

# Material Safety Data Sheet

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## 1. Product & Company Identification

<b>Product name:</b>	Li-ion-Cell, rechargeable
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Voltage	Capacity	Energy content
3.7 V	3200 mAh	11.84 Wh

<b>Manufacturer:</b>	Conrad Electronic SE
<b>Address:</b>	Klaus-Conrad-Str. 1, D-92240 Hirschau
<b>Telephone:</b>	+49 (0) 9604 / 40 - 8988
<b>Date of issue:</b>	05.07.2022

## 2. Hazards Identification

The product is outside of the scope of GHS system.

### Main Hazards:

#### Fire or Explosion Hazards:

Lithium ion battery contains flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperatures (>150°C), when damaged or abused (e.g., mechanical damage or electrical overcharging). May burn rapidly with flare-burning effect. May ignite other batteries in close proximity.

#### Health Hazards:

Contact with the electrolyte of battery may be irritating to skin, eyes and mucous membranes. Fire will produce irritating, corrosive and/or toxic gases. Fumes may cause dizziness or suffocation.

## 3. Information on Ingredients

Ingredient	Concentration	CAS No.	EC No.
Cobalt lithium manganese nickel oxide	<45%	346417-97-8	620-032-4
Carbon (Cathode)	<25%	7440-44-0	231-153-3
Electrolyte (EMC/PC/EC/LiPF <sub>6</sub> )	<14%	623-53-0/108-32-7/ 96-49-1/21324-40-3	433-480-9/203-572-1/ 202-510-0/244-334-7
Aluminium foil	3-10%	7429-90-5	231-072-3
Copper foil	3-5%	7440-50-8	231-159-6
Polyvinylidene fluoride (PVDF)	<1%	24937-79-9	607-458-6

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### 4. First-Aid Measures

**Skin Exposure:**

If in contact with the internal materials of battery, remove the contaminated clothing, shoes and socks, immediately flush with plenty of water for at least 20 minutes. Call a physician.

**Eye Exposure:**

If in contact with the internal materials battery, lift your eyelides immediately and rinse them with running water for more than 20 minutes. Call a physician.

**Inhalation Exposure:**

If the internal materials of battery are inhaled, immediately remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a physician.

**Oral Exposure:**

Do not induce vomiting if the internal materials of battery are swallowed. Call a physician immediately.

**Most Important Symptoms/Effects, Acute and Delayed:**

No data available.

**Indication of Immediate Medical Attention and Special Treatment Needed, if Necessary:**

No data available.

### 5. Fire Fighting Measures

**Suitable Extinguishing Media:**

Water spray or regular foam.

**Specific Hazards Arising from the Chemical:**

May decompose upon combustion to generate irritating, corrosive or toxic fumes. Fumes may cause dizziness or suffocation.

**Special Protective Action for Fire-fighters:**

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Fire-extinguishing work is done from the windward. Uninvolved persons should evacuate to a safe place.

### 6. Accidental Release Measures

**Personal Precautions, Protective Equipment and Emergency Procedures:**

Use personal protective equipment. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Entry to noninvolved personnel should be controlled around the leakage area by roping off. Remove all sources of ignition.

**Environmental Precautions:**

Avoid leakage getting into the earth, ditches or waters. Avoid directly releasing the washing waste-water into the environment.

**Methods and Materials for Containment and Cleaning up:**

If the electrolyte leaks, use soil, sand or other non-combustible materials to absorb. The leaked batteries and dirty adsorbents should be placed in metal containers.

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### 7. Handling and Storage

#### Precautions for Safe Handling:

Operators should be trained and strictly abide by operating procedures. Wear appropriate protective clothing and safety gloves. Keep away from ignition sources, heat and flame. No smoking at working site. Handling is performed in a well ventilated place. Avoid disassembling the battery at will and reversing battery polarity within the battery assembly. The battery must be firmly packed in inner packaging so as to effectively prevent short circuits and short circuits caused by movement. If the electrolyte leaks, avoid directly contacting with eyes and skin. Avoid inhalation.

#### Incompatibilities:

Strong oxidizing agents, combustible materials and corrosives.

#### Conditions for Safe Storage, including Any Incompatibilities:

Store in a cool, dry, and well-ventilated area. Keep away from ignition sources, heat and flame.

#### Incompatibilities:

Strong oxidizing agents, combustible materials and corrosives. The battery must be firmly packed in inner packaging so as to effectively prevent short circuits and short circuits caused by movement. Storage place should be equipped with appropriate varieties and quantities of fire fighting equipment and leakage emergency treatment equipment.

