



Handling Precaution & Prohibitions of Li-Ion & Li-Polymer Rechargeable Cells & Batteries:
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1) General:

- 1.1) Inaccurate handling of Li-Ion and Li-Polymer rechargeable battery may cause leakage, heat, smoke, an explosion, or fire. This could cause deterioration of performance or failure. Please be sure to follow instructions carefully.
- 1.2) To assure product safety, describe the following precautions in the instruction manual of the application.
- 1.3) Before using the battery, be sure to read the user's manual and precaution of it's handling.
- 1.4) If at any time you witness a battery starting to balloon, swell up, smoke or hot, discontinue charging process immediately, disconnect the battery and observe it in a safe place for approximately 15 minutes. This may cause the battery to leak, and the reaction with air may cause the chemicals to ignite and to fire.
- 1.5) Before installing/ removing the battery from application, be sure to read user's manual of the application.
- 1.6) Don't leave, charge or use the battery in a car or similar place where inside temp. may be over 60 °C .
- 1.7) Don't leave the battery near the fire or a heated source, don't throw the battery into the fire, and don't immerse, throw, wet the battery in water / seawater.
- 1.8) Don't fold the battery cased with laminated film such as pouch and Li-Polymer.
- 1.9) Don't short circuit (+) and (-) terminals with metallic object intentionally.
- 1.10) Don't pierce the battery with a sharp object such as a needle, screw drivers.
- 1.11) Don't heat partial area of the battery with heated objects or solder directly to the battery.
- 1.12) Don't hit with heavy objects such as a hammer and don't throw or drop the battery on hard floor.
- 1.13) Don't disassemble the battery or modify the battery design including electric circuit.
- 1.14) Don't put the battery into a microwave oven, dryer ,or high-pressure container.
- 1.15) Stop using the battery if the battery becomes abnormally hot, discoloration, deformation, or abnormal conditions is detected during use, charge, or storage.
- 1.16) Keep away from fire immediately when leakage or foul odors are detected. If liquid leaks onto your skin or cloths, wash well with fresh water immediately.
- 1.17) If liquid leaking from the battery gets into your eyes, don't rub your eyes and wash them with clean water and go to see a doctor immediately.
- 1.18) If the terminals of the battery become dirty, wipe with a dry cloth before using the battery.
- 1.19) The battery can be used within the following temperature ranges. Don't exceed these ranges.
Charge temperature ranges: 0~ 45 °C . Discharge Temperature ranges: -20~ 55 °C .
Store the battery at temperature below 45 °C .
* In any case don't pass the above values and the battery spec. values !
- 1.20) Discharge current must be controlled by specified value in Cell's spec.
- 1.21) Do not discharge battery to a level below 3V per cell under load. Deep discharge below 3V per cell can deteriorate battery performance.
- 1.22) Replace the battery when using time of battery becomes much shorter than usual.
- 1.23) If for any reason you need to cut the terminal wires, it will be necessary to cut each wire separately, ensuring the wires to not touch each other or a short may occur, potentially causing a fire.
- 1.24) Most of the rechargeable cells/packs: supplied 25-50% charged.

2) Charging:

- 2.1) Use only specific Li-Polymer/Li-ion charger.
- 2.2) Before using charger, be sure to read the user's manual of the charger.
- 2.3) You must check the pack voltage before charging. Do not attempt to charge battery if OCV/cell is less than 2.5V .
- 2.4) You must select the charge rate current that does not to exceed 1C and charge current must be controlled per spec.
- 2.5) Use or charge the battery only in the dedicated application.
- 2.6) Don't charge the battery by an electric outlet directly or a cigarette lighter charger.
- 2.7) Don't charge the battery reversely.
- 2.8) Battery must be charge with constant current-constant voltage (CC/CV).
- 2.9) Cut-off Voltage of charging must be 4.2V.
- 2.10) Charger must stop charging battery by detecting either charging time or current specified in Cell's spec.
- 2.11) Stop charging the battery if charging isn't completed within the specified time.
- 2.12) Standard charge: CC of 0.33-0.5C , CV 4.1-4.2V/cell at 20-25 Deg.C ,until current declines to 7-15% of the CC value and then cut-off.





