

Tohoku Murata Manufacturing Co., Ltd.

1-1 Shimosugishita, Takakura, Hiwada-machi, Koriyama-shi, Fukushima, 963-0531 Japan

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SAFETY DATA SHEET

1. Product and Company Identification

Product Information

Customer Name : Murata Manufacturing Co., Ltd.
Product Category : Lithium Ion Rechargeable Battery Pack
Model Name : LIPY041
Rated Capacity : 18.3Ah (468Wh)
Average Operating Voltage : 25.6 V

Company Identification

Manufacturer's Name : Tohoku Murata Manufacturing Co., Ltd.
Address : 1-1 Shimosugishita, Takakura, Hiwada-machi, Koriyama-shi, Fukushima, 963-0531 Japan
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Date Prepared : Feb. 23, 2023
Person in charge : Shun Sato

2. Hazard Identification

GHS classification

Physical hazards : The product is not classified according to GHS.
Health hazards : Sensitization, skin Category 1A
Reproductive toxicity Category 2
Specific target organ toxicity, single exposure Category 1 (digestive system)
Specific target organ toxicity, repeated exposure Category 2 (respiratory system)
Environmental hazards : Short-term (acute) hazardous to the aquatic environment Category 1
Long-term (chronic) hazardous to the aquatic environment Category 1

GHS classification

Pictograms



Signal words : Danger

Hazard statement : Flammable solid. May cause an allergic skin reaction. Suspected of damaging fertility or the unborn child. Causes damage to organs (digestive system). May cause damage to organs (respiratory system) through prolonged or repeated exposure. Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground and bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Do not breathe dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

Response : IF ON SKIN: Wash with plenty of water. IF exposed or concerned: Call a POISON CENTER/doctor. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. In case of fire: Use appropriate media to extinguish. Collect spillage.

Storage : Store locked up.

Disposal : Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards which do not result in classification : None known.

Supplemental information : 69% of the mixture consists of component(s) of unknown acute oral toxicity. 91% of the mixture consists of component(s) of unknown acute dermal toxicity. 81% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 81% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

Main symptoms and emergency overview

Main symptoms : May cause an allergic skin reaction. Dermatitis. Rash. Prolonged exposure may cause chronic effects.

Emergency overview : May be ignited by heat, sparks or flames. Causes damage to organs. May cause an allergic skin reaction. Possible reproductive hazard. Dangerous for the environment if discharged into watercourses.

3. Composition / Information on Ingredients

IMPORTANT NOTE:

The battery pack uses fifty-six US26650FTC1 lithium ion rechargeable cell and control circuit on the PWB. The battery pack should not be opened or burned since the following ingredients contained within the cell that could be harmful under some circumstance if exposed or misused.

The cell contain neither metallic lithium nor lithium alloy.

Common chemical name / General name	CAS number	Concentration / Concentration range
Lithium Iron Phosphate	15365-14-7	28%
Graphite	7782-42-5	19%
Ethylene Carbonate	96-49-1	3%
Dimethyl Carbonate	616-38-6	9%
Lithium hexafluorophosphate	21324-40-3	3%
Aluminum	7429-90-5	5%
Copper	7440-50-8	14%
Iron	7439-89-6	19%

Enclosure : Plastic (PC)

UN number (Class) : UN3480 (Class 9)

UN Packing Group : II

Watt-hour rating : 468Wh for battery pack

4. First Aid Measures

The product contains organic electrolyte. In case of electrolyte leakage from the battery, actions described below are required.

Eye contact : Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing, and call a doctor. If appropriate procedures are not taken, this may cause an eye irritation.

Skin contact : Wash the contact areas off immediately with plenty of water and soap. If appropriate procedures are not taken, this may cause sores on the skin.

Inhalation : Remove to fresh air immediately, and call a doctor.

5. Fire Fighting Measures

- Use specified extinguishers (gas, foam, powder) and extinguishing system under the Fire Defense Law.
- Since corrosive gas may be produced at the time of fire extinguishing, use an air inhalator when danger is predicted.
- Use a large amount of water as a supportive measure in order to get cooling effect if needed.
(Indoor/outdoor fire hydrant)
- Carry away flammable materials immediately in case of fire.
- Move batteries to a safer place immediately in case of fire.

6. Accidental Release Measures

- Wipe off with dry cloth
- Keep away from fire
- Wear safety goggles, safety gloves as needed

7. Precautions for Safe Handling and Use

- Storage : Store within the recommended limit of -20°C to 60°C (-4°F to 140°F), well-ventilated area.
Do not expose to high temperature (60°C/140°F). Since short circuit can cause burn hazard or safety vent to open, do not store with metal jewelry, metal covered tables, or metal belt.
- Handling : Do not disassemble, remodel, or solder. Do not short + and - terminals with a metal.
Do not open the battery pack.
- Charging : Charge within the limits of 10°C to 40°C (50°F to 104°F) temperature.
Charge with specified charger designed for this battery pack.
- Discharging : Discharge within the limits of 0°C to 50°C (32°F to 122°F) temperature.
- Disposal : Dispose in accordance with applicable federal, state and local regulations.
- Caution : Risk of explosion if battery is replaced by an incorrect type.
Risk of fire and burns.
Do not open, crush, short, drop, heat above (60°C/140°F) or incinerate.

