



MATERIAL SAFETY DATA SHEET (MSDS)

REBELCELL LITHIUM ION NMC BATTERIES (Version 8: April 1, 2019)

SECTION I: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Rebelcell 12V18 AV, 12V70 AV, 12V50, 12V100, 12V140 AV, 24V50, 24V100.
PRODUCT CODES: 12018REUA1A, 12050REUA1A, 12070AVREUA, 12100REUA1A, 12140AVREUA, 24050REUA1A, 24100REUA1A
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CHEMICAL NAME: Lithium Nickel Manganese Cobalt Oxide
CHEMICAL FAMILY: Lithium Ion
CHEMICAL FORMULA: LiNiMnCoO_2

PRODUCT USE: Electrical: as energy source for propulsion of electric/hybrid engines, energy storage, service battery

SECTION II: CHEMICAL COMPOSITION AND INGREDIENT INFORMATION

Under normal use, this battery is not expected to expose user to hazardous ingredients. USA: This battery is an article pursuant to 29 CFR 1910.1200 and, as such, is not subject to the OSHA Hazard Communication Standard requirement.

SECTION III: HAZARDS IDENTIFICATION

CLASSIFICATION ACCORDING TO EC REGULATION 1272/2008 [EU-GHS/CLP]: Skin sensitization (Category 1), Respiratory sensitization (Category 1), Carcinogenicity (Category 2)

CLASSIFICATION ACCORDING TO EU DIRECTIVES 67/548/EEC OR 1999/45/EC: Xn, Harmful, R40, R42/43

EMERGENCY OVERVIEW: Not dangerous with normal use. The battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful.

APPEARANCE, COLOR, and ODOR: Solid object, no odor.

ROUTES OF ENTRY: Risk of exposure will only occur if the battery cell is mechanically, thermally, or electrically abused and the enclosure is compromised. If this occurs, exposure to electrolyte solutions contained within the battery cell may occur by inhalation, eye contact, skin contact and ingestion.

POTENTIAL HEALTH EFFECTS

EYES: Contact between the battery and eye will not cause any harm. Eye contact with the contents of a ruptured battery can cause severe irritation to the eye.

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SKIN: Contact between the battery and skin will not cause any harm. Skin contact with positive and negative terminals of high voltages may cause burns to the skin. Skin contact with a ruptured or shorted battery can cause skin thermal and chemical burns or irritation upon contact with the skin.

INGESTION: Swallowing of material from a sealed battery is not an expected route of exposure. Swallowing mists from a ruptured battery may cause respiratory irritation, chemical burns of the mouth and gastrointestinal tract irritation.

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

SECTION IV: FIRST AID MEASURES

EYES: Wash affected eye with lukewarm water for at least 30 minutes. Rinse with saline solution if possible. Seek medical attention.

SKIN: Wash affected eye with lukewarm water for at least 30 minutes. If irritation or pain persists, seek medical attention.

INGESTION: Move victim to fresh air and remove source of contamination from area. Do not induce vomiting. Seek medical attention immediately.

INHALATION: If contents of an opened battery are inhaled, remove source of contamination and move victim to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and obtain medical assistance.

CAUTION: In all cases if irritation persists, seek medical assistance at once.

SECTION V: FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA: Water, carbon dioxide, dry chemical powder and foam are most effective means to extinguish a battery fire.

FIRE FIGHTING PROCEDURE: Put on fully protective gear, including self-contained breathing apparatus, goggles, fireproofing jacket and gloves.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Exposing battery cell to excessive heat, fire or over voltage condition may cause a leak, fire, hazardous vapors and hazardous decomposition products. Damaged or opened cells or batteries can result in rapid heating and the release of flammable vapors.

HAZARDOUS COMBUSTION PRODUCTS: Carbon monoxide, carbon dioxide, lithium oxide fumes. Hydrofluoric acids and other toxic by products. Metallic compounds such as oxides of nickel, cobalt and copper.

SECTION VI: ACCIDENTAL RELEASE MEASURES

The material contained within the batteries is only expelled under abusive conditions. Use a shovel and cover battery with sand or vermiculite, place in an approved container and dispose in accordance with section 13.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: If the battery material is released, remove personnel from the area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Leave the area, allow the batteries to cool, and vapors to dissipate. Avoid skin and eye contact or inhalation of vapors.

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SECTION VII: HANDLING AND STORAGE

HANDLING: Do not expose battery or cell to extreme temperatures or fire. Do not disassemble, crush or puncture battery.

STORAGE: Insulate positive and negative terminals to avoid short circuit. Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, with stable temperature. Store in a cool and well ventilated area. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods. Elevated temperatures can result in reduced battery life.

SECTION VIII: EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATION PROTECTION: Not necessary under conditions of normal use. In case of battery venting or rupture, use a self-contained full-face respiratory mask.

EYE PROTECTION: Not necessary under conditions of normal use. In case of battery rupture or leakage, use safety goggles.

SKIN/HAND PROTECTION: Not necessary under conditions of normal use. In case of battery rupture or leakage, wear rubber apron and Viton rubber gloves.

