

## Material Safety Data Sheet

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### 1. Product & Company Identification

<b>Product:</b>	Li-Ion rechargeable battery (14500)
<b>Manufacturer:</b>	Conrad Electronic SE
<b>Nominal voltage:</b>	3,7 V
<b>Nominal capacity:</b>	800 mAh
<b>Address:</b>	Klaus-Conrad-Str. 1, D-92240 Hirschau
<b>Telephone:</b>	+49 (0) 9604 / 40 - 8988
<b>Date of issue:</b>	03.11.2016

### 2. Composition/Information On Ingredients

Name	CAS RN	Approximate percent of total weight
LiFePO <sub>4</sub>		33%
Carbon (Graphite)	7440-11-0	18%
Electrolyte (LiPF <sub>6</sub> /EC/DMC/EMC)	21324-40-3/96-49-1/616-38-6/623-53-0	13%
Aluminum	7429-90-5	4%
Copper	7440-50-8	10%
Hexafluoropropylene-Vinylidene-Fluoride Copolymer	9011-17-0	4%
PP/PE/PET		3%

### 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.

## Material Safety Data Sheet

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### 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:** N/A

**Autoignition Temperature:** N/A

**Flammable Limits:** N/A

**Lower flammable limit:** N/A

**Upper flammable limit:** N/A

**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.

## Material Safety Data Sheet

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### 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

Item no.: 1362894

## Material Safety Data Sheet

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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
Watt Hour:	2.96 Wh

### 11. Toxicological Information

Acute toxicity: None

### 12. Ecological Information

N/A

### 13. Disposal Consideration

Cylindrical 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.

## Material Safety Data Sheet

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### 14. Transport Information

This report applies to by sea, by air and by land.

The Li-ion Battery tested according to the requirements of the 5th revised edition of the UN manual of tests and Criteria, Part III, subsection 38.3.

Lithium ion battery was 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; The LITHIUM ION BATTERY according to Section II of PACKING INSTRUCTION 967 of the 2016 IATA Dangerous Goods regulations 57th Edition may be transported and applicable U.S.DOT regulations for the safe transport of Li-ion Battery.

More information concerning shipping, testing, marking and packaging can be obtained from label master at <http://www.labelmaster.com/>.

The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking. The materials and pack design shall be chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of moisture.

The package must be handled with care and that a flammability hazard exists if the package is damaged; Each package must be labeled with a Li-ion Battery handling label or in addition to the Class 9 hazard label. With regard to transport, the following regulations are cited and considered:

- The International Civil Aviation Organization (ICAO) Technical Instructions.
- The International Air transport Association (IATA) Dangerous Goods Regulations. UN number of lithium battery: UN3480 or UN3481;

UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment;

UN Classification (Transport hazard class): Non dangerous;

Marine pollutant (Y/N): N;

- The International Maritime Dangerous Goods (IMDG) Code.

For lithium-ion batteries by sea, provided that packaging is strong and prevent the products from short-circuit.

UN number of lithium battery: UN3480 or UN3481;

UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment;

UN Classification (Transport hazard class): Non dangerous; Marine pollutant (Y/N): Y;

Special Provision: International maritime dangerous goods code (IMDG) 188, 230, 310, 348, 957;

- The US Hazardous Materials Regulation (HMR) pursuant to a final rule issued by RSPA
- The Office of Hazardous Materials Safety within the US Department of Transportations' (DOT) Research and Special Programs Administration (RSPA)

Item no.: 1362894

## Material Safety Data Sheet

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### 15. Regulatory Information

OSHA hazard communication standard (29 CFR 1910.1200)

Hazardous: \_\_\_\_\_ Non-hazardous:  X

### 16. Other Information

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration of investigation. This material safety data sheet provides guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required.

The data/information contained herein has been reviewed and approved for general release on the basis that this document contains no export controlled information.