



U.S. Department
of Transportation

Pipeline and Hazardous
Materials Safety
Administration

NOV 01 2017

1200 New Jersey Avenue, SE
Washington, DC 20590

Steven Gregory
Honda Power Equipment Manufacturing Inc.
P.O. Box 37
3721 NC Highway 119
Swepsonville, NC 27359

Reference No. 17-0053

Dear Mr. Gregory:

This letter is in response to your May 18, 2017 and May 22, 2017, emails requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to packaging and shipping requirements for "UN3481, Lithium ion batteries contained in equipment." You seek guidance on the acceptable level of protection provided by the following packaging scenario:

- The lithium ion battery is installed inside a pedestrian-controlled lawn mower;
- The battery's terminals are connected to the lawn mower;
- The battery is secured by a latch;
- The equipment is protected from accidental activation by a switch near the battery that requires a plastic clip to continue normal functionality of the lawn mower; and
- The "bail" and a separate button on the "blade control bail" provide additional protection from accidental activation.

We have paraphrased and answered your questions as follows:

- Q1. You ask if it is acceptable to ship a lithium ion battery contained in equipment (i.e., a lawn mower).
- A1. The answer is yes, provided the lithium ion battery complies with the applicable requirements of § 173.185 and the equipment is packaged in a manner to prevent short circuits, movement (i.e., shifting) within the outer package, and accidental activation of the equipment while in transportation.
- Q2. You ask what level of protection is acceptable to prevent short circuits and accidental activation of the lithium ion battery when contained in a lawn mower.
- A2. As provided by § 173.185(b), the shipper must ensure that the lithium ion battery and the equipment as presented for transport are packaged in a manner to prevent short circuits,

shifting within the outer package, and accidental activation of the equipment. When lithium cells or batteries are contained in equipment, the outer packaging, when used, must be constructed of suitable material of adequate strength and design in relation to the capacity and intended use of the packaging, unless the lithium cells or batteries are afforded equivalent protection by the equipment in which they are contained. These are performance standards, meaning the HMR do not prescribe any specific method. The method described in your email to prevent accidental activation of the lawn mower appears to meet the intent of the HMR.

- Q3. You ask if the lithium ion battery can be connected to a key-activated lawn mower.
- A3. The answer is yes, provided the equipment is secured against shifting within the outer packaging and packed to prevent accidental operation during transport (see § 173.185(b)(4)(ii)).
- Q4. You ask if enclosing a lithium ion battery in a plastic outer cover provides adequate protection from short circuit.
- A4. As provided by § 173.185(b), the shipper must ensure that the lithium ion battery and the equipment as presented for transport are packaged in manner to prevent short circuits, shifting within the outer package, and accidental activation of the equipment. There is not sufficient information included in your email to provide a definitive answer. However, it is the opinion of this Office that if your plastic outer cover is non-metallic, completely encloses the cells or batteries, and separates the cells or batteries from contact with the equipment, other devices, or conductive material, then placement in a plastic outer packaging would be adequate protection against short circuit.

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

Sincerely,



Dirk Der Kinderen
Chief, Standards Development Branch
Standards and Rulemaking Division

Dodd, Alice (PHMSA)

Bater
773.185
Batteries
17-0053

From: INFOCNTR (PHMSA)
Sent: Monday, May 22, 2017 3:38 PM
To: Hazmat Interps
Subject: FW: UN3481 and Lithium-ion batteries

Hi Shante/Alice,

Please submit this as a letter of interpretation. I spoke with Mr. Gregory.

Please let me know if you have any questions.

Thanks,
Jordan

From: Steven R Gregory [mailto:steven_gregory@hpe.honda.com]
Sent: Monday, May 22, 2017 2:03 PM
To: PHMSA HM InfoCenter <PHMSAHMInfoCenter@dot.gov>
Subject: RE: UN3481 and Lithium-ion batteries

Hello,

I am writing to request a letter of interpretation regarding the matter referenced in the attached message and discussed over the phone with a member of the hazmat information center on 5/22/2017.

Based on the discussion, it is my understanding that for the purpose of shipping a 432 Wh Lithium Ion battery with recessed connection terminals, the battery can be shipped following the instructions of UN3481, PI 967 Section I for Lithium Ion Batteries Contained in Equipment. The battery will be certified to have met the requirements of the sixth edition of UN 38.3 for transportation of lithium-ion batteries.

In this case the equipment referenced would be a pedestrian-controlled lawnmower that is powered by the aforementioned removable Lithium-Ion rechargeable battery.

The battery will be secured inside the equipment by a latch, and the terminals of the battery would be connected to the lawnmower.

The equipment is protected from accidental activation by a switch located near the battery inside its enclosure that would require the insertion of a plastic clip that engages the normally open switch.

Further protection from accidental activation would be provided by requiring two additional actions to start the device once the clip is inserted (the blade control bail has a separate button that must be pressed before pulling the bail back – simply pulling back on the bail without first pressing the button will not activate the unit).

Based on my research into this matter, there is no additional requirement of physically blocking the connection to the battery (for instance covering the terminals with electrical tape to prevent engaging with the equipment, which would prevent the battery from latching in place) due to the protections provided by the equipment and secure enclosure of the battery in this case.

If I can clarify any of the above, please do not hesitate to contact me.

Thank you,

Steven Gregory
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From: Steven R Gregory
Sent: Thursday, May 18, 2017 1:32 PM
To: 'phmsa.hm-infocenter@dot.gov' <phmsa.hm-infocenter@dot.gov>
Subject: UN3481 and Lithium-ion batteries

Hello,

I have some questions regarding shipping a lawn mower using UN3481 PI 967 Section I.
I have reviewed the applicable regulation and still have some questions about what is allowed.

Would it be acceptable to ship with the battery installed in equipment?

The regulation states the battery should be protected from short circuit and accidental activation of the equipment - what level of protection is deemed acceptable?

Can the battery be connected to the mower if a key needs to be inserted in a slot next to the battery in order to activate the equipment?

If the battery is fully enclosed in a plastic outer cover is that considered adequate protection from short circuit?

Please advise.

Thank you,

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