Guidelines for packing & transporting of Lithium-ion Batteries

Fortum Battery Recycling Oy

Updated 18.3.2025

Battery Box

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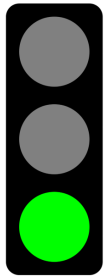
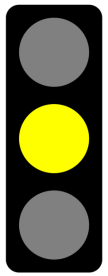
1. Statuses

Batteries can be categorized into three different statuses. Depending on the status, different regulations needs to be followed. In assessing batteries as Yellow or Red, an assessment or evaluation shall be performed based on safety criteria from product manufacturer or by a technical expert with knowledge or the battery's safety features.



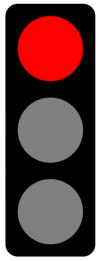
Green, Battery in normal condition fulfilling technical requirements including UN 38.3. Can be transported under SP 377 with packing instruction P909 of 4.1.4.1

Following marking needed for the packages
"LITHIUM BATTERIES FOR DISPOSAL" or "LITHIUM BATTERIES FOR RECYCLING"



Yellow, Defined as being damaged or defective, they do not conform the type tested according to UN 38.3. Can be transported under SP 376 with packing instruction P908 of 4.1.4.1 or LP904 of 4.1.4.3

Following marking needed for the packages
"DAMAGED/DEFECTIVE LITHIUM-ION BATTERIES"



RED, Defined as being damaged or defective and liable to rapidly disassemble, dangerously react, produce a flame or a dangerous evolution of heat or a dangerous emission of toxic, corrosive or flammable gases or vapors, Can be transported under SP 376 with packing instruction P911 of 4.1.4.1 or LP906 of 4.1.4.3

Following marking needed for the packages "DAMAGED/DEFECTIVE LITHIUM-ION BATTERIES"

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Yellow/RED: Transport document must include text: **"Transport in accordance with special provision 376"**

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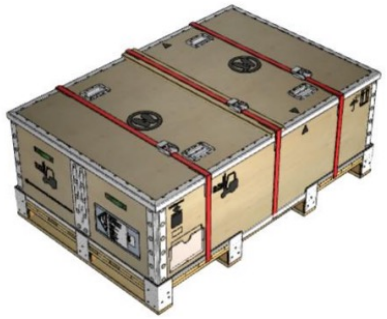
Fortum offers following collection equipment for good condition (green) Lithium-Ion batteries

Plywood LIB-box XL

- External dimensions 2400x1800x550mm
- Internal dimensions 2354x1754x531mm
- UN3090 and UN3480
- Max. payload 400kg
- Available with fire blankets for damaged batteries P908

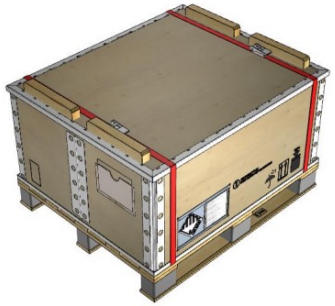


Plywood LIB-box L

- External dimensions 1800x1200x550mm
- Internal dimensions 1754x1154x531mm
- UN3090 and UN3480
- Max. payload 400kg
- Available with fire blankets for damaged batteries P908

Plywood LIB-box M

- External dimensions 1500*800*583
- Internal dimensions 1466*766*407mm
- UN3090 and UN3480
- Max. payload 400kg
- Available with fire blankets for damaged batteries P908



Plywood LIB-box M

- External dimensions 1200*1000*705mm
- Internal dimensions 1165*965*531mm
- UN3090 and UN3480
- Max. payload 400kg
- Available with fire blankets for damaged batteries P908

Plastic LIB-box M

- External dimensions 1200x1000x740mm
- Internal dimensions 1128 x 928 x 585mm
- UN3090 and UN3480
- Max. payload 400kg

- The above equipment are applying to the ADR P909 packing requirements
- Batteries require inner packing preventing batteries to touch each other
- Short circuit needs to be prevented in each of the battery
- Batteries need to be secured from moving

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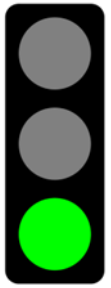
1.1a Status, GREEN (Class 1)

UN Certified packing!



Requirements for Green Lithium-Ion batteries, UN3480

- UN certified, packing method **P909**
  - The packaging needs to be applicable **UN certified drum, box or can**.
  - Packaging must fulfill the **packing group II** requirements.
  - Requirements for packing:
    1. **Protect against short circuit** and dangerous evolution of heat.
    2. **Secure & fill empty spaces** with electrically non-conductive and non-combustible cushioning material to prevent excessive movement during carriage.
    3. **Isolate** with non-conductive lining material when **metal packaging** is used.
- Following labels & markings should be used:
  - UN Label 9A
  - Correct UN-number defined by Sender
  - Text: “LITHIUM BATTERIES FOR DISPOSAL” or “LITHIUM BATTERIES FOR RECYCLING”

UN approved packaging usually has net weight limit 400 kg for dangerous goods, but it must be verified from the package certification.