### 8. Exposure Control / PPE

#### Control Parameters:

GBZ 2. I-2019 Occupational Exposure Limits for Hazardous Agents in the workplace - Part 1: Chemical Hazardous Agents:

Manganese and inorganic compounds, MnO<sub>2</sub>: PC-TWA 0.15 mg/m<sup>3</sup>

Nickel metal and insoluble compounds: PC-TWA 1mg/m<sup>3</sup> (remarks: G2B) metal and alloy

Cobalt and compounds, as Co: TWA 0.05mg/m<sup>3</sup> PC-STEL 0.1mg/m<sup>3</sup> (remarks: G2B) Sensitization

Copper: Copper dust: PC-TWA 1mg/m<sup>3</sup>, Copper smoke PC-TWA 0.2mg/m<sup>3</sup>

Aluminum metal and aluminum alloy dust: PC-TWA 3mg/m<sup>3</sup> (total dust)

#### ACGIH:

Copper: TLV-TWA 1mg(Cu)/m<sup>3</sup>, dust, mist TLV-TWA 0.2mg(Cu)/m<sup>3</sup>, fume

Aluminum: TLV-TWA: 1mg/m<sup>3</sup>

#### Appropriate Engineering Controls:

Mechanical exhaust required. Safety shower and eye bath.

#### Individual Protection Measures:

**Eye/Face Protection:** Wear chemical safety glasses if needed.

**Skin Protection:** Hand Protection: Wear safety gloves.

Body Protection: Wear appropriate protective clothing.

**Respiratory Protection:** Wear government approved respirator if needed.

**Thermal Hazards:** No data available.

**Other Protection:** No smoking, drinking and eating at working site

Wash thoroughly after handling.

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### 9. Physical / Chemical Properties

Appearance: Gray plastic film shell

Odor: Odorless

pH Value: 8-9

Solubility: Partial soluble in water

Boiling Point: No data available

Initial Boiling Point and Boiling Range: >300°C

Melting Point/Freezing Point/Flash Point (ClosedCup): No data available

Density/Relative Density: No data available

Kinematic Viscosity: No data available

Lower/Upper Explosion Limit/Flammability Limit: No data available

Vapour Pressure: No data available

Relative Vapor Density: No data available

Partition Coefficient N-Octanol/Water (Log Value): No data available

Auto ignition Temperature: No data available

Decomposition Temperature: No data available

Particle Characteristics: No data available

Flammability (Solid,Gas): No data available

### 10. Stability and Reactivity

#### Reactivity:

No data available.

#### Chemical Stability:

Stable under normal temperatures and pressures.

#### Possibility of Hazardous Reactions:

No data available.

#### Conditions to Avoid:

Avoid misoperation, exposure to heat and open flame. Avoid mechanical or electrical abuse and overcharge.

Prevent short circuits and short circuits caused by movement.

#### Incompatible Materials:

Strong oxidizing agents, combustible materials and corrosives.

#### Hazardous Decomposition Products:

Carbon oxides, metal oxides, etc.

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### 11. Toxicological Information

**Acute Toxicity:**

No data available.

**Skin Corrosion/Irritation:**

The electrolyte in the battery causes skin irritation.

**Serious Eye Damage/Irritation:**

The electrolyte in the battery causes eye irritation.

**Respiratory Sensitization:**

No data available.

**Carcinogenicity:**

No data available.

**Skin Sensitization:**

No data available.

**Germ Cell Mutagenicity:**

No data available.

**Reproductive Toxicity:**

No data available.

**Specific Target Organ Toxicity-Single Exposure:**

No data available.

**Specific Target Organ Toxicity-Repeated Exposure:**

No data available.

**Aspiration Hazard:**

No data available.

### 12. Ecological Information

**Toxicity:**

No data available.

**Persistence and Degradability:**

No data available.

**Bioaccumulative Potential:**

No data available.

**Mobility in Soil:**

No data available.

**Other Adverse Effects:**

No data available.

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### 13. Disposal Consideration

#### Disposal Methods:

The disposal of discarded battery shall comply with the requirements of relevant laws, regulations, policies and standards such as the Law of the People's Republic of China on the „Prevention and Control of Environmental Pollution by Solid Waste“ and „Technical Policy for the Prevention and Control of Waste Battery Pollution“. Contact a licensed professional waste disposal service to dispose of wastes. Used battery being transported for disposal or reclamation should be carefully checked prior to shipment to ensure the integrity of each battery and its suitability for transport.