3) Storage:

- 3.1) The storage area should be clean, cool (below +18°C), dry, ventilated and without dust or corrosive gas atmosphere.
- 3.2) Store battery at temperature between 5 to + 18°C for best results.
- 3.3) Do not expose battery pack to direct sunlight (heat) for extended periods.
- 3.4) Storing battery at more than 55°C for above 1-2 hours may cause damage to battery and possible fire.
- 3.5) Never store or charge battery pack inside your car in extreme temperatures, since it could ignite fire.
- 3.6) Don't store the battery in a pocket or a bag together with metallic objects such as keys, necklaces, coins or screws.
- 3.7) If the battery is needed to be stored for an long period, battery should be removed from the application prior storage.
- 3.8) Battery during long storage should be kept at: 3.4~3.8V/cell, Temp.: 5~18°C and below 45% Relative Humidity.
- 3.9) It is recommended to recharge a battery pack while in storage, every 3 months using a charger to 3.7-3.85V/cell.

4) Disposed of properly:

- 4.1) Battery that lose 35% (or user definition) of its capacity should be removed from service and disposed of properly.
- 4.2) Discharge battery to 3V, making sure output wires are insulated, and then wrap battery in a bag for disposal.
- 4.3) Cover terminals with proper insulating tape before disposal.

5) Transportation:

- 5.1) When transporting or temporarily storing in a vehicle, temperature range should be between -5 °C to 50 °C .
- 5.2) In the event of a crash due to bad package or other reason, remove the battery for observation and place in a safe open area away from any combustible material for approximately 15 minutes.
- 5.3) Packages that are crushed or punctured, should not be transported. Such packages should be isolated until the shipper has been consulted, provided instructions and arranged to have the product inspected and repacked.
- 5.4) Spilled Product : In the event that damage to packaging results in the release of cells or batteries, the spilled products should be promptly collected and segregated and the shipper should be contacted for instructions.

6) Fire safety:

- 6.1) Only a qualified person may try to fight against flames cause by lithium type batteries.
- 6.2) When the battery creates flames use only masks and protective tools resistant to flames and fire.
- 6.3) When battery creates flames, may also additional elements to ignite such as plastics, metal, etc.
- 6.4) Do not use water or other fluids to fight flames from lithium batteries. A combination of water will cause a chemical reaction to create hydrogen and will lead to an explosion.
- 6.5) Be careful because melted lithium parts may fly as a result of the explosion of the battery.
- 6.6) If the battery catch fire, use only fire extinguisher suitable for lithium (Lith-X Class D or approved for this type of materials according instructions safety expert).
- 6.7) If the flames hit the battery other substances present in the surroundings, made using the appropriate firefighting fire extinguisher to suppress the flames.

7) Warranty Statement:

- 7.1) We warrant this product to be free from defects in materials and workmanship for 3 months from date of purchase from manufacture. Or for period indicated in the company invoices and/or agreements.
- 7.2) During the term of the warranty, should your battery pack, in manufacture's opinion, malfunction, manufacture will, at its option, repair or replace the battery at no charge, provided that this battery pack has not been subjected to misuse, abuse, misapplication, or non-manufacture authorized modifications, alterations and/or repairs.
- 7.3) Manufacture's sole obligation is limited to repair or replacement of this product as provided above. Any use of the battery for a device, which it is not intended, will constitute misuse and is not subject to the warranty. This warranty does not cover damage from everyday wear and tear and/or damage during transportation.
- 7.4) The foregoing constitutes the sole and exclusive warranty of manufacturer & manufacturer disclaims all other warranty expressed, or implied, including any implied warranty of merchantability or fitness for a particular purpose. The foregoing notwithstanding in the event the power product is primarily used for personal or household purpose, expressed and implied warranties for this power product including, but not limited to the warranties of merchant ability and fitness for a particular purpose, are limited in duration to the above 3 months period.
- 7.5) Under no conditions is manufacture liable for any of the following loss or damage to a computer, programs, records, data, revenue, savings, and consequential or incidental damage, even if manufacture is informed of their possibility.
- 7.6) The warranty will not cover any plugs or cables supplied with the battery pack as external accessories.

