



U.S. Department of Transportation
**Pipeline and Hazardous Materials
Safety Administration**

1200 New Jersey Ave, S.E.
Washington, D.C. 20590

AUG 21 2013

Mr. Mark Tisher
Crane Division
Naval Surface Warfare Center
Energy Power & Interconnect Technologies Division
300 Highway 361, Bldg. 3235 GSX
Crane, IN 47522-5001

Ref. No.: 13-0126

Dear Mr. Tisher:

This responds to your June 13, 2013 email and subsequent conversation with a member of my staff requesting clarification of the requirements in the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to design testing of lithium ion batteries. The requirements you address are contained in Section 38.3 of the United Nations (UN) Manual of Tests and Criteria and are implemented through the provisions of § 173.185 of the HMR. In your letter and in telephone conversations with my staff, you described a cylindrical battery comprised of 35 individual cells. The battery is inserted into an aluminum housing that is part of a battery powered device. The device with the batteries is then placed into a case for shipping. You asked if you could conduct the T3 (shock) and the T4 (vibration) tests with the battery installed in the aluminum housing or in a transit box because the battery itself is not equipped with mounts to secure it to the testing machine.

Each test in Section 38.3 must be conducted on the battery itself without equipment or packaging. In the situation you described, the battery must be subjected to each of the tests, including the shock and the vibration tests outside of the device or any packaging.

I hope this answers your inquiry. If you have further questions, please do not hesitate to contact this office.

Sincerely,

Delmer Billings
Senior Regulatory Advisor
Standards and Rulemaking Division

Drakeford, Carolyn (PHMSA)

Leary
§173.185
Lithium Battery

From: Leary, Kevin (PHMSA)
Sent: Thursday, June 13, 2013 3:04 PM
To: Drakeford, Carolyn (PHMSA)
Subject: FW: lithium battery testing question
Attachments: battery photo.jpg; device drawing.jpg

13-0126

Please enter this request into the system for response.

Kevin

-----Original Message-----

From: Tisher, Mark T CIV NSWC Crane, GXS [<mailto:mark.tisher@navy.mil>]
Sent: Thursday, June 13, 2013 10:20 AM
To: Leary, Kevin (PHMSA)
Subject: lithium battery testing question

Kevin,

I'm looking for an interpretation of Section 38.3 of the UN Manual for T3 transportation vibration and T4 shock. The battery has no mounting provisions other than inserting it into the cylindrical housing for the device (see attached). For transportation, the device is then placed in a transit case. I'm trying to determine the acceptable test configuration for these two tests. I don't see how we can test it without the housing. Can it be tested in the transit case? If not, the housing has rubber bumpers that can be seen in the device drawing file. The rubber bumpers are restrained only by a house clamp within the groove. Would we fixture to the rubber bumpers or to the housing itself? We started by fixturing directly to the housing, but the device manufacturer stated that previous testing of a similar device fixture to the bumpers. We switched to fixturing to the rubber bumpers, but the rubber creates play and it loosened up after the first sweep causing problems.

One more question: for shock, the cells and battery are blow the large cell and large battery definition, but if we test it in the housing the mass is up around 70 pounds, so 150g is a lot of force and I'm wondering if there is consideration for this.

v/r

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<http://www.navsea.navy.mil/nswc/crane/Lists/customerfeedback/NewForm.aspx>

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