



Material Safety Data Sheet

1. Product and Company Identification

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| Product Name | Lithium-ion Battery |
| Model | ICR18650 -26H M-4S1P Applicable for bObsweep PetHair Plus Robotic Vacuum Cleaner and Mop, Rouge / Champagne / Charcoal / Cobalt |
| Further Information | Li-026148-BYD 14.8V 2600mAh 38.48Wh |
| Manufacturer | BYD Company Limited |
| Address | Yan'an Road, Kuichong, Dapeng, Shenzhen, Guangdong, 518119, P.R.China Tel: 86-755-89888888-62113 Fax: 86-755-89773959 |
| Emergency telephone number | Tel: 86-755-89888888-62113 |

2. Hazards Identification

The product is a Lithium ion battery and is therefore classified as an article and is not hazardous when used according to the recommendations of the manufacturer. The hazard is associated with the contents of the battery. Under recommended use conditions, the electrode materials and liquid electrolyte are non-reactive provided that the battery integrity remains and the seals remain intact. The potential for exposure should not exist unless the cell or battery leaks, is exposed to high temperatures or is mechanically, electrically or physically abused/damaged. If the battery is compromised and starts to leak, based upon the battery ingredients, the contents are classified as Hazardous.

Physical hazards: No

Health hazards: No

Environmental hazards: No

Specific hazards: Exposure to contents of an open or damaged battery, contact with this material will cause burns to the skin, eyes and mucous membranes. May cause sensitization by skin contact.

Main Symptoms: Symptoms include itching, burning, redness and tearing.

Emergency Overview

Signal Word

Hazard Statements

Suspected of causing danger



Appearance Solid

Physical state Solid

Odor None

3. Composition/Information on Ingredients



| | Chemical Name | CAS No. | *Mass range in cell (g/g %) |
|-------------------------------------|--|---|-----------------------------|
| Electrolyte | Contains Electrolyte salt and solvents. | | 5-20 |
| Electrolyte salt | Lithium hexafluorophosphate | 21324-40-3 | 0.05-5 |
| Electrolyte solvent | Includes one or more of the following: Ethylene Carbonate Propylene Carbonate Diethyl Carbonate Ethyl propionate | 96-49-1 108-32-7 105-58-8 105-37-3 | 5-20 |
| PVDF | Polyvinylidenefluoride | 24937-79-9 | <1 |
| Copper | Cu | 7440-50-8 | 3-15 |
| Aluminium | Al | 7429-90-5 | 2-10 |
| Cathode | Lithium cobalt oxide | 12190-79-3 | 20-50 |
| Anode | Graphite | 7782-42-5 * | 10-30 |
| Steel, Nickel, and inert components | | Various | Balance |

4. First Aid Measures

The hazardous components of this battery are contained within a sealed unit. The following measures are only applicable if exposure has occurred to components when battery leaks, is exposed to high temperatures or is mechanically, electrically or physically abused/damaged. The hazardous contents are caustic alkaline electrolytes contained in batteries with lithium metal oxide cathodes, graphite and carbon anodes and Polyvinylidenefluoride binders.

General Advice: First aid is upon rupture of sealed battery.

Eye contact: Rinse immediately with plenty of water, also under the eyelids. Get medical attention immediately.

Skin contact: Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.

Ingestion: Rinse mouth immediately and drink plenty of water. Do NOT induce vomiting. Call a physician.

Inhalation: Remove to fresh air. Get medical attention immediately.

Further treatment: Present this MSDS to physician.

5. Fire Fighting Measures

Suitable Extinguishing Media:

Cold water and dry powder in large amount are applicable.

Use metal fire extinction powder or dry sand if only few batteries are involved.

Special hazards:

May form hydrofluoric acid if electrolyte comes into contact with water.

In case of fire, the formation of the following flue gases cannot be excluded: Hydrogen fluoride(HF) , Carbon monoxide(CO), carbon dioxide(CO₂) .

