



**SHEERVISION ULTRA SMART BATTERY PACK  
PART # DUB / DDUB  
MSDS – MATERIAL SAFETY DATA SHEET**

**The SheerVision Ultra Battery Pack (Part # DUB / DDUB) is an advanced, microprocessor-controlled battery pack used for SheerVision portable headlight systems.**

**The battery pack has been tested for user safety (ETL/CSA) and also passed UN T1-T8 testing to insure safety when being shipped.**

**The only component that is of concern is the Polymer Lithium ion battery component that is manufactured by Tenergy Battery of Fremont, California, U.S.A. The MSDS for this component follows.**

**For additional information please contact SheerVision.**

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**SheerVision, Inc.**

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## **MATERIAL SAFETY DATA SHEET**

Product Name: Polymer Lithium ion Batteries

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: All polymer lithium ion batteries Revised date: Jan.8, 2011 page 1/1

## **1. PRODUCT & COMPANY IDENTIFICATION**

### PRODUCT NAME

Polymer Lithium Ion rechargeable batteries

### MODEL/SIZE

All

### MANUFACTURER

Name: Tenergy Corporation

Address: 436 Kato Terrace, Fremont, CA94539

Telephone: (510)687-0388

## **2. COMPOSITION/INFORMATION ON INGREDIENTS**

	CAS RN	Approximate of total weight
Lithium Cobalt Oxide (LiCoO <sub>2</sub> )	12190-79-3	11.88g
Carbon (Graphite):	7440-11-0	6.48g
Electrolyte (LiPF <sub>6</sub> /EC/DMC/EMC)	21324-40-3 /96-49-1 /616-38-6 / 623-53-0	4.68g
Aluminum	7429-90-5	1.44g
Copper	7440-50-8	3.6g
Hexafluoropropylene-Vinylidene-Fluoride Copolymer	9011-17-0	1.44g
PP/PE/PET		1.08g

## **3. HAZARDS/HEALTH IDENTIFICATION**

### **Emergency Overview** (including Signs and Symptoms, Route(s) of Entry, etc.)

Intact batteries present no specific hazards.

### **Acute Health Hazards** (e.g., Inhalation, Eye Contact, Skin Contact, Ingestion, etc.):

Burning batteries: AVOID inhalation of toxic fumes. Burning batteries emit toxic fumes, which are irritating to the lungs.

Leaking batteries: AVOID exposure to leaking electrolyte, it can cause severe irritation and/or damage to the skin, mucous membrane or eyes.

### **Chronic Health Effects** (e.g., Carcinogenicity, Teratology, Reproduction, Mutagenicity, etc.):

Cobalt: Suspected human carcinogenic agent.

**Medical Conditions Generally Aggravated by Exposure:** None.

## **4. FIRST-AID MEASURES**

**Inhalation:** If battery is burning, leave the area immediately. If exposed to fumes, seek medical attention promptly.

**Skin Contact:** If battery electrolyte leaks on to the skin flush the affected area for at least 15 minutes with clean water. DO NOT attempt to neutralize. Seek medical attention promptly.

## **5. FIRE-FIGHTING AND EXPLOSION HAZARD DATA**

**Flammable Properties:** N/A

**Flashpoint:** Method:

**Autoignition** Temperature:

**Flammable Limits:** N/A

**Lower flammable limit:** Upper flammable limit:



**Hazardous Combustion Products:** Burning batteries may emit acrid smoke irritating fumes, and toxic fumes of fluoride.

**Extinguishing Media:** Carbon dioxide (CO<sub>2</sub>) or dry chemical fire extinguisher, 10-B: C.

**Fire Fighting Instructions:**

**Personnel:** Fight the fire in a defensive mode, while exiting the area. When using a CO<sub>2</sub> fire extinguisher, DO NOT re-enter the area until it has been thoroughly ventilated (i.e., purged) of the CO<sub>2</sub> extinguishing agent.

**Firefighters:** Use a self-contained breathing apparatus (SCBA).

**6. ACCIDENTAL RELEASE MEASURES**

**Small Spill:** If batteries show signs of leaking, AVOID skin or eye contact with the material leaking from the battery. Use chemical resistant rubber gloves and non-flammable absorbent materials for clean-up. Coordinate disposition with the Installation Environmental Office.

**7. HANDLING & STORAGE**

**Handling:** Recharge batteries IAW methods specified in applicable technical manuals.

DO NOT:

- Overcharge this battery.
  - Abuse, mutilate or short circuit the battery.
- Storage:** Gain approval for storage areas from the Installation Fire Department. Store batteries in a cool (i.e., <130°F), dry and well ventilated area.

DO NOT:

- Store batteries in direct sunlight or under hot conditions.
- Smoke and keep batteries away from open flame or heat.
- Store batteries in the same stacks with hazardous materials.
- Store batteries in office areas, or other areas where personnel congregate.

**Work/Hygienic Practices:** Thoroughly wash hands after cleaning-up a battery spill (i.e., leaking or venting batteries). NO eating, drinking or smoking in battery storage areas.

**8. PERSONAL PROTECTION**

**Personal protective equipment:**

**Respiration protection:** Self-contained breathing apparatus;

**Eye protection:** Safety glasses

**Skin protection:** Rubber gloves;

**9. PHYSICAL & CHEMICAL PROPERTIES**

**Boiling Point @ 760 mm Hg (°C):** NA

**Vapor Pressure (mm Hg @ 25°C):** NA

**Vapor Density (Air = 1):** NA

**Density (grams/cc):** NA

**Percent Volatile by Volume (%):** NA

**Evaporation Rate (Butyl Acetate = 1):** NA

**Physical State:** NA

**Solubility in Water (% by Weight):** NA

**pH:** NA

**Appearance and Odor:** geometric solid object



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## **10. STABILITY & REACTIVITY**

**Stable or unstable:** Stable

**Incompatibility (Materials to avoid) :** NA

**Hazardous decomposition products:** NA

**Decomposition temperature (0°F):** NA

**Hazardous polymerization:** Will Not Occur

**Condition to Avoid:** Avoid electrical shorting

## **11. TOXICOLOGICAL INFORMATION**

Acute toxicity: None

## **12. ECOLOGICAL INFORMATION**

NA

## **13. DISPOSAL CONSIDERATION**

TENERGY Polymer Lithium Ion rechargeable cells and batteries contain no toxic metals, only naturally occurring trace elements. Lithium Cells and batteries are exempted from hazardous waste standards under the Universal Waste Regulations, therefore, it is advisable to consult with local state or federal authorities as disposal regulations may vary dependent on location.

## **14. 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 52th 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 Part 1 of P1965-P1967 accordingly; For cells, the Watt-hour rating should not be more than 20Wh; For batteries, the 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 1 January 2009, which may be transported without this marking until 31 December 2010).

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

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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 cells 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 conductive materials within the same packaging that could lead to short circuit.

9. Comply with SP188 of IMDG

#### **15. REGULATORY INFORMATION**

None

#### **16. OTHER INFORMATION**

The information contained herein is furnished without warranty of any kind. Users should consider this 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.