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Material safety Data Sheet

Maytronics

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Lithium-Ion Rechargeable Battery contained in equipment

1. Product Identification

Product Details

Trade name	Liberty B200/B300/B400
Product type	Pool Cleaners with Lithium-Ion rechargeable battery 25.2V 5Ah /126Wh
Battery Voltage	25.2V
Electrochemical system	Li-NiCoMn

2. Composition / Information on Ingredients

Chemical Composition	Chemical Formula	Weight(%)	CAS No.
Lithium Manganese Nickel and Cobalt Oxide	Li(Ni0.5Mn0.3Co0.2)O2	36.2	346417-97-8
Polyvinylidene Fluoride (PVDF)	(C2H2F2)n	0.5	24937-79-9
Aluminum	Al	2.8	7429-90-5
Graphite	C	18.9	7782-42-5
Styrene-Butadiene Rubber (SBR)	C12H14	0.9	9003-55-8
Sodium Carboxymethyl Cellulose	[C6H7O2(OH)2OCH2CO ONa]n	0.21	9004-32-4
Copper (Cu)	Cu	7.1	7440-50-8
Nickel	Ni	0.9	7440-02-0
Lithium Hexafluorophosphate	LiPF6	1.8	21324-40-3
Polyethlyene	(C2H4)n	3.1	9002-88-4
Nylon	C2ClF3 (unspec.)	0.7	24937-16-4
Polypropylene	(C3H6)n	1.2	9003-07-0
Ethylene Carbonate	C3H4O3	5.5	96-49-1

Propylene Carbonate (PC)	C4H6O3	4.5	108-32-7
Others	/	15.69	/

3. Hazardous Ingredients

The rechargeable lithium-ion batteries described in this Product Safety Data Sheet are sealed units which are not hazardous when used according to the recommendations of the manufacturer and as long as their integrity is maintained.

However, if exposed to a fire, added mechanical shocks, decomposed, added electric stress by miss-use, the gas release vent will be operated. The battery cell case will be breached at the extreme, hazardous materials may be released. Moreover, if heated strongly by the surrounding fire, acrid gas may be emitted.

Most important hazard and effects Human health effects:

Inhalation: The steam of the electrolyte has an anesthesia action and stimulates a respiratory tract.

Skin contact: The steam of the electrolyte stimulates a skin. The electrolyte skin contact causes a sore and stimulation on the skin.

Eye contact: The steam of the electrolyte stimulates eyes. The electrolyte eye contact causes a sore and stimulation on the eye. Especially, substance that causes a strong inflammation of the eyes is contained.

Environmental effects: Since a battery cell remains in the environment, do not throw out it into the environment.

Specific hazards:

If the electrolyte contacts with water, it will generate detrimental hydrogen fluoride. Since the leaked electrolyte is inflammable liquid, do not bring close to fire.

4. First Aid Measures

None unless internal materials exposure. lf contents are leaked out, observe following Instructions: Inhalation Fumes can cause respiratory irritation. Remove to fresh air and consult a physician. Skin Immediately flush skin with plenty of water. If itch or irritation by chemical bum persists, consult a physician.

Eyes Immediately flush eye with plenty of water for at least 15 minutes. And consult a physician immediately

Ingestion If a battery is swallowed, consult a physician immediately.
If contents come into mouth, immediately rinse by plenty of water and consult a physician.

Further treatment All cases of eye contamination, persistent skin irritation and casualties who have swallowed this substance or been affected by breathing its vapors should be seen by a doctor.

5. Fire-Fighting Measures

Extinguishing Media	Extinguisher for alkaline metal fire is effective. Plenty of cold water is also effective to cool the surrounding area and control the spread of fire. But hydrogen gas may be evolved by the reaction of water and lithium and it can form an explosive mixture. Therefore, in case there happen lots of lithium batteries burning in a confined space, use a smothering agent.
Fire fighting procedure	Use self-contained breathing apparatus and full protective gear. Do not to inhale harmful gas. Fight the fire in a defensive mode, while exiting the area. When using a CO2 fire extinguisher, DO NOT re-enter the area until it has been thoroughly ventilated (i.e., purged) of the CO2 extinguishing agent.

6. Accidental Release Measures

Accidental Releases

Do not breathe vapors or touch liquid with bare hands (see section 4).

Waste Disposal Methods"

Evacuate area. If possible, a trained person should attempt to stop or contain the leak by neutralizing spill with soda lime or baking soda. A NIOSH Approved Acid Gas Filter Mask or Self-Contained Breathing Apparatus should be worn. Seal leaking battery and soda lime or baking soda in a plastic bag and dispose of as hazardous waste.

Other Proposal:

Follow North American Emergency Response Guide (NAERG) #138 for cells involved in an accident, cells that have vented, or have exploded.

7. Handling and Storage

Handling:

Recharge batteries IAW methods specified in applicable technical manuals. DO NOT:

-- Overcharge this battery

-- Crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods, which would end up into excessive heating

-- Directly heat or solder throw into fire

-- Mix batteries of different types and brands

-- Abuse, mutilate or short circuit the battery.

-- Mix new and used batteries. Keep batteries in non-conductive (i.e. plastic) trays.

-- Disassemble, mutilate or mechanically abuse cells and batteries.

Storage:

Gain approval for storage areas from the Installation Fire Department. Store batteries in a cool (i.e., 130F), dry and well ventilated area. DO NOT:

--Store batteries in direct sunlight or under hot conditions.

--Smoke and keep batteries away from open flame or heat

--Store batteries in the same stacks with hazardous materials.

