



Material Safety Data Sheet - Nomia 12V210Ah

MSDS DATE: 16.09.2019

SECTION 1: IDENTIFICATION OF THE PRODUCT AND OF THE COMPANY

1.1 PRODUCT IDENTIFIER

Description: Nomia 12V210Ah
Synonyms: Secondary (rechargeable) Li-ion Battery, Lithium Iron Phosphate (LiFePo4) Traction / Energy Battery
EAN code: 8718531361645
Specification: 2688Wh, 210Ah, 12.8V
Use: Traction Battery

1.2 SUPPLIER

Manufacturer: Super B Lithium Power B.V.
Address: Demmersweg 3
7556 BN Hengelo (Ov)
The Netherlands
Emergency telephone number: +31 (0)88 0076 000

SECTION 2: HAZARDS IDENTIFICATION

2.1 CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

Emergency overview:

The rechargeable Li-ion battery cells described in this Safety Data Sheet are sealed units which are not hazardous when used according to the recommendations of the manufacturer. The product should not be disassembled. Do not short circuit, puncture, incinerate, crush, immerse in water, or expose to temperatures outside the by the manufacturer declared temperature range of the product. If this occurs, electrolyte leakage, or battery vent/explosion/fire may follow, depending on the circumstances.

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.
- 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 battery can cause skin irritation.
- Inhalation: Inhalation of material from a sealed battery is not an expected route of exposure. Vapours or mists from a ruptured battery may cause respiratory irritation.

2.2 LABEL ELEMENTS

The rechargeable Li-ion battery described in this Safety Data Sheet is marked with the symbols listed under section 15.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 SUBSTANCES

Chemical name: Lithium Iron Phosphate
 Chemical formula: LiFePO_4
 Chemical family: Lithium-ion

3.2 MIXTURES

Under normal use, this battery is not expected to expose the user to hazardous ingredients. Each battery consists of four 210Ah cell modules. The cell modules consist of two 105Ah cell blocks.

210Ah cell module:

| Cell ingredients | Concentration (%) | CAS No. |
|-----------------------------------|-------------------|------------|
| Phosphate(1-), hexafluoro-lithium | 11 | 21324-40-3 |
| Dimethyl carbonate | 5 | 616-38-6 |
| Nickel | 2 | 7440-02-0 |
| Ethylene carbonate | 5 | 96-49-1 |
| Aluminium Foils | 6 | 7429-90-5 |
| 1,1-Difluoroethylene polymer | 1 | 24937-79-9 |
| Graphite | 20 | 7782-42-5 |

| | | |
|---------------------------------------|----|-------------|
| Copper | 10 | 7440-50-8 |
| Cobalt lithium manganese nickel oxide | 40 | 182442-95-1 |

105Ah cell block:

| Cell ingredients | Concentration (%) | CAS No. |
|---|-------------------|------------|
| Lithium iron phosphate (LiFePO ₄) | 38 | 15365-14-7 |
| Lithium Hexafluorophosphate (LiPF ₆) | 19 | 21324-40-3 |
| Aluminium (Al) | 12 | 7429-90-5 |
| Graphite (C) | 19 | 7782-42-5 |
| Copper (Cu) | 9 | 7440-50-8 |
| Polyethylene (-[CH ₂] _n -) | 3 | 9002-88-4 |

Note: CAS number is Chemical Abstract Service Registry Number.

SECTION 4: FIRST AID MEASURES

In case of electrolyte leakage, or battery rupture/vent/explosion, which results in direct contact with the ingredients, please evacuate all persons from the contaminated area and ensure maximal ventilation in order to break up corrosive gas, smoke and unpleasant odors. If it occurs, following first aid measures must be taken:

- Eye contact: Wash affected eye with lukewarm water for at least 30 minutes. Rinse with saline solution if possible. Seek medical attention.
- Skin contact: Wash affected area 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. Drink water and induce vomiting; seek medical attention.
- Inhalation: Move victim to fresh air and remove source of contamination from area. Seek medical attention.

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

SECTION 5: FIREFIGHTING MEASURES

5.1 EXTINGUISHING MEDIA

Water¹, carbon dioxide, dry chemical powder and foam are most effective means to extinguish a battery fire.