8. Exposure Controls/Personal protection (In case electrolyte is leaked from battery)

Control parameters Follow standard monitoring procedures.

Occupational exposure limits

Japan. OELs - ISHL. (Workplace Environment Assessment Standards)

Components	Type	Value	From
Aluminum (CAS 7429-90-5)	TLV	0.025 mg/m ³	Dust.
Graphite (CAS 7782-42-5)	TLV	0.025 mg/m ³	Dust.

Japan. OELs - JSOH (Japan Society of Occupational Health: Recommendation of Occupational Exposure Limits)

Components	Type	Value	From
Aluminum (CAS 7429-90-5)	TWA	2 mg/m ³	Total dust.
		0.5 mg/m ³	Respirable dust.
Graphite (CAS 7782-42-5)	TWA	2 mg/m ³	Total dust.
		0.5 mg/m ³	Respirable dust.

US. ACGIH Threshold Limit Values

Components	Type	Value	From
Aluminum (CAS 7429-90-5)	TWA	1 mg/m ³	Respirable fraction.
Copper (CAS 7440-50-8)	TWA	1 mg/m ³	Dust and must.
		0.2 mg/m ³	Fume.
Graphite (CAS 7782-42-5)	TWA	2 mg/m ³	Respirable fraction.

Engineering measures : Explosion-proof general ventilation and local ventilation should be carried out as necessary. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal protective equipment

Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.

Hand protection : Wear appropriate chemical resistant gloves.

Eye protection : Wear safety glasses with side shields (or goggles).

Skin and body protection : Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

9. Physical and chemical Properties

Control parameters Follow standard monitoring procedures.

Occupational exposure limits

Japan. OELs - ISHL. (Workplace Environment Assessment Standards)

10. Stability and Reactivity

External short-circuit, deformation by crush, high temperature (over 100°C) exposure of a battery cause generation of heat and ignition.

11. Toxicological Information

Acute toxicity : No information as a battery

Local effects : No information as a battery

12. Ecological Information

When exhausted battery is buried in the ground, corrosion may be caused on the outer case of battery and electrolyte may be oozed. There is no information on environmental influence.

13. Disposal considerations

When battery is disposed, isolate positive (+) and negative (-) terminals of the battery to avoid those terminals from touching each other. Batteries may be short-circuited when piled up or mixed with the other batteries in disorder. Dispose in accordance with applicable federal, state and local regulations.

14. Transport information

- When a number of batteries are transported by ship, vehicle and railroad, avoid high temperature and dew condensation.
- Avoid transportation which may cause damage of package.
- Lithium ion batteries, the Watt-hour rating is more than 100Wh, are subject to dangerous goods regulation for the purpose of transportation by the U.S. Department of Transportation (DOT), the International Civil Aviation Organization (ICAO), the International Air Transport Association (IATA) or the International Maritime Dangerous Goods regulations (IMDG). With regard to air transport, the International Civil Aviation Organization (ICAO) Packing Instruction 965 Section I complies with the Recommendation as is; further, the International Air Transport Association (IATA) adopts ICAO Packing Instruction 965 Section I. In addition, the regulations of the US Department of Transportation for land, sea and air transportation are based on the UN Recommendations.
- IATA (International Air Transport Association): Dangerous Goods Regulation Packing Instruction 965 (Lithium ion or lithium polymer cells and batteries without electronic equipment) With effect 1 April 2016: Lithium ion cells and batteries must be offered for transport at a state of charge not

exceeding 30 per cent of their rated capacity. UN 3480, PI 965, Section IA and IB will be restricted to carriage on cargo aircraft. All packages must bear the Cargo Aircraft Only label and Class9 label in addition to the other marks and labels required by the Regulations.

The shipment complies with the Packing Instruction 965 Section IA under IATA.

Each cell and battery is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3.

The completed package for the cells or batteries meet the Packing Group II performance standards.

Even classified as lithium batteries packed with equipment (UN3481), IATA Dangerous Goods Regulations packing instruction 966 is applied.

Even classified as lithium batteries installed in equipment (UN3481), IATA Dangerous Goods Regulations packing instruction 967 is applied.

15. Regulatory information

- IMDG Code: International Maritime Dangerous Goods (IMDG) Code 2020 Edition
- ICAO TI: International Civil Aviation Organization (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air 2023-2024 Edition
- IATA DGR: International Air Transport Association (IATA) Dangerous Goods Regulations 64th Edition

16. Other Information

The information contained within is provided for your information only. The information and recommendations set forth herein are made in good faith and are believed to be accurate as of the date of preparation. However, Tohoku Murata Manufacturing MAKES NO WARRANTY, EITHER EXPRESSED OR IMPLIED, WITH RESPECT TO THIS INFORMATION AND DISCLAIMS ALL LIABILITY FROM RELIANCE ON IT.

For product quotations and sales inquiries, please contact the dedicated form on the Murata Manufacturing website.

Contact to : <<https://www.murata.com/en-global/contactform>>