



WORKING PAPER

**DANGEROUS GOODS PANEL (DGP)
WORKING GROUP OF THE WHOLE ON LITHIUM BATTERIES**

FIRST MEETING

Montréal, 6 to 10 February 2012

Agenda Item 2: ANC work items:

2.1: Simplification and clarification of lithium battery provisions

**PROPOSAL FOR LITHIUM RECHARGEABLE BATTERY TRANSPORTATION TO REDUCE
RISK OF FIRE PROPAGATION**

(Presented by K.Koume)

SUMMARY

This working paper proposes revisions to Section II of the Lithium battery under Packing Instruction 965 introduce either:

1. Use of non-flammable film to protect against lithium batteries catching fire when adjacent to a fire source; or
2. Use of SOC of 30 % or less during shipment of bulk lithium batteries.

Action by the DGP-WG/LB is in paragraph 2.

1. INTRODUCTION

1.1 Even if lithium battery rules become more stringent, it is unlikely that this will result in increased safety levels. Requiring all lithium batteries to be shipped as class 9 dangerous goods will not result in increased safety but will likely have the opposite effect, by increasing both intentional non-compliant shipments due to shippers seeking to avoid additional cost and delays and involuntary non-compliant shipments due to confusion over changing requirements.

1.2 Concerning the propagation risk associated with lithium ion cells and batteries, testing performed indicates the following two methods would be effective and efficient in case of in-flight fire caused by other fire source:

- a) use of non-flammable film to protect against lithium ion cells and batteries packages catching fire when adjacent fire source; or

- b) use of state of charge (SOC) of 30% or less during shipping of bulk lithium ion cells and batteries;

1.3 A summary of the test results follows.

- a) a package containing lithium ion cells over-packed with non-flammable film exposed to direct flame did not result in fire or explosion.
- b) at 30% SOC, lithium ion cells direct exposure to flame did not lead to fire or explosion.
- c) At 30% SOC, a package containing lithium ion cells exposed to direct flame from a solid fuel source did not result in fire or explosion.
- d) At 30% SOC, a cartridge heater inserted into the centre of a full package containing lithium ion cells did not result in any fire or explosion occurring.

Implementing the above solutions (using non-flammable film and reducing SOC) through their addition into Section II of Packing Instruction 965 would result in significantly improved safety levels.

2. ACTION BY THE DGP-WG/LB

2.1 The DGP-WG/LB is invited to add the following items to Section II of Packing Instruction 965:

To reduce the risk of fire propagation, introduce either:

- a) use of non-flammable film to protect against lithium ion cells and batteries cartons catching fire when adjacent to a fire source; or
- b) use of state of charge (SOC) of 30% or less during shipment of bulk lithium ion cells and batteries;
 - i) Where the shipper is also the battery manufacturer:
 - The SOC must be included on the shipper's transport document;
 - Tamper evident tape should be used when the master cartons are sealed prior to shipment by the manufacturer; and
 - Any packages that show signs of tampering must not be shipped.
 - ii) Where the shipper is not the battery manufacturer:
 - The retail package must not be opened, and
 - Retail packages must be marked with the SOC or accompanied by SOC certification documentation.

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