--Store batteries in office areas, or other areas where personnel congregate.

Work/Hygienic Practices:

Thoroughly wash hands after cleaning-up a battery spill (i.e., leaking or venting batteries). NO eating, drinking or smoking in battery storage areas.

8. Exposure Controls & Personal Protection

Respiratory Protection	In all fire situations, use self-contained breathing
Hand Protection	In the event of leakage, wear gloves.
Eye Protection	Safety glasses are recommended during handling Other
Proposal	In the event of leakage, wear chemical apron

Steps to be taken if material is released to the environment or spilled in the work area:

-- Evacuate the area and allow vapors to dissipate.

-- Increase ventilation.

-- Avoid eye or skin contact.

-- Do not inhale vapors.

-- Clean-up personnel should wear appropriate protective gear.

-- Remove spilled liquid with absorbent and contain for disposal.

9. Physical/Chemical Characteristics

The following points are not applicable unless in case of leaking or damaged batteries with internal components sipping	
Appearance	Soft squares, Silver color，with tab lead（Aluminum/Nickel for Positive and only Nickel for Negative）
Odour	Odourless (unless in case of damaged product with leaking electrolyte)
pH	Not applicable
Flash point	Not applicable
Flammability	Not applicable
Density	Not applicable
Temperature range	+45℃ max in storage, -10°C ~ 45°C within operating
Solubility, with solvent(s)	Insoluble in water

10. Stability and Reactivity

The product is stable under conditions described in Section 7.	
Conditions to avoid.	Heating above 100°C or incinerate. Deformation. Mutilation. Crushing. Piercing. Disassembly. Short circuiting. Exposition over a long period to humid conditions.
Materials to avoid	Conductive materials, water, seawater, strong oxidizers and strong acids.
Hazardous decomposition Products	HF, CH4, CO2

11. Toxicological Information

Batteries are not hazardous when used properly. If the batteries catch fire or the internal substance leaks, combustion products and decomposed products might have irritation and toxicity to skin, eye and respiratory systems. Toxicity data of some substance are listed following:

Hydrogen fluoride:

Extremely toxic. May be fatal if inhaled or ingested. Readily absorbed through the skin contact may be fatal. Possible mutagen. LCLo: 50 ppm/30m (human beings), LC50: 1276 ppm/1h (rats).

Carbon and graphite:

Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation. Causes chronic damage to upper respiratory tract and cardiovascular system.

Copper: Dust may cause respiratory irritation.LD50: 3.5 mg kg-1(mouse).

Aluminum: There is no hazard

12. Ecological Information

Aquatic Toxicity:

-- Do not let internal components enter marine environments.

-- Avoid releases into waterways, wastewater or groundwater.

13. Disposal Considerations

The battery may be regulated by national or local regulation. Please follow the instructions of proper regulation. As electric capacity is left in a discarded battery and it comes into contact with other metals, it could lead to distortion, leakage, overheating, or explosion, so make sure to cover the (+) and (-) terminals with friction tape or some other insulator before disposal.

14. Transportation Information

Shipping Name (UN Number)	Lithium ion batteries (UN3480) Lithium ion batteries packed with equipment (UN3481) Lithium ion batteries contained in equipment (UN3481)
Hazard Classification	Class 9 (Miscellaneous)

Lithium-ion battery packs are of a type that is eligible for exemption from requirements for transport as class 9 hazardous materials or dangerous goods under most national and international regulations. In addition, the batteries are of a type that has been demonstrated to pass each applicable test (T1 through T8) under the UN manual of tests and criteria (ST/SG/AC 10/11), Part III, Subsection 38.3.

Lithium Ion battery's package and transportation must meet all requirements of IATA Dangerous Goods Regulations 64th Edition of 2023 when transporting by air or posting.

Organizations governing the transport of lithium batteries

Area	Method	Organization	Special Provision
International	Air	IATA,ICAO	P1 965-967
International	Water	IMO	SP 188
U.S.A.	Air, Rail, Highway, Water	DOT	49 CFR Section 173.185

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

Be capable of withstanding a 1.2m drop test in any orientation without shifting of the contents that would allow short-circuiting, and without release of package contents.

Be marked to indicate that it contains lithium ion cells & batteries, and that special procedures be followed in the event that the package is damaged.

Be accompanied by a shipping paper explaining that the cells and batteries are exempt from regulations (Appendix A - Template for Accompanying Lithium ion Battery Document.)

Because the consignor has to take the responsibility, the customer has to confirm the exception conditions upon shipment.

15. Regulatory Information

《Dangerous Goods Regulations》
《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 Substance Control Act》(TSCA)
《Consumer Product Safety Act》(CPSA)
《Federal Environmental Pollution Control Act》(FEPCA)
《The Oil Pollution Act》(OPA)
《Superfund Amendments and Reauthorization Act TitleIII (302/311/312/313)》(SARA)
《Resource Conservation and Recovery Act》(RCRA)
《Safety Drinking Water Act》(CWA)
《California Proposition 65》
《Code of Federal Regulations》(CFR)

16. Supplier Statement / Disclaimer

The batteries are exempt articles and are not subject to the OSHA Hazard Communication Standard Requirement. This data sheet is provided as technical information and a service only to our customers. The details and recommendations set forth herewith are made in our good faith and are believed to be accurate as of the date of preparation. However, manufacturer makes no warranty expressed or implied for the MSDS supplied.

MSDS Based and Q-Lite Industrial Limited (Manufacturer of the li-ion Battery)

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