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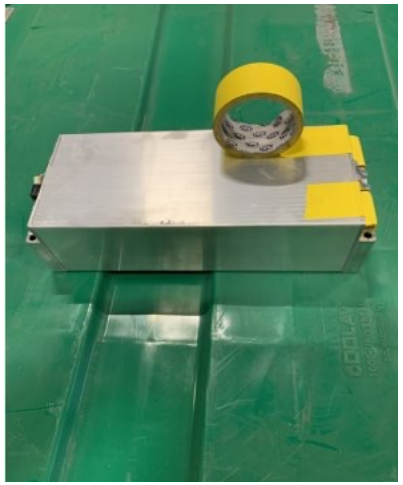
1.1a Status, GREEN (Class 1) Packing Instructions for P909 plastic box

1. Isolate the poles
2. Use plastic bag in the box
3. Load the batteries in the box
4. Secure & fill empty spaces
5. Batteries can be loaded on top of each other with isolation material between
6. Close the plastic bag with tape
7. Close the box lid & secure the straps
8. Open or attach the ADR-plate which is on the box
9. Battery box is ready for transportation




Maximum load 400 kg batteries per box

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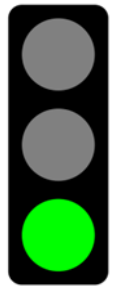
1.1b Status, GREEN (Class 1)

Exception with UN Certified packing!



Requirements for Green Lithium-Ion batteries, UN3480

- ADR approved, packing method **P909 (Exception with UN certified packing)**
- The packaging can be **any strong hard-shell box** if following are met
  - **Batteries with a gross mass of 12 kg or more**
  - **Batteries with a strong impact resistant outer casing**
- Requirements for packing:
  1. **Protect against short circuit** and dangerous evolution of heat.
  2. **Secure & fill empty spaces** with electrically non-conductive and non-combustible cushioning material to prevent excessive movement during carriage.
  3. **Isolate** with non-conductive lining material when **metal packaging** is used.
- Following labels & markings should be used:
  - UN Label 9A
  - Correct UN-number defined by Sender
  - Text: OVERPACK
  - Text: “LITHIUM BATTERIES FOR DISPOSAL” or “LITHIUM BATTERIES FOR RECYCLING”

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Packing method meeting the conditions in this page without UN Approval may exceed a net mass limit 400 kg

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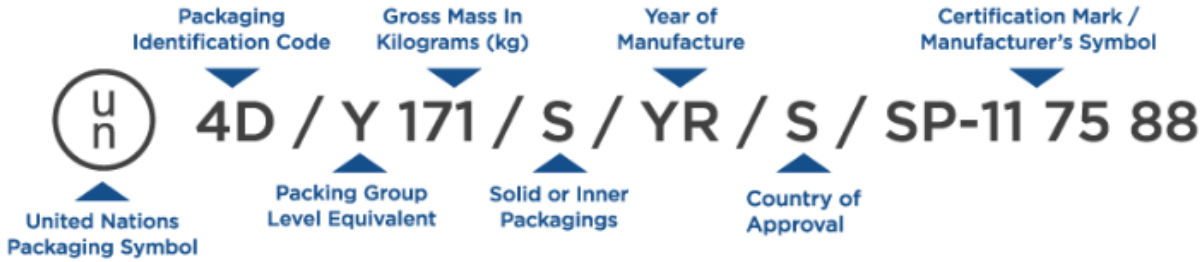
UN Certification of the packages

3.CERTIFICATION

The strict UN regulations require packaging to be certified by a national competent authority. This competent authority differs per country. The certification process by the competent authority involves testing the packaging against specific test requirements applicable for the packaging type and to a level for the intended Packing Group. If a packaging passes the test, it receives a certification to be marked with the UN mark and its achieved Packing Group. The result is called a design-type.

The competent certification authority issues a UN approval mark for every packaging design-type that has passed testing. As long as the packaging is manufactured serially according to the specifications of the design-type and in accordance with requirements of the certifying authority, the packaging is certified and approved for shipments of dangerous goods compliant with the type of packaging, the Packing Group and the issued certificate.



Source: https://www.nefab.com/news-insights/2020/new-to-lithium-battery-packaging-5-things-you-need-to-know/

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