

# Material Safety Data Sheet

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## 1. Product & Company Identification

<b>Product:</b>	Lithium Polymer Rechargeable Battery
<b>Manufacturer:</b>	Conrad Electronic SE
<b>Nominal voltage:</b>	14.8 V
<b>Nominal capacity:</b>	650 mAh, 9.62 Wh
<b>Address:</b>	Klaus-Conrad-Str. 1, D-92240 Hirschau
<b>Telephone:</b>	+49 (0) 9604 / 40 - 8988
<b>Date of issue:</b>	10.11.2018

## 2. Hazard Identification

### Preparation hazards and classification

Not dangerous with normal use. Do not dismantle, open or shred LITHIUM POLYMER CELL the ingredients contained within or their ingredients products could be harmful.

### Appearance, Color, Odor

Solid object with no odor, no color.

### Primary Route(s) of Exposure

These chemicals are contained in a sealed stainless steel enclosure. Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by Inhalation, Ingestion, Eye contact and Skin contact.

### Potential Health Effects:

ACUTE (short term): see Section 8 for exposure controls In the event that this battery has been ruptured, the electrolyte solution contained within the battery would corrosive and can cause burns.

Inhalation: Inhalation of materials from a sealed battery is not an expected route of exposure. Vapors or mists from a ruptured battery may cause respiratory irritation.

Ingestion: Swallowing of materials from a sealed battery is not an expected route of exposure. Vapors or mists from a ruptured battery may cause respiratory irritation.

Ingestion: Swallowing of materials from a sealed battery is not an expected route of exposure. Swallowing the contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.

Skin: Contact between the battery and skin will not cause any harm. Skin contact with contents of an open battery can cause severe irritation or burns to the skin.

Eye: Contact between the battery and the eye will not cause any harm. Eye contact with contents of an open battery can cause severe irritation or burns to the eye.

CHRONIC (long term): see Section 11 for additional toxicological data.

### Medical Conditions Aggravated by Exposure

Not applicable

### Reported as Carcinogen

Not applicable

## Material Safety Data Sheet

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### 3. Composition/Information on Ingredients

LITHIUM POLYMER CELL is a mixture

Hazardous Ingredients (Chemical Name)	Concentration or concentration ranges (%)	CAS Number
Lithium Cobalt Oxide (CoLiO <sub>2</sub> )	15-40	12190-79-3
Graphite	10-30	7782-42-5
Phosphate(1-),hexafluoro-, lithium	10-30	21324-40-3
Copper	7-13	7440-50-8
Aluminum foil	5-10	7429-90-5
Nickel	1-5	7440-02-0

Labeling according to EC directives.

No symbol and risk phrase are required.

Note: CAS number is Chemical Abstract Service Registry Number.

N/A=Not apply.

### 4. First Aid Measures

#### Inhalation

If contents of an opened battery are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice.

#### Skin contact

If skin contact with contents of an open battery occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard.

#### Eye contact

If eye contact with contents of an open battery occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes while holding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility.

#### Ingestion

If ingestion of contents of an open battery occurs, never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 60 to 240 mL (2-8 oz.) of water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Quickly transport victim to an emergency care facility.

## Material Safety Data Sheet

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### 5. Fire Fighting Measures

#### Flammable Properties

In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be flammable. Like any sealed container, battery cells may rupture when exposed to excessive heat; this could result in the release of flammable or corrosive materials.

#### Suitable Extinguishing Media

Use extinguishing media suitable for the materials that are burning.

#### Unsuitable extinguishing Media

Not available

#### Explosion Data

Sensitivity to Mechanical Impact: This may result in rupture in extreme cases

Sensitivity to Static Discharge: Not Applicable

#### Specific Hazards arising from the chemical

Fires involving LITHIUM POLYMER CELL can be controlled with water. When water is used, however, hydrogen gas may evolve. In a confined space, hydrogen gas can form an explosive mixture. In this situation, smothering agents are recommended to extinguish the fire.

#### Protective Equipment and precautions for firefighters

As for any fire, evacuate the area and fight the fire from a safe distance. Wear a pressure-demand, self-contained breathing apparatus and full protective gear.

Fight fire from a protected location or a safe distance. Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear.

