be transported by air, and the batteries manufactured by TENERGY meet these requirements.( A154 Lithium batteries identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport. )
8. Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with

## **16. Other Information**

This information is not effective to all the batteries manufactured by Tenergy. This information comes from reliable sources, but no warranty is made to the completeness and accuracy of information contained. Tenergy Corporation doesn't assume responsibility for any damage or loss because of misuse of batteries. Users should grasp the correct use method and be responsible for the use of batteries.