U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue SE
Washington, DC 20590

Mr. Tom Ferguson, PG, CHMM, DGSA
Technical Consultant
Council on the Safe Transportation of Hazardous Articles, Inc.
7803 Hill House Court
Fairfax Station, VA 22039

FEB 8 2012

Ref. No. 12-0019

Dear Mr. Ferguson:

This responds to your January 18, 2012 request for written clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to the exceptions provided for portable electronic devices powered by lithium ion batteries carried on an aircraft. Specifically, you ask whether the aggregate equivalent lithium content (AELC) stated in § 175.10(a)(18)(ii) for up two lithium ion batteries is limited to 25 grams per battery.

The answer is yes. Although AELC is not defined in the HMR, its meaning is equivalent to the definition of aggregate lithium content, which is defined as "the sum of the grams of lithium content or equivalent lithium content contained by the cells comprising a battery." § 171.8. Based on this definition, the 25g limit applies to each battery and not the total between the batteries. While we revised the text of § 175.10(a)(18)(ii) (formerly subparagraph (17)) in Final Rule 72 FR 44930 (Apr. 9, 2007), our interpretation that each battery may have an AELC up to 25 grams remains the same. Therefore, a passenger or crew member may carry up to two lithium ion batteries if the AELC of each battery does not exceed 25 grams. Spare batteries must be carried in carry-on baggage only.

Thank you for bringing this matter to our attention. We have created a table outlining the applicability of the exceptions stated in §175.10(a)(18). *See* Appendix A attached. We will also consider clarifying this issue in a rulemaking action. Please contact us if we can be of further assistance.

Sincerely,

cc Dr. Magdy El-Sibaie
Associate Administrator for Hazardous Materials Safety

Appendix A

The following table identifies the exceptions for portable electronic devices stated in § 175.10(a)(18):

Type of Battery (Used to power portable electronic devices, see § 175.10(a)(18))	**Carry-on Baggage**		**Checked Baggage**	
	Installed in equipment	**Spares**	**Installed in equipment**	**Spares**
Lithium ion (Small*) (Rechargeable lithium, lithium polymer, LIPO) as used in small consumer electronics, such as cell phones, cameras, PDAs, and most laptops. (* 8 grams or less equivalent lithium content **per battery**)	**YES**	**YES** (Protected from short circuit)	**YES**	**NO**
Lithium ion (Medium*) (Typically extended-life batteries) (*More than 8 grams but not more than 25 grams equivalent lithium content **per battery**)	**YES** Limit two (2) batteries per passenger.	**YES** Limit two (2) batteries per passenger and protected from short circuit	**YES** Limit two (2) batteries per passenger	**NO**
Lithium metal* (As used in small consumer electronics such as cameras, LED flashlights, etc.) (*2 grams or less lithium **per battery**)	**YES**	**YES** No limit and protected from short circuit	**YES**	**NO**

COUNCIL ON SAFE TRANSPORTATION
OF HAZARDOUS ARTICLES, INC.

January 19, 2012

January 18, 2012

Magdy El-Sibaie, PhD
Associate Administrator, Hazardous Materials Safety
Pipeline and Hazardous Materials Safety Administration
US Department of Transportation
1200 New Jersey Ave., SE
East Bldg. Second Floor
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Dear Dr. El-Sibaie:

The Council on Safe Transportation of Hazardous Articles, Inc. (COSTHA) hereby submits a request for interpretation regarding 49 CFR, Part 175, §175.10, paragraph (a)(18). Specifically, COSTHA is requesting clarification as to whether the paragraph permits the carriage of up to two (2) lithium ion batteries with an aggregate equivalent lithium content (ELC) of up to 25g each, or whether the paragraph permits the carriage of up to two (2) lithium ion batteries with an aggregate ELC of up to 25g total between the batteries.

COSTHA is a not-for-profit organization representing manufacturers, shippers, distributors, carriers, freight forwarders, trainers, packaging manufacturers and others associated with the hazardous materials transportation industry. In addition to promoting regulatory compliance and safety in hazardous materials transportation, COSTHA assists its members and the public in evaluating the practicality and efficacy of laws, rules and regulations for the safe transportation and distribution of hazardous materials.

The Hazardous Materials Regulations (HMR) provide specific provisions for the carriage of hazardous materials in checked or carry-on baggage in §175.10. Paragraph (a)(18) details provisions for the carriage of small electronic devices containing batteries (including lithium ion batteries) in baggage. The paragraph details conditions under which spare lithium ion batteries are permitted, stipulating such batteries may only be offered in carry-on baggage.

