TRANSPORTLI FREIGHT GUIDE

Lithium Battery Shipping Guide

What to know before you ship lithium-ion or lithium-metal batteries by LTL freight: the rules, how to pack and label, what to tell carriers, and what hazmat does to your quotes.

Class 9
federal hazard class for lithium batteries (UN3480, UN3481, UN3090, UN3091)

24 to 1
carriers returning a quote: about 24 without hazmat, one with it, in our 24 test runs

+7%
typical hazmat premium on that one carrier's own price ($18 to $36 per pallet)

1. Know what you are shipping

Fill this in before you request quotes. Carriers will ask, and your answers decide which rule path applies.

Chemistry: ☐ lithium-ion ☐ lithium metal	Shipped: ☐ batteries alone ☐ packed with / inside equipment
Largest cell: _____ Wh (or g lithium)	Largest battery: _____ Wh (or g lithium)
Battery weight: _____ lb Count: _____	Condition: ☐ good ☐ damaged / recalled ☐ for recycling
UN number on the safety data sheet: _____	Pallet or crate size: _____ in

The watt-hour (Wh) rating must be printed on the case of every lithium-ion battery made since 10 May 2024. Check the label.

UN numbers

UN NUMBER	WHAT IT COVERS
UN3480	Lithium-ion batteries shipped by themselves (EV packs, home storage, e-bike and tool packs, loose cells)
UN3481	Lithium-ion batteries packed with or contained in equipment
UN3090	Lithium-metal batteries shipped by themselves
UN3091	Lithium-metal batteries packed with or contained in equipment

2. Find your rule path (49 CFR 173.185)

PATH	APPLIES TO	WHAT IT MEANS
Small-battery exception	Lithium-ion up to 20 Wh per cell and 100 Wh per battery (60 Wh and 300 Wh by highway or rail only). Lithium metal up to 1 g per cell and 2 g per battery (5 g and 25 g highway only).	No hazmat shipping papers, Class 9 label or UN-specification packaging. Still needs strong inner and outer packaging, a 1.2 m drop test, the lithium battery mark and the Wh marking. Packages up to 66 lb (30 kg) unless packed with or inside equipment.
Fully regulated	Anything larger, including EV packs and most home-storage batteries	UN-tested batteries with a test summary, UN-specification packaging or, for single batteries of 26.5 lb (12 kg) or more with a strong casing, a pallet or crate. Lithium battery mark, Class 9 lithium battery label, hazmat shipping paper, trained shipper.
Damaged, defective or recalled	Batteries that could overheat, ignite or short-circuit	Highway, rail or vessel only. Individual non-metallic inner packaging, absorbent non-conductive cushioning, Packing Group I packaging and a "Damaged/defective" marking. Few LTL carriers accept these.
Disposal or recycling	Batteries going by motor vehicle to a permitted storage, disposal or recycling site	Relief from testing records and UN performance packaging in a strong outer packaging, and from hazmat paperwork when the small-battery conditions are met.

Placards: a Class 9 placard is not required for domestic ground transport (49 CFR 172.504(f)(9)). **Training:** hazmat employees who prepare these shipments need training under 49 CFR 172.704, repeated at least every three years.

3. Pack, mark and document

Packing checklist

- [ ] Batteries are not swollen, leaking, dented or recalled
- [ ] Terminals taped, capped or covered so nothing can bridge them
- [ ] Each cell or battery in non-metallic inner packaging, away from metal and other batteries
- [ ] Outer packaging matches the rule path (rigid box, UN-spec packaging, or pallet or crate for single batteries of 26.5 lb and up)
- [ ] Strapped or blocked so nothing slides; terminals carry no weight
- [ ] Load stays inside the pallet edges; no overhang
- [ ] Weight and dimensions measured, not estimated

Marking and paperwork checklist

- [ ] Lithium battery mark on the package with the right UN number
- [ ] Class 9 lithium battery label (fully regulated shipments)
- [ ] Watt-hour rating visible on each lithium-ion battery
- [ ] “Damaged/defective” marking, if applicable
- [ ] Hazmat shipping paper: UN number, proper shipping name, hazard class, quantity, emergency response phone number
- [ ] Same description on the bill of lading
- [ ] Trained person signs the shipping paper