#### NFPA

Health: 0    Flammability: 0    Instability: 0

### 6. Accidental Release Measures

#### Personal Precautions, protective equipment, and emergency procedures

Restrict access to area until completion of clean-up. Do not touch the spilled material. Wear adequate personal protective equipment as indicated in Section 8.

#### Environmental Precautions

Prevent material from contaminating soil and from entering sewers or waterways.

#### Methods and materials for Containment

Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately.

#### Methods and materials for cleaning up

Absorb spilled material with an inert absorbent (dry sand or earth). Scoop contaminated absorbent into an acceptable waste container. Collect all contaminated absorbent and dispose of according to directions in Section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal.

# Material Safety Data Sheet

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## 7. Handling and Storage

### Handling

Don't handling LITHIUM POLYMER CELL with metalwork. Do not open, disassemble, crush or burn battery. Ensure good ventilation/ exhaustion at the workplace.

Prevent formation of dust.

Information about protection against explosions and fires: Keep ignition sources away- Do not smoke.

### Storage

If the LITHIUM POLYMER CELL is subject to storage for such a long term as more than 3 months, it is recommended to recharge the LITHIUM POLYMER CELL periodically.

3 months: -10 °C ~ +40 °C, 45 to 85 Rhand recommended at 0 °C ~ +35 °C for long period storage.

The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more.

The voltage for a long time storage shall be 14.8 V ~ 16.8 V range.

Do not storage LITHIUM POLYMER CELL haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.

Keep out of reach of children.

Do not expose LITHIUM POLYMER CELL to heat or ire. Avoid storage in direct sunlight.

Do not store together with oxidizing and acidic materials.

## 8. Exposure Controls/Personal Protection

### Engineering Controls

Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor.

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

### Personal Protective Equipment

Respiratory Protection: Not necessary under normal conditions.

Skin and body Protection: Not necessary under normal conditions, Wear neoprene or nit ride rubber gloves if handling an open or leaking battery.

Hand protection: Wear neoprene or natural rubber material gloves if handling an open or leaking battery.

Eye Protection: Not necessary under normal conditions, Wear safety glasses if handling an open or leaking battery.

Other Protective Equipment Have a safety shower and eye wash fountain readily available in the immediate work area.

### Hygiene Measures

Do not eat, drink, or smoke in work area. Maintain good housekeeping.

## Material Safety Data Sheet

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### 9. Physical and Chemical Properties

#### Physical State:

Form: Solid

Color: Black

Odour: Monotony

#### Change in condition:

pH, with indication of the concentration	Not applicable
Melting point/freezing point	Not available.
Boiling Point, initial boiling point and Boiling range	Not available.
Flash Point	Not available.
Upper/lower flammability or explosive limits	Not available.
Vapor Pressure	Not applicable
Vapor Density: (Air = 1)	Not applicable
Density/relative density	Not available.
Solubility in Water	Insoluble
n-octane/water partition coefficient	Not available.
Auto-ignition temperature	130°C
Decomposition temperature	Not available.
Odour threshold	Not available.
Evaporation rate	Not available.
Flammability (soil, gas)	Not available.
Viscosity	Not applicable

### 10. Stability and Reactivity

#### Stability

The product is stable under normal conditions.

#### Conditions to Avoid (e.g. static discharge, shock or vibration)

Do not subject LITHIUM POLYMER CELL to mechanical shock.

Vibration encountered during transportation does not cause leakage, fire or explosion.

Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse.

#### Incompatible Materials

Not Available

#### Hazardous Decomposition Products

This material may release toxic fumes if burned or exposed to fire

#### Possibility of Hazardous Reaction

Not Available

## Material Safety Data Sheet

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### 11. Toxicological Information

#### Irritation

Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur.

#### Sensitization

Not Available

#### Neurological Effects

Not Available

#### Teratogenicity

Not Available

#### Reproductive Toxicity

Not Available

#### Mutagenicity (Genetic Effects)

Not Available

#### Topologically Synergistic Materials

Not Available

### 12. Ecological Information

#### General note:

Water hazard class 1 (Self-assessment): slightly hazardous for water.

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

#### Anticipated behavior of a chemical product in environment/possible environmental impact/ ecotoxicity

Not Available

#### Mobility in soil

Not Available

#### Persistence and Dependability

Not Available

#### Bio accumulation potential

Not Available

#### Other Adverse Effects

Not Available

# Material Safety Data Sheet

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## 13. Disposal Considerations

### Product disposal recommendation

Observe local, state and federal laws and regulations.

