



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

September 9, 2024

Jacob Hacker
Business Development Manager
TriEnda
N7660 Industrial Road
Portage, WI 53901

Reference No. 24-0064

Dear Mr. Hacker:

This letter is in response to your June 26, 2024, email requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to the packaging requirements for lithium ion batteries. Specifically, you state that a customer is requesting your company manufacture a packaging for six lithium ion batteries consisting of a plastic pallet base, a plastic outer sleeve, and a plastic pallet lid banded together and holding two foam trays inside which contain the six individual batteries. You state that each battery weighs 56.7 kg and has a strong, aluminum outer casing. Lastly, in your email you provide drawings of the proposed configuration and a picture of a single lithium ion battery. You ask whether the foam trays “holding” the batteries need to meet the inner packaging requirements specified in § 173.185(b).

The answer is no. Section 173.185(b)(3)(i) requires lithium cells or batteries to be placed in non-metallic inner packagings that completely enclose the cells or batteries and separate the cells or batteries from contact with equipment, other devices, or electrically conductive materials (e.g., metal) in the packaging. The packaging configuration described in your letter would not meet this requirement because the inner packaging does not completely enclose the batteries. However, in accordance with § 173.185(b)(5), lithium cells or batteries that weigh 12 kg or more and have a strong, impact-resistant outer casing, may be packed on pallets or other handling devices instead of packages meeting the UN performance packaging requirements of § 173.185(b)(3)(ii) and (b)(3)(iii), including the inner packaging requirement of paragraph (b)(3)(i). Provided that the battery casing is strong and impact-resistant, the lithium ion batteries are secured to prevent inadvertent shifting, and the terminals do not support the weight of other superimposed elements, it is the opinion of this Office that the packing and handling arrangement you describe in your email is acceptable for highway transportation in accordance with § 173.185(b)(5).

I hope this information is helpful. Please contact us if we can be of further assistance.

Sincerely,

Eamonn Patrick
Acting Chief, Regulatory Review and Reinvention Branch
Standards and Rulemaking Division

From: [INFOCNTR \(PHMSA\)](#)
To: [Hazmat Interps](#)
Subject: FW: UN Battery Packaging Question / Verification
Date: Wednesday, July 17, 2024 3:48:38 PM
Attachments: [logo.png](#)
[facebook-grey.png](#)
[twitter-grey.png](#)
[linkedin-grey.png](#)
[youtube-grey.png](#)
[trienda_auto_2023_banner.png](#)
[image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)

Hello,

Below is a request for letter of interpretation.

The physical mailing address is:

TriEnda
N7660 Industrial Road
Portage, Wisconsin
53901

Thanks,
Jonathon

From: Jacob Hacker <jhacker@trienda.com>
Sent: Wednesday, June 26, 2024 10:37 AM
To: INFOCNTR (PHMSA) <INFOCNTR.INFOCNTR@dot.gov>
Cc: Andy Axelsen <aaxelsen@trienda.com>
Subject: UN Battery Packaging Question / Verification