Protective Equipment and Precautions for Firefighters:

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Additional information:

If possible, remove battery from fire-fighting area. If heated above 125°C, battery can explode/vent. battery is not flammable but internal organic material will burn if the battery is incinerated.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures:

As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all



directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed areas before entering.

Environmental precautions:

Absorb spilled material with non-reactive absorbent such as vermiculite, clay or earth. Prevent from migration into soil, sewers and natural waterways – inform local authorities if this occurs.

Methods for cleaning up:

Evacuate spill area immediately and remove sources of ignition. Do NOT touch spilled material. Cleanup personnel must be trained in the safe handling of this product. Spills may be absorbed on non-reactive absorbents such as vermiculite. Place batteries into individual plastic bags and then place into appropriate containers and close tightly for disposal. Ensure that cleanup procedures do not expose spilled material to any moisture. Immediately transport closed containers outside. Lined steel drums are suitable for storage of damaged batteries until proper disposal can be arranged.

7. Handling and Storage

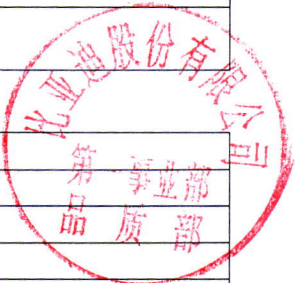
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| Handling | Avoid short circuiting the battery. Avoid mechanical damage of the cell. Do not open or disassemble. Advice on protection against fire and explosion. Keep away from open flames, hot surfaces and sources of ignition. |
| Storage | Storage at room temperature (approx. 20°C) at approx. 30~50% of the nominal capacity (OCV approx. 14.12V~15.2V). Keep in closed original container. |

8. Exposure Controls and Personal Protection

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| Exposure Limit Values | Airborne exposures to hazardous substances are not expected when the batteries are used for their intended purposes. Exposure standards are not applicable to the sealed articles. |
| Respiratory protection | During routine operation, a respirator is not required. However, if dealing with an electrolyte leakage and irritating vapors are generated, an approved half face inorganic vapor and gas/acid/particulate respirator is required. |
| Engineering Controls | Special ventilation is not required when using these products in normal use scenarios. Ventilation is required if there is leakage from the battery. |
| Skin (Hand) Protection | Hand protection is not required when handling the battery during normal use. PVC gloves are recommended when dealing with a leaking or ruptured battery. |
| Skin (Clothing) Protection | Skin protection is not required when handling the battery during normal use. Wear long sleeved clothing to avoid skin contact if handling a leaking or ruptured battery. Soiled clothing should be washed with detergent prior to re-use. |
| Eye and Face Protection | Eye protection is not required when handling batteries during normal use. Wear safety glasses/goggles if handling a leaking or ruptured battery. |
| Other Protective Equipment | Have a safety shower or eye wash station readily available |
| Hygiene Measures | Do not eat, drink or smoke in work areas. Avoid storing food, drink or tobacco near the product. Practice and maintain good housekeeping. |
| Environmental Exposure Controls | Avoid release to the environment. |

9. Physical and Chemical Properties

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| Appearance | Sealed battery, solid |
| Odor | Odorless |
| Color | Various |
| pH Value | N/A |
| Flash point | N/A unless few parts exposed |
| Flammability | N/A unless few parts exposed |
| Relative density | N/A unless few parts exposed |
| Water solubility | N/A unless few parts exposed |





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| Other solubility | N/A unless few parts exposed |
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10. Stability and Reactivity

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| Stability | Stable in normal case. |
| Conditions to avoid | Keep away from hot surfaces and sources of ignition. Do not puncture, crush or incinerate. |
| Materials to avoid | No materials to be especially mentioned. |
| Hazardous polymerization | Hazardous polymerization will not occur |
| Hazardous decomposition products | In case of open batteries, there is the possibility of hydrofluoric acid and carbon monoxide release. |

