



WORKING PAPER

**DANGEROUS GOODS PANEL (DGP)
WORKING GROUP MEETING (DGP-WG/15)**

Montreal, 27 April to 1 May 2015

Agenda Item 5: Development of mitigating measures to address risks associated with the transport of lithium batteries including measures that address recommendations from the Second International Multidisciplinary Lithium Battery Transport Coordination Meeting

5.6: Miscellaneous lithium battery issues

**ADDITIONAL CONSIDERATIONS FOR SECTION II OF THE LITHIUM BATTERY
PACKING INSTRUCTIONS**

(Presented by D. Brennan)

SUMMARY

This working paper proposes revisions to Section II of the lithium battery packing instructions to clarify the requirements applicable to packagings and the marking and labelling of packages to remove ambiguities and omissions.

Action by the DGP-WG: The DGP-WG is invited to consider revising the content of Section II of the lithium battery packing instructions as shown in the appendix to this working paper.

1. INTRODUCTION

1.1 A working paper was presented to the Dangerous Goods Panel Working Group of the Whole (DGP-WG/14, Rio de Janeiro, Brazil, 20 to 24 October 2014) (DGP-WG/14-WP/17, see paragraph 3.5.2.1.1 b) of the DGP-WG/14 Report) that proposed some revisions to address some gaps in the provisions for packages of lithium batteries prepared in accordance with Section II of the lithium battery Packing Instructions 965, 966, 967, 968, 969 and 970.

1.2 The changes proposed in DGP-WG/14-WP/17 were to address some potential gaps in the robustness of packagings where, while it may be implied should be rigid, is not actually stated.

1.3 There is also a lack of requirement for packages or overpacks to identify the shipper and consignee. In the discussion of the proposal at DGP-WG/14 there was some reluctance to adopt this as it was not seen as a safety issue and also because packages may be small and this would potentially require the shippers to use larger packagings at additional cost.

1.4 It is believed that having the name and address of the shipper and consignee on at least what is presented for transport, package or overpack, is a general principle that while not directly safety related does go to being able to identify the appropriate parties in the event of incident, or damage to the piece of cargo. Much like a letter or package sent by mail, cargo won't be accepted for carriage unless the name and address of the shipper and consignee is marked at least on the outermost packaging.

1.5 Based on the comments therefore, the proposal in this paper is that the name and address of the shipper and consignee is marked either on the package, or where packages are placed in an overpack, on the outside of the overpack.

1.6 Finally, the information required on the air waybill, when used, just requires an indication of the packing instruction number and lithium battery type, without any indication of the number of packages in the consignment that contain lithium batteries. This provision is inconsistent with the requirement for dangerous goods in excepted quantities where, as shown in Part 3;5.5 the number of packages is required to be shown on the air waybill or other appropriate documentation.

1.7 It is believed that by requiring the number of packages to be shown on the air waybill airlines can implement such risk mitigation measures as they see appropriate.

2. ACTION BY THE DGP-WG

2.1 Based on the above the DGP-WG is invited to consider revising the content of Section II of the lithium battery packing instructions as shown in the appendix to this working paper.

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APPENDIX

PROPOSED AMENDMENT TO PART 4 OF THE TECHNICAL INSTRUCTIONS

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Part 4

PACKING INSTRUCTIONS

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Chapter 11

CLASS 9 — MISCELLANEOUS DANGEROUS GOODS

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Packing Instruction 965

Passenger and cargo aircraft for UN 3480

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II. SECTION II

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II.2 Additional requirements

- Cells and batteries must be packed in inner packagings that completely enclose the cell or battery then placed in a strong rigid outer packaging.
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
 - damage to cells or batteries contained therein;
 - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
 - release of contents.
- Each package must be labelled with a lithium battery handling label (Figure 5-32).
- Each package must be marked with the name and address of the shipper and the consignee unless packages are placed in an overpack, in which case the name and address of the shipper and the consignee must either be marked on the outside of the overpack or must be clearly visible.
- Each consignment must be accompanied with a document with an indication that:
 - the package contains lithium ion cells or batteries;
 - the package must be handled with care and that a flammability hazard exists if the package is damaged;
 - special procedures must be followed in the event the package is damaged, to include inspection and repacking if necessary; and
 - a telephone number for additional information.
- The words "lithium ion batteries, in compliance with Section II of PI965" and the number of packages in the consignment must be placed on the air waybill, when an air waybill is used.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

II.3 Outer packagings, strong outer packagings, such as

Boxes

Aluminium
Fibreboard
Natural wood
Other metal
Plastics
Plywood
Reconstituted wood
Steel

