

Material Safety Data Sheet

Section 1 - Chemical Product and Company Identification

Product Name: Li-ion Battery

Model/Type: 4x (IMR18650 2200 mAh 3.7 V 8.14 Wh) = 4400 mAh 7.4 V 32.56 Wh

Component of:

- Ledino 20 W LED Emergency Light „Benrath 20NB“, Item No.: 11150206001211
- Ledino 10 W LED Emergency Light „Benrath NB“, Item No.: 11150106001211
- Ledino 10 W LED Anti Panic Light „Benrath“, Item No.: 11150106001111
- Ledino 60 W LED Working Light „Kalkum“, Item No.: 11160606001011
- Ledino 20 W LED Working Light „Charlottenburg 20A2“, Item No.: 11140206006211
- Spare Part Battery (w. housing) for „Charlottenburg 20A2“, Item No.: 11800200006222

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Section 2 - Composition/Information on Ingredient

| Chemical Composition | | Chemical Formula | CAS No: | Weight (%) |
|-------------------------|-----------------------------|---|-------------|------------|
| Nickel cobalt manganese | | LiNixCoyMn1-x-yO2 | 182442-95-1 | 47,00 |
| Graphite | | C | 7782-42-5 | 20,20 |
| Organic Electrolyte | Ethylene carbonate | C ₃ H ₄ O ₃ | 96-49-1 | 3,35 |
| | Ethyl methyl carbonate | C ₄ H ₈ O ₃ | 623-53-0 | 0,79 |
| | Diethyl carbonate | C ₅ H ₁₀ O ₃ | 105-58-8 | 5,23 |
| | Propylene carbonate | C ₄ H ₆ O ₃ | 108-32-7 | 1,79 |
| | Lithium hexafluorophosphate | F ₆ LiP | 21324-40-3 | 1,35 |
| Polypropylene | | C ₃ H ₆ | 9003-07-0 | 1,20 |
| Copper | | Cu | 7440-50-8 | 7,70 |
| Aluminum | | Al | 7429-90-5 | 4,60 |
| Nickel | | Ni | 7440-02-0 | 6,80 |

Section 3 - Hazards Identification

Health Hazards (Acute and Chronic)

These chemicals are contained in a sealed can.

Risk of exposure occurs only if the battery is mechanically or electrically abused.

Contact of electrolyte and extruded lithium with skin and eyes should avoided.

Section 4 - First Aid Measures

- Eye: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- Skin: Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.
- Inhalation: Remove from exposure and move to fresh air immediately. Use oxygen if available.
- Ingestion: Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician.

Section 5 - Fire Fighting Measures

Flash point: N/A

Auto-Ignition temperature: N/A

Extinguishing media: Dry chemical, CO₂

Special Fire-Fighting procedures: Self-contained breathing apparatus

Unusual fire and explosion hazards: If the battery is overheated, it may leak

Hazardous combustion products: Carbon monoxide, carbon dioxide, lithium oxide fumes

Section 6 - Accidental Release Measures

Steps to be taken in case material is released or spilled

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. With a cloth and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the batteries to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

Waste disposal method

It is recommended to discharge the battery to the end, handing in the abandoned batteries to related department unified, dispose of the batteries in accordance with approved local, state, and federal requirements. Consult state environmental protection agency and/or federal EPA.

Section 7 - Handling and Storage

The batteries should not be opened, destroyed or incinerate, since they may leak or

rupture and release to the environment the ingredients they contain in the hermetically sealed container.

Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire. Do not crush or puncture the battery, or immerse in liquids.

Precautions to be taken in handling and storing

Avoid mechanical or electrical abuse. storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

Other precautions

Batteries may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

Section 8 - Exposure Controls, Personal Protection

Respiratory protection

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

Ventilation: 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 batteries: Respiratory protection, protective gloves, protective clothing and safety glass with side shields.

Section 9 - Physical and Chemical Properties

| | |
|------------------------|---|
| Nominal voltage: | 7.4 V |
| Rated capacity: | 4400 mAh |
| Appearance characters: | Solid batteries for the cylindrical tasteless |

Section 10 - Stability and Reactivity

Stability: Under normal use, good stability

Conditions to avoid: Heating, mechanical, abuse and electrical abuse.

Hazardous decomposition products: N/A

Hazardous polymerization: N/A

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

Section 11 - Toxicological Information

Inhalation, skin contact and eye contact are possible when the battery is opened. Exposure to internal contents, the corrosive fumes will be very irritation to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.

Section 12 - Ecological information

When promptly used or disposed the battery does not present environmental hazard. When disposed, keep away from water, rain and snow.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

If batteries are still fully charged or only partially discharged, they can be considered a reactive hazardous waste because of significant amount of uncreated or unconsumed lithium remaining in the spent battery. The batteries must be neutralized through an approved secondary treatment facility prior to disposal as a hazardous waste. Recycling of battery can be done in authorized facility, through licensed waste carrier.

Sections 14 -Transport Information

According to packing instruction PI965–970 section II of IATA 60th Edition for transportation or the special provision 188 of IMDG.

IATA:

Proper Shipping Name: Lithium batteries

UN Number:UN 3480

Hazard Class: 9

Packaging requirement: According to IATA DGR 61th Edition, PACKING INSTRUCTION 965 of section IB for transportation.

Proper Shipping Name: Lithium batteries contained in equipment.

“Lithium batteries packed with equipment”, UN Number: UN 3481

Hazard Class: Not restricted

Packaging requirement: According to IATA DGR 61 th Edition, PACKING INSTRUCTION 966 and 967of section II for transportation.

IMO:

Proper Shipping Name: Lithium batteries

UN Number:UN 3480 & UN 3481

Hazard Class: Not restricted

Packing Group: Not restricted

The goods are not restricted to IMO IMDG Code (Amend 38-2016) according to special provision 188.

Separate Lithium-ion batteries when shipping to prevent short-circuiting. They should be packed in strong packaging for support during transport. Take in a cargo of them without falling, dropping and breakage. Prevent collapse of cargo piles and wet by rain.

Transport Fashion: By air, by sea

Section 15 - Regulatory Information

Law Information

- 《Dangerous Goods Regulation》
- 《Recommendations on the Transport of Dangerous Goods Model Regulations》
- 《International Maritime Dangerous Goods》
- 《Technical Instructions for the Safe Transport of Dangerous Goods》
- 《Classification and code of dangerous goods》
- 《Occupational Safety and Health Act》 (OSHA)
- 《Toxic Substances Control Act 》 (TSCA)
- 《Federal Environmental Pollution Control Act 》 (FEPCA)
- 《The Oil Pollution Act 》 (OPA)
- 《Superfund Amendments and Reauthorization Act Title III(302/311/312/313) 》 (SARA)
- 《Resource Conservation and Recovery Act 》 (RCRA)
- 《Safety Drinking Water Act 》 (CWA)
- 《California Proposition 65》
- 《Code of Federal Regulations 》 (CFR)

In accordance with all Federal, State and Local laws.

Section 16 - Additional Information

The above information is based on the data of which we are aware and is believed to be correct as of the data hereof. Since this information may be applied under conditions beyond our control and with which may be unfamiliar and since data made available subsequent to the data hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that person receiving it shall make his own determination of the suitability of the material for his particular purpose.

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