11. Toxicological Information

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| The hazardous components of the battery are contained within a sealed unit. Under recommended use conditions, the electrode materials and liquid electrolyte are non-reactive provided that the battery integrity remains and the seals remain intact. The potential for exposure should not exist unless the battery leaks, is exposed to high temperature or is mechanically, electrically or physically abused/damaged. The following toxicology data is in respect to if a person comes into contact with the electrolyte. | |
| Swallowed | The electrolyte contained within the battery is a corrosive liquid. Ingestion of this electrolyte would be harmful. Swallowing may result in nausea, vomiting, diarrhea, abdominal pain and chemical burns to the gastrointestinal tract. During normal usage ingestion should not be a means of exposure. |
| Eye | The electrolyte contained within the battery is a corrosive liquid and it is expected that it would cause irreversible damage to the eyes. Contact may cause corneal burns. Effects may be slow to heal after eye contact. Correct handling procedures incorporating appropriate eye protection should minimize the risk of eye irritation. |
| Skin | The electrolyte contained within the battery is a corrosive liquid and it is expected that it would cause skin burns or severe irritation to the skin if not washed off immediately. Correct handling procedures should minimize the risk of skin irritation. People with pre-existing skin conditions, such as dermatitis, should take extreme care so as not to exacerbate the condition. |
| Inhalation | Inhalation of vapors from a leaking battery is expected to cause severe irritation of the mouth and upper respiratory tract with a burning sensation, pain, burns and inflammation in the nose and throat; there may also be coughing or difficulty breathing. |
| Germ Cell Mutagenicity | The electrolyte contained within the battery is not expected to be mutagenic according to test such as OECD tests 471, 475, 476, 478 and 479, based on the available data and the known hazards of the components. |
| Carcinogenicity | Electrolyte contained within the battery is not expected to be a carcinogen. The cathode contains Cobalt and Nickel components. These components are classified as IARC 2B – possibly carcinogenic to humans, however they do not pose a threat when contained in or battery sealed unit. |
| Reproductive Toxicity | The electrolyte contained within the cell or battery is not expected to be a reproductive hazard according to test such as OECD tests 414 and 421, based on the available data and the known hazards of the components |
| Specific Target Organ Toxicity (STOT) – Single Exposure | The electrolyte components contained within the battery is corrosive and is expect to cause respiratory irritation by inhalation. Inhalation of vapors may lead to severe irritation of the mouth and upper respiratory tract with a burning sensation, pain, burns and inflammation in the nose and throat; there may also be coughing or difficulty breathing. |
| Specific Target Organ Toxicity (STOT) – Repeated Exposure | The batteries are not expected to cause organ damage from repeated exposure according to tests such as OECD tests 410 and 412, based on the available data and the known hazards of the components. |



12. Ecological Information

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| Ecological Information | Ecological injuries are not known or expected under normal use. Do not flush into surface water or sanitary sewer system. |
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13. Disposal Considerations

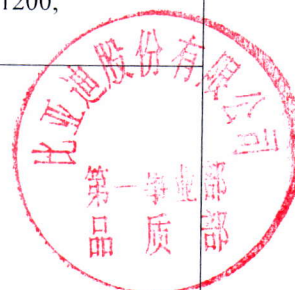
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| Never used or disposal of remnant | Disposal in accordance with local regulations, avoid release to environment. |
| Contaminated packaging | Disposal in accordance with local regulations. |

14. Transport Information

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| With regard to transport, the following regulations are cited and considered: Shipping by air Proper Shipping Name: Lithium ion Batteries Class or division: 9 UN Number: UN3480 The goods are packaged according to the Packaging Instruction 965 section IB. Cargo Aircraft Only. Shipping by sea Proper Shipping Name: Lithium ion Batteries The article is not restricted to IMO IMDG Code according to special provision 188. Packaging requirement: None If those lithium-ion batteries are packed with or contained in an equipment, then it is the responsibility of the shipper to ensure that the consignment are packed in compliance to the latest edition of the IATA Dangerous Goods Regulations section II of either Packing Instruction 966 or 967 in order for that consignment to be declared as NOT RESTRICTED (non-hazardous/non-Dangerous). If those lithium-ion batteries are packed with or contained in an equipment, UN No. is UN3481 | |
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15. Regulatory Information

