

Material Safety Data Sheet

1. Identification of the substance/mixture and of the company/undertaking

Product name:	Cylindrical Lithium-ion cell, rechargeable
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Model	Nominal Voltage	Capacity	Energy content
CMINR21700F2	3.62 V	5000 mAh	18.1 Wh

Manufacturer:	Conrad Electronic SE
Address:	Klaus-Conrad-Str. 1, D-92240 Hirschau
Telephone:	+49 (0) 9604 / 40 - 8988
Web:	www.conrad.de
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2. Hazards Identification

Hazards Identification

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

Primary Route (s) of Exposure

Inhalation, ingestion, Skin contact and Eye contact.

Potential Health Effects

Inhalation:

Vapors or mists from a ruptured battery may cause respiratory irritation.

Ingestion:

The battery ingredients contained within or their ingredients products can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.

Skin:

Skin contact with contents of an open battery can cause severe irritation or burns to the skin.

Eye:

Eye contact with contents of an open battery can cause severe irritation or burns to the eye.

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3. Composition/Information on Ingredients

Chemical Name	CAS Number	Concentration or concentration ranges (%)
Lithium Manganese Nickel and Cobalt Oxide	346417-97-8	37.53
Polyvinylidene Fluoride(PVDF)	24937-79-9	0.51
Aluminium	7429-90-5	2.56
Graphite	7782-42-5	19.98
Styrene-Butadiene Rubber(SBR)	9003-55-8	0.82
Carboxymethylcellulose	9000-11-7	0.25
Copper	7440-50-8	6.62
Iron	7439-89-6	17.03
Nickel	7440-02-0	0.29
Lithium Hexafluorophosphate	21324-40-8	1.69
Polyethylene(PE)	9002-88-4	2.1
Polypropylene(PP)	9003-07-0	1.05
Ethylene Carbonate (EC)	94-49-1	2.87
Dimethyl Carbonate (DMC)	10481-44-3	6.7

Note:

CAS number is Chemical Abstract Service Registry Number.

N/A=Not apply.

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4. First Aid Measure

Inhalation

Remove source of contamination or move victim to fresh air. Obtain medical advice.

Ingestion

Please rinse mouth thoroughly with water, induce vomiting under the guidance of professional personage. Please seek medical treatment in time.

Skin contact

Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.

Eye contact

Irrigate with flowing water for 15 minutes. If irritation persists, consult a physician.

5. Fire Fighting Measures

Characteristics of Hazard

Toxic fumes, gases or vapors may evolve on burning.

Hazardous Combustion Products

Carbon monoxide, carbon dioxide, lithium oxide fumes and so on.

Fire-extinguishing Methods and Extinguishing Media

Please use water, dry sand and other proper fire extinguishing media.

Attention in Fire-extinguishing

The firemen should put on antigas masks and full fire-fighting suits.

6. Accidental Release Measure

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.

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7. Handling and Storage

Handling

Don't handling the batteries in manner that allows terminals to short circuit. Do not open, disassemble, crush or burn battery.

Storage

if the battery is subject to storage for such a long term as more than 3 months, it is recommended to recharge the battery periodically.

Long period storage: $25\pm 5^{\circ}\text{C}$, $60\pm 25\%\text{R.H}$

Do not storage the battery 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 the battery to heat or fire. Avoid storage in direct sunlight.

Do not store together with oxidizing and acidic materials.

8. Exposure Controls/Personal Protection

Engineering Controls

No engineering controls are required for handling batteries that have not been damaged. Personal protective equipments for damaged batteries should include chemical resistant gloves and safety glasses.

Personal Protective Equipment

Respiratory Protection:

In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores. Respiratory Protection is not necessary under conditions of normal use. Not necessary under conditions of normal use.

Protective Gloves:

Not necessary under conditions of normal use.

Other Protective Clothing or Equipment:

Not necessary under conditions of normal use.

Personal Protection is recommended for venting battery:

Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

9. Physical and Chemical Properties

Appearance: Green

Physical state: Solid

Form: Cylindrical

Melting Point $^{\circ}\text{C}$: $>300^{\circ}\text{C}$

Odor: Odorless

Solubility: Partial soluble in water

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10. Stability and Reactivity

Stability

Stable under normal temperatures and pressures.

Conditions to Avoid

Heat above 70°C or Incinerate, Deform, Mutilate, Crush, Disassemble, Overcharge, Short circuit, Expose over a long period to humid conditions.

Hazardous Decomposition Products

Toxic Fumes, and may form peroxides.

Possibility of Hazardous Reaction

If leaked, forbidden to contact with strong oxidizers ,mineral acids ,strong alkalis, halogenated hydrocarbons.

11. Toxicological Information

Irritation

In the event of exposure to internal contents, vapor fumes may be very irritating to the eyes and skin.

Sensitization

Not applicable.

Reproductive Toxicity

Not applicable.

Toxicologically Synergistic Materials

Not applicable.

12. Ecological Information

General note

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 applicable.

Mobility in soil

Not applicable.

Persistence and Degradability

Not applicable.

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13. Disposal Considerations

Waste Treatment

Recycle or dispose of in accordance with government, state & local regulations.

Attention for Waste Treatment

Deserted batteries couldn't be treated as ordinary trash. Couldn't be thrown into fire or placed in high temperature. Couldn't be dissected, pierced, crushed or treated similarly. Best way is recycling.

14. Transport Information

The battery shall be passed the test items of the UNITED NATIONS "Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria" section 38.3 and meet the requirements of UNITED NATIONS "Recommendations on the Transport of Dangerous Goods, model Regulations"

The battery shall 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;

The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking.

The package must be handled with care and that a flammability hazard exists if the package is damaged.

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.

The battery can be shipped by air in according to Section II /Section IB of PACKING INSTRUCTION 965, or Section II of PACKING INSTRUCTION 966 ~ 967 of the 2021 IATA Dangerous Goods regulations 62nd Edition.

UN number: UN3480 or UN3481;

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

UN Classification (Transport hazard class): Class 9 (PI965 Section IB) or N/A (PI965 ~ 967 Section II)

UN packaging group: N/A

-The international Maritime Dangerous Goods (IMDG) Code.

UN number: UN3480 or UN3481;

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

UN Classification (Transport hazard class): N/A

UN packaging group: N/A

The battery is not restricted according to IMO IMDG Code (inc Amdt 39-18).

Need to meet the Special Provision: international maritime dangerous goods code (IMDG) 188, 230, 310, 348, 957;

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15. Regulatory Information

International Civil Aviation Organization (ICAO) Technical Instructions

1. Unless be exempted according to ICAO TI, the lithium ion cell/batteries (UN 3480,PI 965) and lithium metal cell/batteries (UN 3090,PI 968) are forbidden for carriage on passenger aircraft.
2. Unless be approved according to ICAO TI, Lithium ion cells/batteries (UN 3480,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.

16. Additional Information

Other Information

The information above is believed to be accurate and represents the best information currently available to us. However, we makes 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 and investigation. This 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.