



WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTY-FIRST MEETING

Montréal, 5 to 16 November 2007

Agenda Item 2: Development of recommendations for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2009-2010 Edition

Agenda Item 5: Resolution, where possible, of the non-recurrent work items identified by the Air Navigation Commission or the panel

5.4: Review of provisions for dangerous goods relating to lithium batteries

**COMMENTS ON CARRY-ON PROVISIONS FOR LITHIUM ION BATTERIES
CARRIED BY PASSENGERS OR CREW**

(Presented by the Portable Rechargeable Battery Association)

SUMMARY

This working paper was originally presented to WG07 as DGP-WG/07-WP/73. It invites the DGP to consider amending the carry-on provisions for lithium ion batteries carried by passengers or crew due to the changes adopted by the UN Committee of Experts.

Action by the DGP is in paragraph 2.

1. INTRODUCTION

1.1 At the DGP Working Group of the Whole Meeting in 2007 (WG07), a proposed amendment to the lithium metal and lithium ion battery carry-on provisions in 8;1.1.2 q) to enhance the existing requirement to protect batteries from short circuits was accepted (DGP-WG/07-WP/54). The Portable Rechargeable Battery Association (PRBA) supports the amendment and has been working with portable equipment manufacturers (including those in the professional audio / video industry) to educate them on these important safety issues.

1.2 At present, the Technical Instructions allow certain lithium metal and lithium ion batteries to be carried in the cabin of a passenger carrying aircraft in accordance with 8;1.1.2 q) which states the following:

- q) consumer electronic devices (watches, calculating machines, cameras, cellular phones, laptop computers, camcorders, etc.) containing lithium or lithium ion cells or

batteries when carried by passengers or crew for personal use. Spare batteries must be individually protected so as to prevent short circuits and carried in carry-on baggage only. In addition, each spare battery must not exceed the following quantities:

- for lithium metal or lithium alloy batteries, a lithium content of not more than 2 grams; or
- for lithium ion batteries, an aggregate equivalent lithium content of not more than 8 grams.

Lithium ion batteries with an aggregate equivalent lithium content of more than 8 grams but not more than 25 grams may be carried in carry-on baggage if they are individually protected so as to prevent short circuits and are limited to two spare batteries per person.

1.3 At the third session of the UN Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals (Geneva, 15 December 2006) significant changes to the lithium metal and lithium ion battery provisions in the UN Model Regulations were adopted. These changes are reflected in working paper DGP-WG/07-WP/4. One of the changes adopted by the UN Committee removed the “equivalent lithium content” provisions in the Model Regulations that apply to lithium ion cells and batteries and replaced it with watt-hours. Therefore, this paper proposes to replace the reference in 8;1.1.2 q) to “an aggregate equivalent lithium content of not more than 8 grams” with the appropriate watt-hour rating of “not more than 100 Wh” to be consistent with the changes adopted by the UN Committee.

1.4 This paper also is intended to inform the working group of the implications of its decision at the Working Group of the Whole Meeting in Beijing, China (WG/06) (DGP-WG/06-WP/29) to remove the following provision from 8;1.1.2 q): “*Lithium ion batteries with an aggregate equivalent lithium content of more than 8 grams but not more than 25 grams may be carried in carry-on baggage if they are individually protected so as to prevent short circuits and are limited to two spare batteries per person.*”

1.5 Below are three existing scenarios in which lithium ion batteries used by passengers and one industry segment exceed 8 grams of equivalent lithium content (100 watt-hours) and are frequently brought onboard passenger aircraft. (There may be others as well.) These batteries currently do not exceed 160 watt-hours.

- a) The professional audio/video industry uses lithium ion batteries that exceed 100 watt-hours. These are frequently carried onboard aircraft by camera crews, along with the equipment the batteries power, and are not placed in checked baggage (which is prohibited under 8;1.1.2 q). Examples of these batteries are shown in the appendix.
- b) Most portable oxygen concentrators (POC) on the market today are powered by lithium ion batteries. These products provide critical supplemental oxygen to individuals with medical disabilities and are quickly replacing oxygen tanks as the preferred choice for such individuals. PRBA anticipates that the batteries used to power POCs will soon exceed 100 watt-hours so that they can provide necessary power for passengers that travel over 3 hours in an aircraft.

- c) There are numerous “universal” lithium ion batteries on the market that are designed to power a variety of portable electronic equipment. These batteries provide extended run time for passengers that use products such as notebook computers and DVD players. Examples of these batteries are shown in the appendix.

1.6 PRBA does not believe that a carry-on provision for lithium ion batteries with 25 grams of equivalent lithium content (approximately 300 watt-hours) is needed. However, there are numerous examples as noted above where larger lithium ion batteries with up to 160 watt-hours currently are being sold in the marketplace and brought onboard aircraft by passengers. Some of these batteries will be used to power portable medical equipment. Therefore, PRBA believes a carry-on provision for larger lithium ion batteries should allow up to two spare lithium ion batteries containing no more than 160 watt-hours.

2. ACTION BY THE DGP

2.1 The DGP is invited to *amend* 8;1.1.2 q) as follows:

- q) consumer electronic devices (watches, calculating machines, cameras, cellular phones, laptop computers, camcorders, etc.) containing lithium or lithium ion cells or batteries when carried by passengers or crew for personal use. Spare batteries must be individually protected so as to prevent short circuits and carried in carry-on baggage only. In addition, each spare battery must not exceed the following quantities:
 - for lithium metal or lithium alloy batteries, a lithium content of not more than 2 grams; or
 - for lithium ion batteries, ~~an aggregate equivalent lithium content of not more than 8 grams~~ a watt-hour rating of not more than 100 Wh.
 - ~~Lithium ion batteries with an aggregate equivalent lithium content of more than 8 grams but not more than 25 grams~~ Lithium ion batteries with an aggregate equivalent lithium content of more than 8 grams but not more than 25 grams a watt-hour rating of more than 100 Wh but not more than 160 Wh may be carried in carry-on baggage if they are individually protected so as to prevent short circuits and are limited to two spare batteries per person.

APPENDIX

130 watt-hour
“universal”
lithium ion
battery



160 watt-hour
lithium ion battery
for professional
audio / video
equipment