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| Canadian Federal Regulations | These products have been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. WHMIS Classification: Not Controlled, manufactured article. New Substance Notification Regulations: Lithium hexafluorophosphate is listed on the Non-Domestic Substance List (NDSL). All other ingredients in the product are listed, as required, on Canada's Domestic Substances List (DSL). National Pollutant Release Inventory (NPRI) Substances: These products do not contain any NPRI chemicals. |
| US Federal and State Regulations | TSCA Status: All ingredients in these products are listed on the TSCA inventory. OSHA: These products do not meet criteria as per Part 1910.1200, manufactured article. |
| Australia and New Zealand | SUSMP: Not applicable AICS: All ingredients are on the AICS list. HSNO Approval Number: Not applicable HSNO Group Title: Not applicable NOHSC: 10008 Risk Phrases: R34 -Causes Burns. NOHSC:1008 Safety Phrases S1 – Keep locked up S2 – Keep out of reach of children. S23 – Do not breathe vapor. S24/25 – Avoid contact with skin and eyes. S26 –In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. |





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| | <p>S27/28 – After contact with skin, take off immediately all contaminated clothing and wash immediately with plenty of water.</p> <p>S36/37/39 – Wear suitable protective clothing, gloves and eye/face protection.</p> <p>S56 – Dispose of this material and its container at hazardous waste or special waste collection point.</p> <p>S62 –If swallowed, DO NOT induce vomiting; seek medical advice immediately and show this container or label.</p> <p>S64 –If swallowed, rinse mouth with water (Only if the person is conscious).</p> |
| EC Classification | <p>These products are not classified as hazardous according to Regulation (EC) No. 1272/2008.</p> <p>Keep out of the reach of children.</p> |
| EU Restriction on Use | Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended: Aluminium (CAS 7429-90-5). |
| Other EU Regulations | This Material Safety Data Sheet complies with the requirements of Regulation (EC) No. 1907/2006. |
| Japanese Regulations | <p>Japanese Industrial Standards (JIS) JIS Z 7253:2012</p> <p>Waste disposal and public cleaning law</p> <p>Law for Promotion of Effective Utilization of Resources</p> |
| Taiwanese Regulations | <p>Regulation of Labelling and Hazard Communication of Dangerous and Harmful Materials: Labeling requirements and other relevant provision of chemicals, this product is not classified as dangerous goods.</p> <p>Toxic Chemicals Substance Control Law: Not Listed.</p> <p>CNS1030016 Safety of primary and secondary lithium cells and batteries during transport.</p> |
| Chinese Regulations | <p>General Rule for Classification and Hazard Communication of Chemicals (GB 13690-2009) : Specifies the classification, labeling and hazard communication of chemicals in compliance with the GHS standard for chemical production sites and labeling of consumer goods.</p> <p>General Rule for Preparation of Precautionary Labels for Chemicals (GB 15258-2009): Specifies the relevant application methods of precautionary labels for chemicals.</p> <p>Material Safety Data Sheet for Chemical Products Content and Order of Sections (GB/T 16483-2008).</p> |

16. Other Information

The information describes exclusively the safety requirements for the product (s) and is based on the present level of our knowledge. Data of sections 4 to 8, as well as 10 to 12, do not necessarily refer to the use and the regular handling of the product (in this sense consult package leaflet and expert information), but to release of major amounts in case of accidents and irregularities.

Attention: The information provided in this Material Safety Data Sheet is correct and reliable. Any parts or all information used by anyone should depends on special demands of users, Users assume all risks resulting from its use. The supplier may not be responsible for any direct, indirect, accident or inevitable loss or damage, and also make no warrantee to any patent infringement caused by using this MSDS. If need further information, please contact BYD.



