



# How To Legally Ship Batteries: Inbound and Outbound

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**CONFIDENTIAL**

# Outline

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- Why is proper shipping important?
- Is it Class 9?
- Are my suppliers complying?
  - Example 1: Incoming freight
- How do I comply?
  - Example 2: Outgoing ground
- What about my customers?
- Summary
- Q&A

# Why is proper shipping important?

The US Dept of Transportation classify Lithium-ion batteries as hazardous materials.

US DOT tells us how to safely ship these batteries:

1. Training
2. Testing
3. Labels
4. Documentation
5. Packaging
6. 24hr emergency response

# Why is proper shipping important?

- Ⓢ IT'S THE LAW!
- Ⓢ For safety of your employees/customers
  - Li-ion suspected in Sept '10 UPS crash near Dubai
  - Li-ion suspected in Jul '11 Asiana crash near S. Korea
- Ⓢ Up to \$55,000 in fines per violation
- Ⓢ Up to \$110,000 if death, illness, injury results

Year	Li & Li-ion Incidents
2009	21
2010	16
2011	13

# Is it Class 9?

*SMALL BATTERIES ARE NOT CLASS 9 IF:*

Batteries under 8 g of ELC (or 100 Wh capacity)

**ELC = 0.3 x cell capacity x No. of cells**

**Wh capacity = rated voltage V x rated amp-hours Ah**

(Examples: 24V 5Ah, 36V 2.5Ah, 48V 2Ah)

- UN/IATA testing still req'd
- Sturdy packaging
- Air or Ground shipments

# Is it Class 9?

*MEDIUM BATTERIES ARE NOT CLASS 9 IF:*

Batteries under 25 g of ELC (or 300 Wh capacity)

**ELC = 0.3 x cell capacity x No. of cells**

**Wh capacity = rated voltage V x rated amp-hours Ah**

(Examples: 24V 10Ah, 36V 7Ah, 48V 5Ah)

- UN/IATA testing still req'd
- Sturdy packaging
- **Ground shipments only**

If the battery does **not** meet the above criteria,

**YES IT IS CLASS 9**

# Partial exception

If Battery is installed in electric bike

- UN/IATA testing still req'd
- Securely fastened to vehicle
- Protected against damage, short circuit
- Packed by haz mat trained personnel

In this case, it is class 9 and still needs haz mat shipping papers, but no labels, marking, or placard are required on packaging.

# Supplier compliance

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Important Things to ask about:

- Training records
- Test reports (UN/IATA)

Incoming shipments:

- Labels
- Bill of lading
- Packaging quality

# Inbound freight example



Labels

LITHIUM BATTERIES  
CLASS 9  
UN3090  
PGII

In case of emergency,  
call 24 hour phone #:  
800- [REDACTED]

Haz Mat shipping papers such as:

- Bill of Lading (Haz Mat box checked? Emergency # provided?)
- Dangerous Goods Declaration

# Inbound freight example



Were the packing instructions printed on the box followed?

# How do I comply?

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## Training

- All employees that package, ship batteries
- Directly supervised before initial training
- Initial training within 90 days of employment
- Keep record of employee training
- Retraining every 3 years

## Who offers training?

FedEx <http://goo.gl/MQBmC>

or UPS <http://goo.gl/g22Ox>

# How do I comply?

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## Training records

- Employee name
- Training completion date
- Description of training materials used
- Name and address of training provider
- Certification that employee has been trained and tested as required

# How do I comply?

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Training will cover everything you need to know, but here are a few important points.

You need a 24hr emergency contact number.

[www.pers-er.com](http://www.pers-er.com) ; [www.hazmatservice.com](http://www.hazmatservice.com)

## **Batteries should be securely packed.**

*To prevent short circuit, damage, contact with metal, etc  
Connectors, casing wrapped in heavy-duty bubble-wrap  
Peanuts, etc used to prevent any unintended movement*

# Outbound ground example

*Make sure you use the proper ID code:*

If shipping battery alone:

(Domestic) UN3090, Lithium battery

(International) UN3480, Lithium ion batteries

If shipping e-bike and battery in same box:

(D) UN3091, Lithium ion batteries packed with equipment

(I) UN3481, Lithium ion batteries packed with equipment

If shipping an e-bike with battery installed:

UN3171, Battery-powered vehicle

*Partial exception: no marking, labeling, or placard req'd*

**All 3 scenarios are hazmat shipments!**



# Outbound ground example

Labels



LITHIUM BATTERIES  
CLASS 9  
UN3090  
PGII

In case of emergency,  
call 24 hour phone #:  
800- [REDACTED]

## Forms (shipper usually helps you generate)

- OP-900LL →
  - 1 copy for your records
  - 1 copy directly on box
  - 1 copy for driver
  - 5 copies in document pouch

REMOVE THIS COPY AND APPLY TO PACKAGE		
Account Number 123456789	Emergency Contact Number 8002225555	Shipper Name Company Name
Tracking ID 123456789101112		
Hazardous Materials Description and Quantity 1 fiberboard box; UN 1263 Paint 3, II 10 lb, Ltd. Qty.		
<b>FedEx</b> Ground		
This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.		
John Doe Signature	1/01/2011 Date	HM Barcode
Page 1 of 1		

- OP-950 – Certification form

# Customer returns

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Important note:

Transport of known safety defective cells and batteries is forbidden!

# Customer returns

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Private citizens do **not** need training to return a pack.

You need to provide them with a kit containing:

- Box with address and hazmat labels
- All necessary documentation filled out by you
- Detailed instructions on how to pack the battery

# Summary

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- ① Ask supplier for UN/IATA test report
- ① Keep your employees trained
- ① Keep your training records up to date
- ① Know your labels and forms
- ① Get a 24hr emergency contact provider
- ① Quality products properly packed minimizes:
  - Shipment delays
  - Customer returns
  - **Cost of compliance**

# Questions?

## Contact:

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