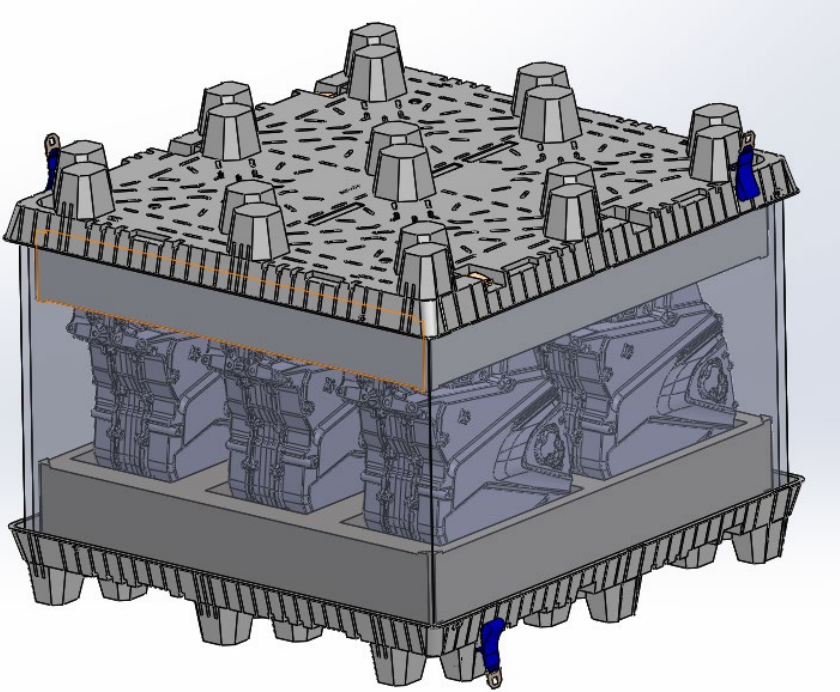
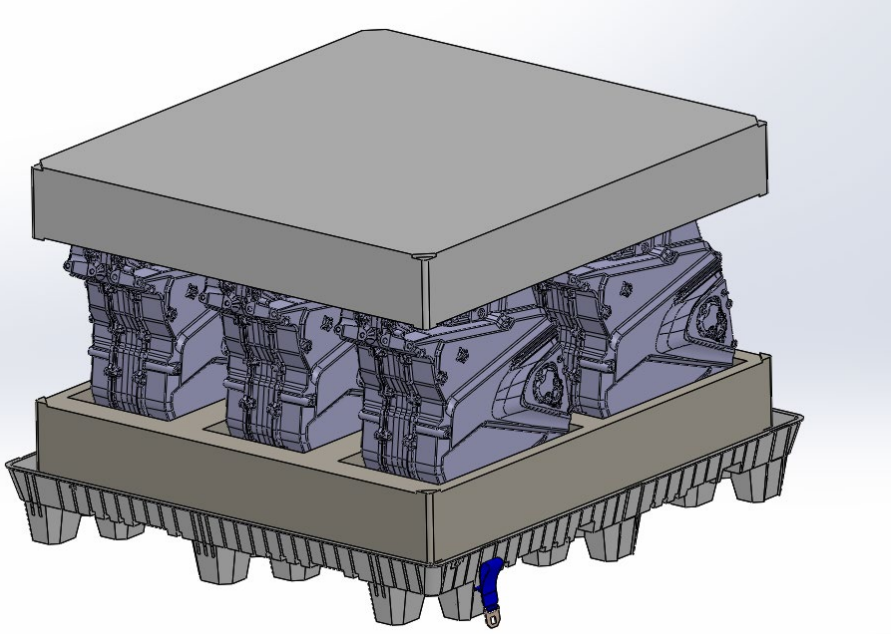
CAUTION: This email originated from outside of the Department of Transportation (DOT). Do not click on links or open attachments unless you recognize the sender and know the content is safe.

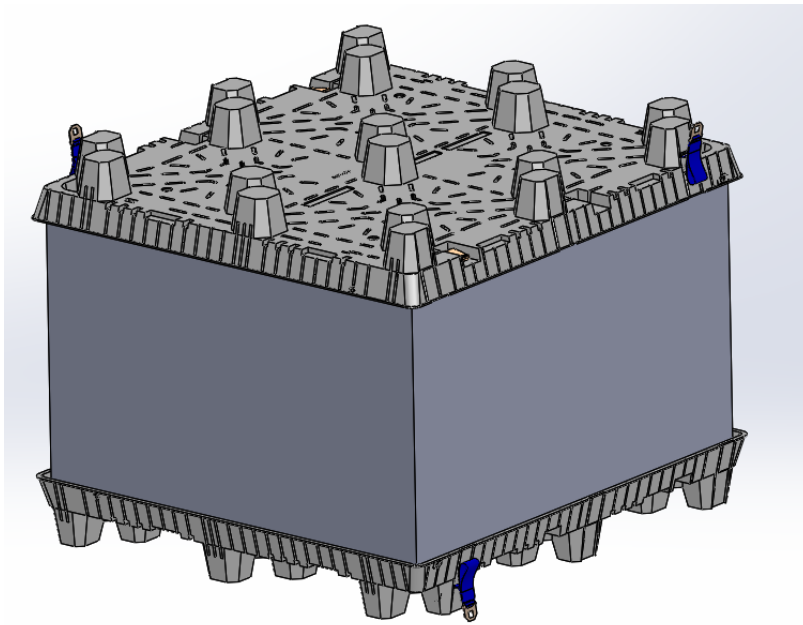
Good morning,

I am with TriEnda a reusable plastic manufacturing company and we are working on a project for a customer and was directed to you from our UN Testing facility to reach out for verification. We would like to ask a few questions around the inner packaging requirements of our pack and if this is compliant with your DOT regulation.

