



U.S. Department  
of Transportation

**Pipeline and Hazardous  
Materials Safety  
Administration**

1200 New Jersey Avenue, SE  
Washington, DC 20590

June 10, 2021

Mr. Pete Z  
Director of Global Regulatory Compliance  
Arcimoto, Inc.  
2034 W 2<sup>nd</sup> Ave  
Eugene, OR 97402-7105

Reference No. 21-0050

Dear Mr. Z:

This is in response to your May 6, 2021, email requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to lithium batteries in electric vehicles. Your questions are paraphrased and answered as follows:

- Q1: You ask whether a lithium ion battery contained in an electric vehicle and securely fastened to the battery holder must comply with all of the requirements in § 173.185.
- A1: An electric vehicle powered by a lithium-ion battery that is transported with the battery installed should be classed as “UN3171, Battery-powered vehicle, 9” and offered for transportation and transported in accordance with § 173.220 of the HMR. A battery in an electric vehicle shipped in accordance with § 173.220 must be: (1) securely fastened in its holder/compartiment; (2) protected in such a manner as to prevent damage and short circuits; and (3) of a type that successfully passed tests in the United Nations (UN) Manual of Tests and Criteria as specified in § 173.185.
- Q2: You ask whether a lithium ion battery—one that is removed from an electric vehicle and packed separately from the vehicle—must comply with the requirements in § 173.185.
- A2: When a lithium-ion battery is removed from an electric vehicle and packed separately, the battery must be shipped as “UN3480, Lithium ion batteries, 9” and prepared in accordance with the applicable requirements specified in § 173.185.

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

Sincerely,

T. Glenn Foster  
Chief, Regulatory Review and Reinvention Branch  
Standards and Rulemaking Division

**From:** [DerKinderen, Dirk \(PHMSA\)](#)  
**To:** [Hazmat Interps](#)  
**Subject:** FW: Arcimoto -- 49 CFR § 173.185 -- Request PHMSA Office of Chief Counsel guidance  
**Date:** Monday, May 10, 2021 11:03:55 AM  
**Attachments:** [image004.png](#)

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Interp request forwarded from counsel.

Thanks,  
Dirk Der Kinderen  
Chief, Standards Development Branch  
PHMSA  
202-366-4460

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**From:** Horsley, Adam (PHMSA)  
**Sent:** Monday, May 10, 2021 11:00 AM  
**To:** DerKinderen, Dirk (PHMSA) <Dirk.DerKinderen@dot.gov>  
**Cc:** Tsaganos, Vasiliki (PHMSA) <vasiliki.tsaganos@dot.gov>; Tackett, Christina (PHMSA) <christina.tackett@dot.gov>; Ross, Robert (PHMSA) <robert.ross@dot.gov>  
**Subject:** FW: Arcimoto -- 49 CFR § 173.185 -- Request PHMSA Office of Chief Counsel guidance

Hi Dirk,  
Can you please treat the questions below as a request for an interpretation?  
Thanks,  
- Adam

**Adam Horsley**

Deputy Assistant Chief Counsel, Office of Chief Counsel

US Department of Transportation  
**Pipeline and Hazardous Materials Safety Administration**  
1200 New Jersey Avenue, S.E., Washington, D.C. 20590  
Office: 202.366.8000 ♦ Facsimile: 202.366.7041

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**From:** Pete Z [<mailto:petez@arcimoto.com>]  
**Sent:** Thursday, May 6, 2021 7:35 PM  
**To:** Chief Counsel, PHMSA (PHMSA) <[phmsachiefcounsel@dot.gov](mailto:phmsachiefcounsel@dot.gov)>  
**Cc:** Regulatory Affairs <[regulatory@arcimoto.com](mailto:regulatory@arcimoto.com)>; Gerrit Hurenkamp <[gerrith@arcimoto.com](mailto:gerrith@arcimoto.com)>  
**Subject:** Arcimoto -- 49 CFR § 173.185 -- Request PHMSA Office of Chief Counsel guidance

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Hello PHMA Chief Counsel,

Thanks for speaking with me earlier today!

I'm doing some research to confirm or reject that fully battery-electric motor vehicles (EV) will need to comply with [49 CFR § 173.185](#).

Here's my research so far:

- PHMSA's Interim Final Rule (IFR) became effective on March 6, 2019, see attached PDF "FedReg PHMSA 49 CFR 172-173 HazMat Enhanced Safety Li-ion 2019\_03\_06"
- Test summaries of demonstrated compliance are required starting Jan 1, 2022, see attached PDF "FedReg PHMSA 49 CFR 171-180 HazMat Harmonization With Intl Stds 2020\_05\_11"
- EV batteries are typically shipped contained within new vehicles, but also shipped separately to repair partners for service, warranty, and part sales. UNECE Transport of Dangerous Goods regulations for ground, air, & marine transport, such as [UN 38.3](#) is relevant, and was "harmonized" by above PHMSA regulations.
- Typical EV battery-packs are 20,000+ Watt-hours and weigh hundreds of pounds.
- For some EV, each battery contains cells or a series of cells that are connected in parallel, all battery control mechanisms like BMS, contactors, major fuses, etc are external to the batteries, and there are no means inside the battery of preventing reverse current flow.
- Per 173.185(a)(3), "Beginning January 1, 2022 each manufacturer and subsequent distributor of lithium cells or batteries manufactured on or after January 1, 2008, must make available a test summary." The test summary requirements are listed 173.185(a)(3)(i) to (x).
- Per 173.185(a)(4), there is no stated phase-in date, so it appears that for subject cells and batteries, "each lithium cell or battery must: (i) Incorporate a safety venting device or be designed to preclude a violent rupture, (ii) Be equipped with means of preventing external short circuits; and (iii) Be equipped with a means of preventing dangerous reverse current flow (e.g., diodes or fuses) if a battery contains cells, or a series of cells that are connected in parallel."
- Per 173.185(c) and (c)(1), "smaller cells or batteries" may be exempt if the "Size limits" is met where "The Watt-hour (Wh) rating may not exceed 20 Wh for a lithium ion cell or 100 Wh for a lithium ion battery."
- Per 173.185(c)(1), "After December 31, 2015, each lithium ion battery subject to this provision must be marked with the Watt-hour rating on the outside case."
- Per 173.220(d), "Where the lithium battery is removed from the vehicle and is packed separate from the vehicle in the same outer packaging, the package must be consigned as "UN 3481, Lithium ion batteries packed with equipment" or "UN 3091, Lithium metal batteries packed with equipment" and prepared in accordance with the requirements specified in §173.185."
- I've completed an [iSearch.NHTSA.gov](#) review, found three letters from NHTSA Chief Counsel that are relevant to PHMSA 173.185, please see attached PDF.

Questions for PHMSA:

If a Li-ion battery is intended for a motor vehicle and is not "smaller," then is compliance to 49 CFR 173.185 required for **either** or **both** of the following conditions?

1. Where the Li-ion battery is **contained in** the vehicle and securely fastened in the battery holder of the vehicle;
  2. Where the Li-ion battery is **removed from** the vehicle and is packed separate from the vehicle.
- If PHMSA has already provided guidance to other EV motor vehicle OEM (such as Ford, GM, Toyota, etc) in response to same/ similar questions, then can you share this guidance with me so we don't unnecessarily cover the same ground?

I look forward to speaking with you at your very earliest convenience. Please feel free to call me anytime.

Thank you,

Pete Z

**Director of Global Regulatory Compliance**

**Arcimoto, Inc.**

**mobile 541-846-8198**

**From:** [DerKinderen, Dirk \(PHMSA\)](#)  
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Pete Z

**Director of Global Regulatory Compliance**

**Arcimoto, Inc.**

**mobile 541-846-8198**

**From:** [DerKinderen, Dirk \(PHMSA\)](#)  
**To:** [Dodd, Alice \(PHMSA\)](#)  
**Subject:** FW: Arcimoto -- 49 CFR § 173.185 -- Request PHMSA Office of Chief Counsel guidance  
**Date:** Tuesday, May 11, 2021 11:12:52 AM  
**Attachments:** [FedReg PHMSA 49 CFR 172-173 HazMat Enhanced Safety Li-ion 2019\\_03\\_06.pdf](#)  
[FedReg PHMSA 49 CFR 171-180 HazMat Harmonization With Intl Stds 2020\\_05\\_11.pdf](#)  
[iSearch.NHTSA.gov - Letter from NHTSA DD.Kinderen to DHL DRV.Franco - 2020\\_09\\_15.pdf](#)  
[iSearch.NHTSA.gov - Letter from NHTSA TG.Foster to TerraTrike L.Permesang - 2020\\_05\\_06.pdf](#)  
[iSearch.NHTSA.gov - Letter from NHTSA DD.Kinderen to Honda PowerEquip S.Gregory - 2017\\_11\\_01.pdf](#)

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FYI....for sharing with whomever this letter got assigned to.

Thanks,  
Dirk Der Kinderen  
Chief, Standards Development Branch  
PHMSA  
202-366-4460

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**From:** Tsaganos, Vasiliki (PHMSA) **On Behalf Of** Chief Counsel, PHMSA (PHMSA)  
**Sent:** Tuesday, May 11, 2021 11:09 AM  
**To:** DerKinderen, Dirk (PHMSA) <Dirk.DerKinderen@dot.gov>  
**Cc:** Horsley, Adam (PHMSA) <adam.horsley@dot.gov>  
**Subject:** FW: Arcimoto -- 49 CFR § 173.185 -- Request PHMSA Office of Chief Counsel guidance

Dirk: Adam confirmed you are logging this in. Just want to make sure you have all the attachments. Many thanks!

### Vasiliki Tsaganos

Deputy Chief Counsel, Office of Chief Counsel

US Department of Transportation  
**Pipeline and Hazardous Materials Safety Administration**  
1200 New Jersey Avenue, S.E., Washington, D.C. 20590  
Office: 202.366.0639 ♦ Facsimile: 202.578.9223

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