We are seeking an interpretation regarding the highlighted section below from 175.10(a)(18)(ii) as originally written. The way the industry has interpreted this is that each battery (of 2) can have an aggregate equivalent lithium battery content of between 8-25 grams. FAA is stating that the two batteries in aggregate must be less than 25 grams.

49 CFR 175.10(a)(18) reads as follows:

(18) Except as provided in §173.21 of this subchapter, portable electronic devices (for example, watches, calculating machines, cameras, cellular phones, lap-top and notebook computers, camcorders, etc.) containing cells or batteries (including lithium cells or batteries) and spare batteries and cells for these devices, when carried by passengers or crew members for personal use. Each spare battery must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. , by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch) and carried in carry-on baggage only. In addition, each installed or spare battery must not exceed the following:

(i) For a lithium metal battery, a lithium content of not more than 2 grams per battery; or
(ii) For a lithium-ion battery, an aggregate equivalent lithium content of not more than 8 grams per battery, except that up to two batteries with an aggregate equivalent lithium content of more than 8 grams but not more than 25 grams may be carried.

Our research shows that the language adopted in the Final Rule HM-228 published in the Federal Register on March 22, 2006 stated:

(17) Except as provided in Sec. 173.21 of this subchapter, consumer electronic and medical devices (watches, calculators, cameras, cellular phones, lap-top computer, camcorders, and hearing aids, etc.) containing lithium cells or batteries, and spare lithium batteries and cells for these devices, when carried by passengers or crew members in carry-on or checked baggage for personal use. In addition, each installed or spare battery must conform to the following;
(i) The lithium content of the anode of each cell, when fully charged, is not more than 5 g; and
(ii) The aggregate lithium content of the anodes of each battery, when fully charged, is not more than 25g.

On August 9, 2007, the Final Rule HM-224E was published. HM-224E modified the previous subparagraph (ii) to include two (2) spare lithium ion batteries.

(17) Except as provided in Sec. 173.21 of this subchapter, portable electronic devices (for example, watches, calculating machines, cameras, cellular phones, lap-top and notebook computers, camcorders, etc.) containing cells or batteries (including lithium cells or batteries) and spare batteries and cells for these devices, when carried by passengers or crew members for personal use. Each spare battery must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g., by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch) and carried in carry-on baggage only. In addition, each installed or spare battery must not exceed the following:
(i) For a lithium metal battery, a lithium content of not more than 2 grams per battery; or
(ii) For a lithium-ion battery, an aggregate equivalent lithium content of not more than 8 grams per battery, except that up to two batteries with an aggregate equivalent lithium content of more than 8 grams but not more than 25 grams may be carried.

However, when HM-224E was adopted, the word "each" was removed or omitted from the final language. Some have interpreted the removal as intentional and implying the 25g ELC limit applies to the combined ELC of the two (2) batteries.

> **[Note: The paragraph number changed from (a)(17) to (a)(18) in the Final Rule HM-215K published in the Federal Register on January 19, 2011.]**

§171.8 – Definitions provides details on what is meant by the terms Equivalent Lithium Content (ELC) and Aggregate Lithium Content:

> ***Equivalent lithium content*** *means, for a lithium-ion cell, the product of the rated capacity, in ampere-hours, of a lithium-ion cell times 0.3, with the result expressed in grams. The equivalent lithium content of a battery equals the sum of the grams of equivalent lithium content contained in the component cells of the battery.*
>
> ***Aggregate lithium content*** *means the sum of the grams of lithium content or equivalent lithium content contained by the cells comprising a battery.*

COSTHA believes the current language in §175.10(a)(18)(ii) permits the carriage of two (2) spare lithium ion batteries in carry-on baggage, ***each*** with an ELC up to 25g. We believe this interpretation is supported by the definitions in §171.8 for Aggregate lithium content which refers to the lithium content of a single battery, not multiple batteries. Further, we believe this interpretation is supported by the Federal Aviation Administration (FAA)'s "Batteries Carried by Airline Passengers – Frequently Asked Questions" document issued on January 9, 2008 (attached for your reference), and PHMSA's SafeTravel.DOT.GOV website regarding lithium ion batteries in carry-on baggage.

As this interpretation has implications on pending FAA approval of multiple US air carriers' Hazardous Materials Transport and Training Programs, we request PHMSA provide guidance on this issue in an expeditious manner.

We appreciate your assistance in clarifying PHMSA's intent in regards to this rule.

Sincerely,

Tom Ferguson, DGSA
Technical Consultant

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