Here is our proposed packaging for 6 batteries. Plastic pallet base, plastic outer sleeve, and a plastic pallet as the lid banded together. The 2 foam trays on the inside hold the batteries and

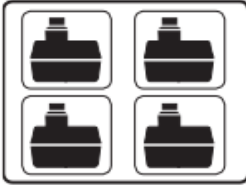
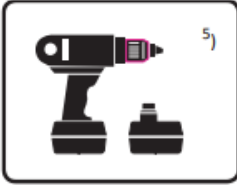
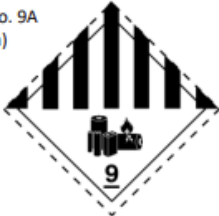
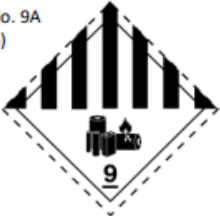
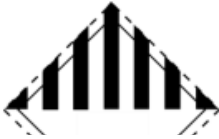
keep them separated as a load unit. My question is around the 2 foam trays holding the batteries and the UN Inner Packaging requirement.





So below is the picture of the exact battery and the battery weight is 56.7 kg so we check that box of being over 12 kg. They performed a 1.1 m drop test on the actual battery and thus did not meet the 1.2 m drop test required for the verification of the outer casing battery drop test. **They did confirm that the outer casing of the battery is aluminum and all the elements of the battery is enclosed.** The customer questioned the highlighted statement above meets the impact resistant outer casing requirement even without a 1.2m drop test.

They still want our packaging to be UN tested and approved. So total loaded pack weight with batteries is 825 lbs so we are planning on doing the 5 side drop test for UN packaging approval. I know we have the Outer packaging requirement met with the pallet/sleeve/pallet lid, but my question is if the foam trays holding the 6 modules on the inside meet Inner packaging requirements or if that foam needs to completely enclose each battery and have the foam fill the inside of the packaging?

Transportation Mode	Road / Rail (ADR/RID), Sea Freight (IMDG Code)	
Nominal Energy	> 100 Wh (per battery)	
Name and Description	Batteries (without equipment) 	Batteries packed with equipment (at least one battery which is not attached) 
Special Provision / Packing Instruction	P903, LP903	SP 390, P903, LP903
Max. Quantity	ADR 1.1.3.6: max. 333 kg (per transport unit, e.g. truck incl. trailer) If exceeded, further requirements for vehicle equipment and driver	
Weight Limit	n/a	
Packaging	Batteries must be placed in inner packagings that completely enclose the battery, batteries must be protected to prevent short circuits. Batteries must be secured against movement within the outer packaging. UN approved packaging (Packing Group II: e.g. UN/4G/Y30/...)	
Marking	Hazard label No. 9A (10 cm x 10 cm)  ADR: UN 3480 IMDG Code: LITHIUM-ION BATTERIES UN 3480	Hazard label No. 9A (10 cm x 10 cm)  ADR: UN 3481 IMDG Code: LITHIUM-ION BATTERIES PACKED WITH EQUIPME LITHIUM-ION BATTERIES CONTAINED IN EQUIPMEI
Sea Freight Container-Marking	Container Placards (min. 25 cm x 25 cm) 	



Thanks



Jacob Hacker
Business Development Manager

Direct [608.742.9467](tel:608.742.9467) or [2298](tel:2298) **Mobile** [608-566-4447](tel:608-566-4447)

Email jhacker@trienda.com **Website** www.trienda.com



An advertisement for Custom Automotive Packaging Solutions. The text "CUSTOM AUTOMOTIVE PACKAGING SOLUTIONS" is prominently displayed on the left. Below the text is a small icon of a car and three arrows pointing right. The background features a 3D rendering of various automotive parts, including stacks of metal components and plastic trays, all set against a blue and white grid pattern.