Sample shipping description (confirm the exact wording for your battery on its safety data sheet):
UN3480, Lithium ion batteries, 9, _____ pieces, _____ lb, emergency response phone: _____

4. Tell the carrier, and ask these questions

Declare the shipment as lithium batteries (hazmat) **when you request the quote**. Declaring late is how shipments get refused at the dock or reweighed and billed back. Ask each carrier, in writing:

- [ ] Do you accept UN3480 / UN3481 (or UN3090 / UN3091) on LTL, and on what service?
- [ ] What is your hazmat charge, and is it per shipment or per pound?
- [ ] Any limit on weight, number of packages, pallet height or state of charge?
- [ ] Do you accept pickup or delivery at a site without a dock (liftgate) for this commodity?
- [ ] What paperwork must be at the pickup, and who signs it?
- [ ] Which terminals can handle hazmat on my route?

5. What hazmat did to our quotes

We priced 400 lb, 1,000 lb and 1,200 lb battery shipments on four lanes with and without the hazmat option ticked (pickup 24 November 2026, business with dock at both ends). Below: the 1,000 lb pallet (48 x 40 x 48 in, class 70).

LANE	CARRIERS QUOTING, NO HAZMAT	REGULAR QUOTES: LOWEST / MEDIAN	HAZMAT QUOTE (1 CARRIER)	PREMIUM ON THAT CARRIER'S PRICE
Houston to Dallas 239 mi	25	$290 / **$366**	**$435**	+6%
Chicago to Atlanta 684 mi	19	$353 / **$505**	**$488**	+8%
Los Angeles to Dallas 1,438 mi	23	$431 / **$568**	**$589**	+7%
Newark to Houston 1,618 mi	25	$454 / **$612**	**$604**	+6%

- **The field collapsed.** 19 to 25 carriers quoted a regular pallet. With hazmat ticked, one carrier quoted, the same one on all 12 paired runs.
- **The surcharge itself was modest:** 4% to 8% ($18 to $36) over that carrier's own price for the same freight.
- **The real cost was lost competition:** the cheapest hazmat quote sat 27% to 50% above the cheapest regular quote.

The quote tool has a single hazmat checkbox with no field for a UN number or class, so this shows what carriers quote automatically for a generic hazmat request. Some carriers that did not quote may still accept lithium batteries by phone. Carrier names are not shown.

Freight class follows density, not hazmat

SHIPMENT	SIZE AND WEIGHT	DENSITY	CLASS USED
400 lb pallet	48 x 40 x 40 in, 400 lb	9.0 lb per cubic foot	100
1,000 lb pallet	48 x 40 x 48 in, 1,000 lb	18.8 lb per cubic foot	70
1,200 lb crate	60 x 40 x 24 in, 1,200 lb	36 lb per cubic foot	55

6. If LTL carriers will not quote

- **Expedited van or box truck:** a dedicated vehicle, no terminals. Good for EV modules and urgent loads.
- **Truckload or partial truckload:** the shipment travels alone on its own trailer.
- **Ground parcel:** one or two small packages that meet the small-battery exception can often go by parcel services with lithium battery programs.
- **Specialist hazmat carrier:** for damaged, recalled or very large batteries.

Get quotes: tell us it is lithium batteries and we match it with carriers that handle hazmat. transportli.com/quote/ · support@transportli.com

Sources: 49 CFR 173.185 (lithium cells and batteries), 49 CFR 172.504(f)(9) (Class 9 placard exception), 49 CFR 172.704 (hazmat training), all at law.cornell.edu/cfr; PHMSA Lithium Battery Guide for Shippers (2024). Quote figures are snapshots from our own quote requests, not rate cards; carrier names are withheld. This guide is a planning aid, not legal advice: confirm requirements with the regulations and your carrier. © Transportli, 2026. You may quote these figures if you name Transportli and link to transportli.com/ltl-freight/how-to-ship-lithium-batteries/.