



WORKING PAPER

**DANGEROUS GOODS PANEL (DGP)
MEETING OF THE WORKING GROUP OF THE WHOLE**

Memphis, 30 April to 4 May 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

2.3: Part 3 — Dangerous Goods List and Limited Quantities Exceptions

2.4: Part 4 — Packing Instructions

LITHIUM BATTERIES

(Presented by D. Brennan)

SUMMARY

This paper proposes addition of a new special provision to clarify the classification and testing of lithium batteries.

Action by the DGP-WG is in paragraph 2.

1. INTRODUCTION

1.1 A question was posed recently regarding the potential for a shipper to use the dangerous goods in excepted quantity provisions to ship small quantities of regulated lithium batteries, UN 3090.

1.2 A review of Part 1;2.4 identifies that there is no specific wording or provision that prevents a shipper from consigning a small quantity of lithium batteries, that exceed the limits set out in Special Provision A45, but that individually weigh 30 g or less.

1.3 One area of concern did arise however in that the requirements for UN 3090 Lithium batteries do not specifically identify that all lithium batteries must have successfully passed the test set out in the UN Manual of Tests and Criteria. The text that describes this requirement is contained in Packing Instruction 903, which would not be referred to if using the excepted quantity provisions.

1.4 A review of the UN Model Regulations identifies that the text that relates to the conditions applicable to lithium batteries is reflected in SP 230 and applies to UN 3090 and UN 3091.

The equivalent text in the Technical Instructions is contained in paragraphs a) to d) in Packing Instruction 903.

2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to:

a) insert a new special provision Axxx as follows:

Axxx This entry applies to cells and batteries containing lithium in any form, including lithium polymer and lithium ion cells and batteries. Lithium cells and batteries may be transported under this entry if they meet the following provisions:

a) Each cell or battery is of the type proved to meet the requirements of each test of the *Manual of Tests and Criteria*, Part III, subsection 38.3;

b) Each cell and battery incorporates a safety venting device or is designed to preclude a violent rupture under conditions normally incident to transport;

c) Each cell and battery is equipped with an effective means of preventing external short circuits;

d) Each battery containing cells or series of cells connected in parallel is equipped with effective means as necessary to prevent dangerous reverse current flow (e.g., diodes, fuses, etc.).

b) assign Axxx against the entries UN 3090 and UN 3091 in Table 3-1; and

c) modify Packing Instruction 903 as follows:

903	PACKING INSTRUCTION 903	903
<p>The general packing requirements of 4;1 must be met.</p> <p>This entry applies to cells and batteries containing lithium in any form, including lithium polymer and lithium ion cells and batteries.</p> <p>Lithium cells and batteries may only be transported under this packing instruction if they meet the following requirements:</p> <p>— a) each cell or battery type has been determined to meet the criteria for assignment to Class 9 on the basis of tests carried out in accordance with the <i>UN Manual of Tests and Criteria</i>, Part III, subsection 38.3;</p> <p>— b) each cell and battery must incorporate a safety venting device or be designed to preclude a violent rupture under conditions normally incident to transport;</p> <p>— c) each cell and battery must be equipped with an effective means of preventing external short circuits;</p> <p>— d) each battery containing cells or series of cells connected in parallel must be equipped</p>		

~~with an effective means as necessary to prevent dangerous reverse current flow (e.g. diodes, fuses);~~

ea) cells and batteries must be packed in the inner packagings to effectively prevent short circuits and to prevent movement which could lead to short circuits;

fb) cells and batteries must be packed in steel drums (1A2), aluminium drums (1B2), plywood drums (1D) or fibre drums (1G), plastic drums (1H2), plastic jerricans (3H2), steel jerricans (3A2), wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G), solid plastic boxes (4H2), steel or aluminium boxes (4A, 4B) of Packing Group II;

gc) irrespective of the requirements in ea) and fb), lithium batteries with a mass of 12 kg or greater and having a strong, impact-resistant outer casing, or assemblies of such batteries, may be transported when packed in strong outer packagings and protective enclosures not subject to the requirements of Part 6 of these Instructions, if approved by the appropriate authority of the State of Origin. A copy of the document of approval must accompany the consignment.

≠ Cells with a liquid cathode containing sulphur dioxide, sulphuryl chloride or thionyl chloride which have been discharged to the extent that the open circuit voltage is less than the lower of:

a) 2 volts; or

b) two-thirds of the voltage of the undischarged cell;

and batteries containing one or more such cells, are forbidden from transport.