SECTION IX: PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid	Odor Type:	Odorless
Appearance:	Battery	Odor Threshold:	Not Applicable
pH:	Not Applicable	Evaporative Rate: (n-Butyl Acetate = 1)	Not Applicable
Relative Density:	Not Applicable	Auto Ignition Temperature (°C):	Not Applicable
Boiling Point:	Not Applicable	Flammability Limits (%):	Not Applicable
Melting Point:	Not Applicable	Vapor Pressure: (mm Hg @ 20 °C)	Not Applicable
Viscosity:	Not Applicable	Vapor Density: (Air = 1)	Not Applicable
Oxidizing Properties:	Not Applicable	Solubility in Water:	Insoluble
Flash Point and Method (°C)	Not Applicable	Water/ Oil distribution coefficient:	Not Applicable

SECTION X: STABILITY AND REACTIVITY

STABILITY: Stable.

CONDITIONS TO AVOID: Avoid exposing battery to high temperatures. Do not incinerate, deform, mutilate, crush, pierce, short circuit or disassemble.

MATERIALS TO AVOID: If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons.

HAZARDOUS DECOMPOSITION PRODUCTS: Combustible vapors may be released if exposed to fire.

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SECTION XI: TOXICOLOGICAL INFORMATION

IRRITATION: Risk of irritation only occurs if battery cells are mechanically, thermally or electrically abused and the enclosure is compromised. If this occurs, irritation to the skin, eyes and respiratory tract may occur.

NEUROLOGICAL EFFECTS: Not applicable.

SENSITIZATION: Not applicable.

TERATTOGENICITY: Not applicable.

REPRODUCTIVE TOXICITY: Not applicable.

MUTAGENICITY (GENETIC EFFECTS): Not applicable.

TOXICOLOGICALLY SYNERGISTIC MATERIALS: Not available

SECTION XII: ECOLOGICAL INFORMATION

When properly used or disposed, the batteries do not present an environmental hazard.

ECOTOXICITY: Not available.

MOBILITY: Not available.

PERSISTENCE AND DEGRADABILITY: Not available.

BIOACCUMULATIVE POTENTIAL: Not available.

OTHER ADVERSE EFFECTS: Not available.

SECTION XIII: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Recycling is encouraged. Dispose of in accordance with local regulations.

EC: Dispose of in accordance with relevant EC Directives.

SECTION XIV: TRANSPORT INFORMATION

The used battery cells have been tested under provisions of the UN manual of tests and criteria, part III, subsection 38.3 (UN38.3). Tested at Vkan (RZUN2014-1971 for UN38.3) and SEM (STR16018002E for MSDS).

SHIPPING BY AIR:

IATA proper shipping name: Lithium Ion Batteries

Hazard Class: 9

UN Class: UN3480

Packaging group: II

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Watt-hour exceeds the standard, so it belongs to dangerous goods. Cargo only. The goods are packaged according to the packing instructions 965 section I of DGR.

SHIPPING BY SEA:

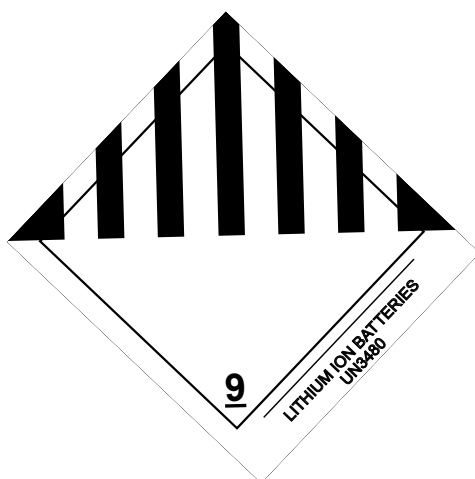
IMDG proper shipping name: Lithium Ion Batteries

Hazard Class: 9

UN Class: UN3480

Packaging group: II

Watt-hour exceeds the standard, so it belongs to dangerous goods.



Use Class 9 Miscellaneous Dangerous Goods and UN Identification labels for transportation of lithium ion batteries that are assigned Class 9.

Refer to relevant transportation documents. Lithium and lithium ion cells and batteries are regulated in the U.S. in accordance with Part 49 of the Code of Federal Regulations, (49 CFR Sections 105-180) of the U.S. Hazardous Materials Regulations.

SECTION XV: REGULATORY INFORMATION

EC CLASSIFICATION FOR THE SUBSTANCE/PREPARATION:

Symbol: This product is not classified as dangerous according to Directive 1999/45/EC and its amendments.

Risk Phrases: None

Safety Phrases: S2: Keep out of the reach of children.

SECTION XVI: ADDITIONAL INFORMATION

Please read all precautionary information. This document is intended only as a guide to the appropriate precautionary handling of this product by a person trained in, or supervised by a person trained in, chemical handling. Exposure to chemicals present in this product may have serious adverse health effects. Rebelcell cannot warn of all the potential dangers of use or interaction with other chemicals or materials. The user is responsible for determining the precautions and dangers of this product for his or her particular application.

The information provided in this MSDS is provided in good faith and, to the best of our knowledge, the information provided in this MSDS document is correct. We do not assume any liability for consequences of the use of this information since it may be applied under conditions beyond our control or knowledge. As newly documented general safety information becomes available, Rebelcell will periodically revise this MSDS. The latest version of this MSDS is available for download at www.rebel-cell.com.

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