### 14. Transport Information

#### Only Lithium Battery during Transport:

The product has passed the test items of UN Model Regulations, Manual of Test and Criteria Section 38.3 and UN Model Regulations, SP188, 1.2m drop test. The total net weight of the Lithium batteries is less than 10 kg.

#### RID/ADR (2021 Edition):

The product is not subject to RID/ADR according to special provision 188. According to 2.2.9.1.7(g) of RID/ADR (2021 Edition), Manufacturers and subsequent distributors of cells or batteries manufactured shall make available the test summary as specified in the Manual or Tests and Criteria, Part III, sub-section 38.3, paragraph 38.3.5.

#### IATA DGR (63rd Edition):

Proper Shipping Name: Lithium ion batteries

UN Number: UN3480

Hazard Class: 9

The product shall meet the General Requirements and section 1B or Packaging Instruction 965. According to 3.9.2.6.1 (g) of IATA DGR (63th Edition), Manufacturers and subsequent distributors of cells or batteries manufactures after 30 June 2003 shall make available the test summary as specified in the Manual of Tests and Criteria, Part III, sub-section 38.3, paragraph 38.3.5.

#### IMO IMDG Code (2020 Edition):

The product is not subject to IMO IMDG Code according to special provision 188. According to 2.9.4.7 of IMO IMDG Code (2020 Edition), Manufacturers and subsequent distributors of cells or batteries manufactured shall make available the test summary as specified in the Manual of Tests and Criteria, Part III, sub-section 38.3, paragraph 38.3.5.

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### 15. Regulatory Information

#### Domestic Regulations:

Only Lithium Battery during Transport:

#### Regulations Concerning Road Transportation of Dangerous Goods (JT/T 617-2018)

UN Number: UN3480

Name and Description: Lithium ion batteries

The product has passed the test items of UN Model Regulations, Manual of Test and Criteria Section 38.3. The product is not subject to JT/T 617-2018 according to special provision 188.

#### List of Dangerous Goods (GB 12268-2012):

UN Number: UN3480

Shipping Name: Lithium ion batteries

PackingGroup: II

The product has passed the test items of UN Model Regulations, Manual of Test and Criteria Section 38.3.

The product is not subject to GB 12268-2012 according to special provision 188.

#### List of Dangerous Goods byRail (2009 Edition):

Number: 91013

Name of Product: Lithium batteries

#### International Regulations:

##### Directive 2006/66/EC and 2013/56/EU:

The label, disposal and recycling of the battery shall meet the requirements of EU Directive 2006/66/EC and 2013/56/EU.

##### ICAO TI:

- 1) Unless be exempted according to ICAO TI, the lithium ion cell/batteries UN3480, PI 965) and lithium metal cell/batteries (UN 3090, PI968) are forbidden for carriage on passenger aircraft.
- 2) Unless be approved according to ICAO TI, Lithium ion cells/batteries (UN3480, PI 965) must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated design capacity.
- 3) A shipper is not permitted to offer for transport more than one (1) package prepared according to Section II of PI 965 and PI 968 in any single consignment. Not more than one (1) package prepared in accordance with Section II of PI 965 and PI 968 may be placed into an overpack.
- 4) Packages prepared according to Section II of PI 965 and PI 968 must be offered to the operator separately from other cargo and must not be loaded into a unit load device (ULD) before being offered to the operator.

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### 16. Other Information

#### Abbreviations and Acronyms:

CAS: Chemical Abstracts Service

EC: European Commission

ACGIH: American Conference of Government Industrial Hygienists

PC-TWA: Permissible concentration-time weighted average

PC-STEL: Permissible concentration-short term exposure limit

TLV-TWA: Time weighted average threshold limit

G2B: Possibly carcinogenic to humans

Sensitization: The substance may have allergenic effects

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulations concerning the International Carriage of Dangerous Goods by Rail

IMO IMDG CODE: International Maritime Organization International Maritime Code for Dangerous Goods

IATA DGR: International Air Transport Association Dangerous Goods Regulations

EU: European Union

ICAO TI: International Civil Aviation Organization Technical Instructions for the safe Transport of Dangerous Goods by Air

PI: Packaging Instruction

#### Other Information:

This SDS is only compiled for battery and based on the information such as ingredients provided by applicant and our current knowledge. This SDS shall be used only as a guide. If the battery is used as a component in another product, the information in this SDS may not be applicable. The users of this SDS must make independent judgement on the correctness and completeness and then decide its suitability according to the actual Situation. The users should take the relevant legal responsibilities for the consequences of use.