



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

January 23, 2023

Jim Sides
Director, Product Development
Totex Manufacturing, Inc.
3050 Lomita Boulevard
Torrance, CA 90505

Reference No. 22-0113

Dear Mr. Sides:

This letter is in response to your October 26, 2022, letter requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to packaging exceptions based on lithium-ion battery size. In your letter, you describe a scenario where a company manufactures a lithium-ion battery that is physically capable of a Watt-hour (Wh) rating of more than 100 Wh. You further state that the lithium-ion battery is designed and programmed with firmware (i.e., software for device hardware) that prevents the user from charging the lithium ion battery to an energy level that exceeds 100 Wh. You ask whether the lithium ion battery can be considered less than 100 Wh for the purposes of transportation (i.e., shipping).

The answer is yes. The United Nations Manual of Tests and Criteria, subsection 38.3.2.3, defines Wh rating or nominal energy as “the energy value of a cell or battery determined under specified conditions and declared by the manufacturer...” Firmware that controls the voltage and ultimately the nominal energy is within the design and specified conditions of the lithium-ion battery manufacturer. Therefore, the lithium-ion battery—as described in your scenario—can be considered 100 Wh or less for shipping purposes.

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

Sincerely,

A handwritten signature in blue ink, appearing to read "Dirk Der Kinderen".

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

Baker

From: [Raynor, T'Mia \(PHMSA\)](#)
To: [Hazmat Interps](#)
Cc: [Tsang, Hoi Lam CTR \(PHMSA\)](#)
Subject: FW: Request for Letter of Interpretation
Date: Wednesday, October 26, 2022 8:48:37 PM
Attachments: [image002.png](#)

22-0113

Hello,

Please see below.

Thanks,

T'Mia Raynor

Webmaster, Office of the PHMSA CIO
US Department of Transportation
Pipeline and Hazardous Materials Safety Administration
1200 New Jersey Ave. SE, Washington, D.C., 20590
Office: 202.366.9818 ♦ Mobile: 202.580.9447

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From: Jim Sides <jsides@totexmfg.com>
Sent: Wednesday, October 26, 2022 6:01 PM
To: PHMSA Website Manager <PHMSAWebsiteManager@dot.gov>
Subject: Request for Letter of Interpretation

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.

Subject: Reducing the charge voltage of Li-ion batteries to keep under the 100Wh limit

Question: Is there an official position of the PHMSA as to whether or not a pack maker can stay under the 100Wh limit by reducing the charge voltage (by firmware settings) of a Li-ion battery such that the battery cannot be charged by the end user to a level which exceeds the 100Wh limit?

Example: If a battery can be charged in such a way that the cells in the battery are fully charged to 4.2V and the resultant battery energy exceeds 100Wh, can that battery be programmed by the pack maker such that the end user can only charge the cells to 4.1V (thus reducing the battery capacity by ~10%) resulting in a battery which can be designated by the pack maker to be <100Wh for shipping purposes?

Jim Sides
Director, Product Development
Totex Manufacturing, Inc.
310-986-9662