¹Water can only be used as extinguishing media in case of systems up to and including 48V.

5.2 FIREFIGHTING PROCEDURE

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

5.3 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

SECTION 6: ACCIDENTAL RELEASE MEASURES

The ingredients contained within the battery cells are only expelled under abusive conditions. In the case of spillage, use a bonding agent, such as sand or vermiculite to cover the battery. Place in an approved container and dispose in accordance with section 13.

Caution: Avoid any direct and indirect contact with the released ingredients.

SECTION 7: HANDLING AND STORAGE

7.1 HANDLING

The battery must be transported in its original or equivalent packing.

Do not expose the battery to high temperatures or fire.

Do not disassemble, short circuit, puncture, incinerate or crush the battery.

Do not mix batteries of different types and brands. Do not mix new and used batteries.

Avoid deep discharge of the battery.

Follow manufacturers recommendations regarding maximum recommended currents and operating temperature range.

7.2 STORAGE

Insulate positive and negative terminals to avoid short circuit. Follow manufacturers recommendations regarding storage temperatures. Store in well ventilated area away from moisture, sources of heat and open flames. Avoid direct sunlight. Elevated temperatures can result in reduced battery life.

7.3 OTHER

Follow manufacturer's instructions for use, installation and storage as described in the user manual that is supplied with the battery.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 ENGINEERING CONTROLS

- Ventilation requirements: Not necessary under normal use. Room ventilation may be required in areas where there are open or leaking batteries.

8.2 PERSONAL PROTECTIVE MEASURES

- Respiratory protection: Not necessary under normal use. In case of battery or cell rupture, use a self-contained full face respiratory mask.
- Eye protection: Not necessary under normal use. Wear safety goggles if handling a ruptured or leaking battery cell.
- Hand protection: Not necessary under normal use. Wear Viton rubber gloves if handling a ruptured or leaking battery cell.
- Skin protection: Not necessary under normal use. Wear rubber apron and Viton rubber gloves if handling a ruptured or leaking battery cell.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|------------------------------|----------------|--|----------------|
| Physical State: | Solid | Odor Type: | Not Applicable |
| 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 10: STABILITY AND REACTIVITY

Reactivity: The battery is stable under conditions as described in section 7.



Conditions to Avoid: Avoid exposing of the battery to high temperatures or fire. Do not disassemble, short circuit, puncture, incinerate, or crush the battery. Avoid deep discharge of the battery.

Materials to Avoid: Not Applicable

Hazardous Decomposition Products: Combustible vapors may be released if exposed to fire.

Possibility of Hazardous Reactions: Not available.

SECTION 11: TOXICOLOGICAL INFORMATION

Irritation: Risk of irritation only occurs if battery cells are mechanically, thermally or electrically abused, which results in leakage or venting of the battery cells:

- Eye contact: Eye irritant.
- Skin contact: Skin irritant.
- Inhalation: Lung irritant

Neurological Effects: Not applicable.

Sensitization: Not applicable.

Teratogenicity: Not applicable.

Reproductive Toxicity: Not applicable.

Toxicologically Synergistic Materials: Not available

SECTION 12: ECOLOGICAL INFORMATION

Bioaccumulation potential: Not available.

Persistence and degradability: Not available.

Mobility: Not available.

Ecotoxicity: Not available.



Other adverse effects: Not available.

When properly used and disposed, the battery can be recycled and do not present environmental hazard during and after their life time.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Dispose of the Li-ion battery in accordance with local, state and federal laws and regulations. Always discharge the battery before disposal. Use electrical tape or other approved covering over the battery connection points to prevent short circuits.

Battery recycling is encouraged. Batteries may be returned to the manufacturer. Contact your supplier for recollection and recycling of the battery or contact an authorized waste management company.

USA: Dispose of in accordance with local, state and federal laws and regulations.

Canada: Dispose of in accordance with local, state and federal laws and regulations.

EC: Dispose of in accordance with relevant EC Directives.