### Packaging disposal recommendation

Be aware discarded batteries may cause fire, tape the battery terminals to insulate them. Don't dis assembly the battery. Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local, state and federal laws and regulations.

The potential effects on the environment and human health of the substances used in batteries and accumulators; the desirability of not disposing of waste batteries and accumulators as unsorted municipal waste and of participating in their separate collection so as to facilitate treatment and recycling.

## 14. Transport Information

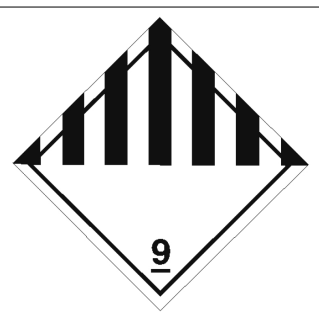
The transportation of primary lithium cells and batteries is regulated by the International Air Transport Association (According to PACKING INSTRUCTION 965 of IATA DGR 58th Edition for transportation), International Civil Aviation Organization, International Maritime Dangerous Goods Code and the US Department of Transportation.

The batteries must meet the following criteria for shipment:

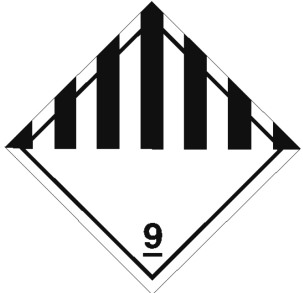
1. Air shipments must meet the requirements listed in Special Provision A45 of the International Air Transport Association Dangerous Goods Regulations.
2. Meet the requirements for the US Department of Transportation listed in 49 CFR 173.185.
3. The transport of primary lithium batteries is prohibited aboard passenger aircraft. Refer to the Federal Register December 15, 2004 (Hazardous Materials; Prohibited on the Transportation of Primary Lithium Batteries and Cells Aboard Passenger Aircraft; Final Rule)

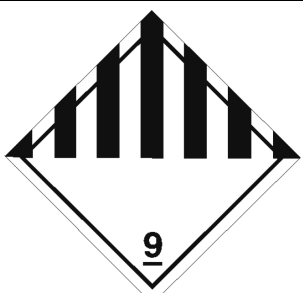
Lithium batteries shipped as "Lithium batteries", "Lithium batteries packed with equipment", or "Lithium batteries contained in equipment" may not be classified as "Dangerous Goods" when shipped in accordance with "special provision A45 of IA TA-D GR" or "special provision 188 of IMO-IMDG Code"

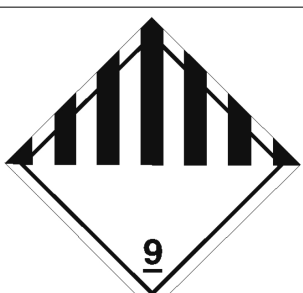
The following information is provided for domestic and international transportation:

DOT regulations:		
UN Classification (Transport Hazard class):	9	
UN number:	3480	
Packing group:	IA	
UN Proper shipping name(technical name):	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT	
Marine pollutant (Y/N):	Y	
Label:	Class 9	

## Material Safety Data Sheet

Land transport ADR/RID (cross-border):		
ADR/RID class:	9 Miscellaneous dangerous substances and articles	
Danger code (Kemler):	9	
UN-Number:	3480	
Packaging group:	IA	
Marine pollutant (Y/N):	N	
Label:	Class 9	
Description of goods:	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT	

Sea transport IMDG:		
IMDG Class:	9	
UN Number:	3480	
Label:	Class 9	
Packaging group:	IA	
EMS Number:	F-A, S-I	
Marine pollutant (Y/N):	Y	
Special regulation:	IMO 188	
Proper shipping name:	LITHIUM ION BATTERIES	

Air transport CIAO-TI and IATA-DGR:		
UN/ID Number:	3480	
Label:	Class 9	
Packaging group:	IA	
Marine pollutant (Y/N):	N	
Proper shipping name:	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT	



## Material Safety Data Sheet

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### 15. Regulatory Information

OSHA hazard communication standard (29 CFR 1910.1200)

Hazardous \_\_\_ Non-hazardous  \_\_\_

### 16. Additional Information

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchant-ability 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 and 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.

\*\*\*\*\*End of report\*\*\*\*\*