

Manufacturers create batteries in formats most suited to their vehicles, so please review the size and shape of any electric vehicle or hybrid electric vehicle battery before shipping to make sure the shipping process is appropriate for the battery's size and shape. If you have concerns about shipping your battery in this way, please contact Battery Solutions and we will happily assist you in finding the most appropriate shipping method for your battery.

Correctly Packaging Lithium-ion EV Batteries

1. Prepare Shipment



Contact Battery Solutions for recycling authorization tracking number. Begin to build shipment on sturdy 40" by 48" pallet.

2. Package Pallet



Secure to pallet with vinyl banding over topmost insulating layer.

3. Orange Plug



Make sure orange plug is removed and area is protected from contact.

4. Shrinkwrap to Pallet



Shrinkwrap to pallet, with wrap extending down around pallet as well as the battery. Make sure enough wrap is used to prevent easy tearing of wrap.

5. Label & Ship



Attach appropriate labels to outermost layer of shrink wrap or packing material.

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customerservice@batterysolutions.com

The party shipping or transporting batteries (the "Shipper") to Battery Solutions, LLC. ("BSL") must properly secure the batteries to pallets prior to loading onto the truck. Packaging and labeling must be in compliance with the U.S. Department of Transportation – Code of Federal Regulations (CFR).

Attention Battery Solutions, LLC. Customers - Notice to Comply:
As the shipper of record you must fully comply with all U.S. Department of Transportation regulations.

Lithium-ion EV: Pallet Shipping

Packaging & Shipping Instructions

Battery Solutions has provided the following information, to the best of our abilities, in order to give guidance on how to ship Li-ion EV battery packs (cases containing the cells and/or modules) from your facility to ours in the safest manner possible.

We highly advise that lineman's gloves/high voltage gloves are used during handling. Gloves should be rated up to the capacity of any electrical equipment you handle; we use 1,000 volt rated gloves at Battery Solutions.

Transport in a manner to prevent short circuits and that prevents movement, shifting, or damage.

WARNING:

The wires of these battery cases can transmit high voltage electricity, **even when the service plug is removed and/or the power switch set to off.** This is very important to understand when shipping these batteries to prevent pinch points (meaning the wires becoming pinched, which can cause overheating), short-circuiting, and especially injury.

Tape Terminals/Exposed Wires:

Tape all exposed, non-recessed, terminals and/or exposed wires. Non-conductive approved electrical tape must be used when taping exposed terminals and wires.

Tape Wires:

Tape/zip tie/secure the wires, to the battery case, in a manner to prevent pinch points and/or short circuits during transportation. Non-conductive approved electrical tape must be used when taping exposed terminals and wires.

Pallets:

EV battery packs should never be stacked on top of each other. It is acceptable to place multiple same or similar-size batteries in a single layer on a pallet if they are properly secured. Pallets should not be large enough to accommodate the entire length of the battery (Generally this is considered an "oversize" pallet). Generally, we suggest cocoons or crates whenever feasible for shipping Li-ion EV batteries, but palletizing is common and can be compliant if done correctly as well.

Stacking:

Stacking is prohibited if batteries are not in crates or cocoons.

The regulations require a "Strong, rigid, outer packaging for the batteries" which can be interpreted as the battery housing itself.

Cover (For palletized batteries):

Place nonconductive material on top of entire layered unit, usually a piece of cardboard satisfies most transportation carriers requirements. It is important to protect the shipment from the elements.

Strap Layers:

Strap all the layers together. Do not use metal strapping. Use nonconductive strapping ONLY. We suggest at least 4 straps: 2 straps perpendicular (90 degrees) from the other 2 straps. Important Note: These straps should prevent all batteries, on all layers, from moving freely.

Plastic Wrap (for palletized batteries):

Generously wrap the layered batteries from top to bottom. If you can stick a finger easily through the wrap, more is needed.

Marks/Labels Required:

The following marks are required for shipments of Li-ion EV batteries:

- Shipping from address
- Ship to address
- Proper DOT shipping name "UN3480 Lithium Ion Batteries "
- The following labels as seen below (standard labels available from vendors such as Label Master)



**This information is interpreted directly from the Transportation code, contained in [Title 49](#). Please refer to that code for more detailed info on the shipping of batteries according to the U.S.D.O.T.*

Damaged Lithium-ion Batteries:

If the battery (or batteries) is not intact, Battery Solutions may not be able to accept the shipment if it is determined to be hazardous waste. Battery Solutions does not ship or receive hazardous waste. If the battery is damaged, but is still considered "intact", Battery Solutions may request photos and will work with customers on an as needed basis for shipping solutions that may be in addition to those listed above.

If needed, hazardous waste/environmental service companies with a national footprint:

www.stericycle.com

www.hazardouswasteexperts.com/