SECTION 14: TRANSPORTATION

14.1 TRANSPORT CLASSIFICATION

U.S. DEPARTMENT OF TRANSPORTATION

| | |
|-----------------------|-----------------------|
| Proper shipping name: | Lithium-ion batteries |
| Hazard class: | Class 9 |
| ID number: | UN3480 |
| Packing group: | Not Applicable |
| Packing instruction: | PI 965 |
| Label statement | See section 14.2 |

WATER TRANSPORTATION

| | |
|-----------------------|-----------------------|
| Proper shipping name: | Lithium-ion batteries |
| Hazard class: | Class 9 |
| ID number: | UN3480 |
| Packing group: | Not Applicable |
| Packing instruction: | PI 965 |
| Label statement | See section 14.2 |



AIR TRANSPORTATION

| | |
|-----------------------|-----------------------|
| Proper shipping name: | Lithium-ion batteries |
| Hazard class: | Class 9 |
| ID number: | UN3480 |
| Packing group: | Not Applicable |
| Packing instruction: | PI 965 |
| Label statement | See section 14.2 |

14.2 TRANSPORT INFORMATION



Use Class 9 Miscellaneous Dangerous Goods and UN Identification labels for transportation of Lithium-ion batteries which 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 15: REGULATORY INFORMATION

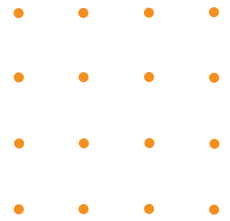
This MSDS is made in compliance with Regulation No 1907/2006.

No other regulatory information is applicable for the used substances and mixtures.

SECTION 16: OTHER INFORMATION


Avoid any mechanical or electrical abuse of the Li-ion battery. Install and use the battery in accordance with the instructions provided in the user manual.

Disclaimer: The information and recommendations set forth are made in good faith and accurate at the date of preparation. Super B makes no warranty expressed or implied with respect to this information and recommendations and disclaims all liability from reliance on it.



UN38.3 Lithium Battery Test Summary in accordance with sub-section 38.3 of Manual of Tests and Criteria

BATTERY TRANSPORTATION INFORMATION

| | | |
|--|--|--|
| General battery information Item Name/Model : Nomia 12V210Ah Item Description : Secondary (rechargeable) lithium battery | | Battery manufacturer information Super B Lithium Power B.V. Europalaan 202 7559 SC Hengelo, The Netherlands Tel: +31 (0) 88 007 6000 Website: www.super-b.com Email: info@super-b.com |
| Name of test laboratory used DEKRA Certification B.V. Meander 1051 6825 MJ Arnhem The Netherlands Tel: +31 (0) 88 96 83 000 Website: www.dekra.nl Email: product.certification@dekra.com | Test report number 2235632.60 | Date of test report 2019-06-18 |
| Description of battery Battery type : Lithium Iron Phosphate (LiFePO4) Wh rating : 2688 Wh Battery weight : 22,5 kg Physical description : Prismatic battery pack | List of conducted tests and results (i.e., pass/fail) Test T.1: Altitude Simulation : Pass Test T.2: Thermal Test : Pass Test T.3: Vibration : Pass Test T.4: Shock : Pass Test T.5: External Short circuit : Pass Test T.6: Impact/Crush : Not applicable Test T.7: Overcharge : Pass Test T.8: Forced Discharge : Not applicable | |
| Reference to assembled battery testing requirements, if applicable (i.e. 38.3.3(f) and 38.3.3(g)): Not applicable | Reference to the revised edition of the Manual of Tests and Criteria used and to amendments thereto, if any: 6th revised edition + Amend.1 | For air transport only: Does the battery comply with the 30% State of Charge: When shipped by air: yes |
| PRODUCT CLASSIFICATION FOR TRANSPORT (According to UN – DGP) | | |
| UN classification: UN 3480 | | Proper Shipping Name Lithium Batteries |
| The manufacturing process is carried out according to a documented quality management system ISO 9001 of 04-10-2019, valid until 03-10-2022 | | |
| Signature with name and title of signatory as an indication of the validity of information provided:  Maarten Mooij Approvals & testing | This document remains valid as long as no changes, modifications or additions are made to the model(s) described in this document, after being transported from Super B Lithium Power B.V. the model(s) has (have) been classified according to the applicable transport regulations and the UN Manual of Tests and Criteria as of the date of the certification. The model(s) must be packaged, labeled and documented according to country and other international regulations for transportation. | |
| Date this document was generated :02-03-2020 | | |