# Rechargeable Lithium Ion Battery Pack Handling Precautions

**Carefully read these instructions before using rechargeable Lithium Ion batteries for the first time.**

**Important:** For your safety and that of your customers observe all cautionary information provided in this document. Save this document for future reference. The following information is intended to highlight potential safety hazards that can be associated with the misuse, misapplication or damage to rechargeable Lithium Ion batteries. Please carefully evaluate the information in this section when using rechargeable Lithium Ion Batteries (This document refers to battery packs only and NOT single cells) or when using or manufacturing equipment incorporating Lithium Ion batteries.

This document is no substitute for your independent evaluation of equipment incorporating rechargeable Lithium Ion batteries. Customers incorporating rechargeable Lithium Ion batteries into their equipment must assure that their completed product has been properly designed, manufactured and tested. End users of equipment incorporating rechargeable Lithium Ion batteries should also be provided with sufficient warnings and instructions on their safe operation. As appropriate, some or all of the following warnings and information should be incorporated by you into the instruction manual accompanying your equipment.

## ⚠ DANGER!

1. Do not disassemble or modify the battery pack. The battery pack is equipped with built-in safety/protection features. Should these features be disabled, the battery pack can leak, overheat, emit smoke, burst and/or ignite.

2. Do not connect the positive (+) and negative (-) terminals with a metal object such as wire. Do not transport or store the battery pack together with metal objects such as necklaces, hair pins, etc. Otherwise, short-circuiting will occur, over-current will flow, causing the battery pack to leak acid, overheat, emit smoke, burst and/or ignite, or the metal object such as wire, necklace or hair pin can generate heat.

3. Do not discard the battery pack into fire or heat it. Otherwise, its insulation can melt down, its gas release vent or safety features will be damaged and/or its electrolyte can ignite, possibly leading to leakage, overheating, smoke emission, bursting and/or ignition on it.

4. Do not use or leave the battery pack near a heat source such as a fire or a heater (+80ºC or higher). If the resin separator should be damaged owing to overheating, internal short-circuiting may occur to the battery pack, possibly leading to leakage, smoke emission, bursting and/or ignition of the battery pack.

5. Do not immerse the battery pack in water or seawater and do not allow it to get wet. Otherwise, the protective features in it can be damaged, it can be charged with extremely high current and voltage, abnormal chemical reactions may occur in it, possibly leading to leakage, smoke emission, bursting and/or ignition.

6. Do not recharge the battery pack near fire or in extremely hot weather. Otherwise, hot temperatures can trigger its built-in protective features, inhibiting recharging, or can damage the built-in protective features, causing it to be charged with an extremely high current and voltage and, as a result, abnormal chemical reactions can occur in it, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

7. To recharge the battery pack, use the battery charger specifically designed for the purpose and observe the recharging conditions specified by the manufacturer. A recharging operation under non-conforming recharging conditions (higher temperature and larger voltage/current than specified, modified battery charger, etc.) can cause the battery pack to be overcharged, or charged with extremely high current, abnormal chemical reaction can occur in it, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

8. Do not pierce the battery pack with a nail or other sharp objects, strike it with a hammer, or step on it. Otherwise, the battery pack will become damaged and deformed, internal short-circuiting can occur, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.

9. Do not strike or throw the battery pack. The impact might cause leakage, overheating, smoke emission, bursting and/or ignition. Also, if the protective feature in it becomes damaged, it could become charged with an extremely high current and voltage, abnormal chemical reactions can occur, which can lead to acid leakage, overheating smoke emission, bursting and/or ignition.

10. Do not use an apparently damaged or deformed battery pack. Otherwise, leakage, overheating, smoke emission, bursting and/or ignition of the battery pack may occur.

11. Do not directly solder the battery pack. Otherwise, heat can melt down its insulation, damage its gas release vent or safety features, possibly leading to leakage, overheating, smoke emission, bursting and/or ignition.

12. Do not reverse the positive (+) and negative (-) terminals. Otherwise, during recharging, the battery pack will be reverse-charged, abnormal chemical reactions then may occur, or excessively high current can flow during discharging, leading to leakage, overheating, smoke emission, bursting and/or ignition.

13. The positive (+) and negative (-) terminals are arranged in a particular orientation. Do not force the connection if you cannot easily connect the battery pack terminals to the battery pack charger or other equipment. Confirm that the terminals are correctly oriented. Reversing the terminals will result in reverse-charging, possibly leading to leakage, overheating, smoke emission, bursting and/or ignition of the battery pack.

14. Do not connect the battery pack to an electrical outlet, vehicle cigarette lighter, etc. When subjected to large voltage, over-current can flow on the battery pack, possibly leading to leakage, overheating, smoke emission, bursting and/or ignition.

15. Do not use the battery pack for a purpose other than those specified. Otherwise, its guaranteed performance will be lost and/or its service life will be shortened. Depending on the equipment in which the battery pack is used, excessively high current can flow through battery pack, possibly damaging it and leading to leakage, overheating, smoke emission, bursting and/or ignition.

16. If the battery pack leaks and the electrolyte gets into the eyes, do not rub them. Instead, rinse the eyes with clean running water and immediately seek medical attention. Otherwise, eye injury may result.

## ⚠ WARNING

1. Do not use the battery pack in combination with primary battery packs (such as dry-cell battery packs) or battery packs of different capacities or brands. Otherwise, the battery pack can be over-discharged during use or overcharged during recharging, abnormal chemical reactions may occur, possibly leading to leakage, overheating, smoke emission, bursting and/or ignition.

2. If recharging operation fails to complete even when a specified recharging time has elapsed, immediately stop further recharging. Otherwise, acid leakage, overheating, smoke emission, bursting and/or ignition can occur.

3. Do not put the battery pack into a microwave oven or pressurised container. Rapid heating or disrupted sealing can lead to leakage, overheating, smoke emission, bursting and/or ignition.

4. If the battery pack leaks or gives off a bad odour, remove it from any exposed flame. Otherwise, the leaking electrolyte may catch fire and the battery pack may emit smoke, burst or ignite.

5. If the battery pack gives off an odour, generates heat, becomes discoloured or deformed, or in any way appears abnormal during use, recharging or storage, immediately remove it from the equipment or battery pack charger and stop using it. Otherwise, the problematic battery pack can develop acid leakage, overheating, smoke emission, bursting and/or ignition.

## ⚠ CAUTION

1. Do not use or subject the battery pack to intense sunlight or hot temperatures such as in a car in hot weather. Otherwise, leakage, overheating and/or smoke emission can occur. Also, its guaranteed performance will be lost and/or its service life will be shortened.

2. The battery pack incorporates built-in safety devices. Do not use it in a location where static electricity (greater than the manufacturer's guarantee) may be present. Otherwise, the safety devices can be damaged, possibly leading to leakage, overheating, smoke emission, bursting and/or ignition.

3. The guaranteed recharging temperature range is 0°C to +45ºC. A recharging operation outside this temperature range can lead to leakage and/or overheating of the battery pack and may cause damage to it.

4. If electrolyte leaking from the battery pack comes into contact with your skin or clothing, immediately wash it away with running water. Otherwise, skin inflammation can occur.

5. Store the battery pack in a location where children cannot reach it. Also, make sure that a child does not take the battery pack out of the battery pack charger or equipment.

6. For recharging procedures, refer to the Operation Manual of your battery pack charger.

7. If you find rust, a bad odour, overheating and/or other irregularities when using the battery pack for the first time, return it to your supplier or vendor.

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