Drums

Aluminium
Fibre
Other metal
Plastics
Plywood
Steel

Jerricans

Aluminium
Plastics
Steel

Strong outer packagings

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Packing Instruction 966

Passenger and cargo aircraft for UN 3481 (packed with equipment) only

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II. SECTION II

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II.2 Additional requirements

- Lithium ion cells and batteries must:
 - be placed in inner packagings that completely enclose the cell or battery, then placed in a strong rigid outer packaging; or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in a strong rigid outer packaging.
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- The number of cells or batteries in each package must not exceed the appropriate number for the equipment's operation, plus two spares.
- Each package of cells or batteries, or the completed package, must be capable of withstanding a 1.2 m drop test in any orientation without:
 - damage to cells or batteries contained therein;
 - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
 - release of contents.
- Each package must be labelled with a lithium battery handling label (Figure 5-32).
- Each package must be marked with the name and address of the shipper and the consignee unless packages are placed in an overpack, in which case the name and address of the shipper and the consignee must either be marked on the outside of the overpack or must be clearly visible.
- Each consignment must be accompanied with a document with an indication that:
 - the package contains lithium ion cells or batteries;
 - the package must be handled with care and that a flammability hazard exists if the package is damaged;
 - special procedures must be followed in the event the package is damaged, to include inspection and repacking if necessary; and
 - a telephone number for additional information.
- The words "lithium ion batteries, in compliance with Section II of PI966" and the number of packages in the consignment must be placed on the air waybill, when an air waybill is used.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

II.3 Outer packagings, strong outer packagings, such as

Boxes

Aluminium
Fibreboard
Natural wood
Other metal
Plastics
Plywood
Reconstituted wood
Steel

Drums

Aluminium
Fibre
Other metal
Plastics
Plywood
Steel

Jerricans

Aluminium
Plastics
Steel

~~Strong outer packagings~~

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Packing Instruction 967

Passenger and cargo aircraft for UN 3481 (contained in equipment) only

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II. SECTION II

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II.2 Additional requirements

- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- Cells and batteries must be protected so as to prevent short circuits.
- The equipment must be packed in strong rigid outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained.
- Each package containing more than four cells or more than two batteries installed in equipment must be labelled with a lithium battery handling label (Figure 5-32) (except button cell batteries installed in equipment (including circuit boards)).
- Each package bearing the lithium battery handling label must be marked with the name and address of the shipper and the consignee unless packages are placed in an overpack, in which case the name and address of the shipper and the consignee must either be marked on the outside of the overpack or must be clearly visible.
- Each consignment with packages bearing the lithium battery handling label must be accompanied with a document with an indication that:
 - the package contains lithium ion cells or batteries;
 - the package must be handled with care and that a flammability hazard exists if the package is damaged;
 - special procedures must be followed in the event the package is damaged, to include inspection and repacking if necessary; and
 - a telephone number for additional information.
- Where a consignment includes packages bearing the lithium battery handling label, the words "lithium ion batteries, in compliance with Section II of PI967" and the number of packages in the consignment must be placed on the air waybill, when an air waybill is used.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

II.3 Outer packagings, strong outer packagings, such as

Boxes

Aluminium
Fibreboard
Natural wood
Other metal
Plastics
Plywood
Reconstituted wood
Steel

Drums

Aluminium
Fibre
Other metal
Plastics
Plywood
Steel

Jerricans

Aluminium
Plastics
Steel

Strong outer packagings

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Packing Instruction 968

Cargo aircraft only for UN 3090

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II. SECTION II

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II.2 Additional requirements

- Cells and batteries must be packed in inner packagings that completely enclose the cell or battery, then placed in a strong rigid outer packaging.
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
 - damage to cells or batteries contained therein;
 - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
 - release of contents.
- Each package must be labelled with a lithium battery handling label (Figure 5-32) and the cargo aircraft only label (Figure 5-26).
 - the cargo aircraft only label must be located on the same surface of the package near the lithium battery handling label, if the package dimensions are adequate.
- Each package must be marked with the name and address of the shipper and the consignee unless packages are placed in an overpack, in which case the name and address of the shipper and the consignee must either be marked on the outside of the overpack or must be clearly visible.
- Each consignment must be accompanied with a document with an indication that:
 - the package contains lithium metal cells or batteries;
 - the package must be handled with care and that a flammability hazard exists if the package is damaged;
 - special procedures must be followed in the event the package is damaged, to include inspection and repacking if necessary; and
 - a telephone number for additional information.
- The words "lithium metal batteries, in compliance with Section II of PI968 — cargo aircraft only" or "lithium metal batteries, in compliance with Section II of PI968 — CAO" and the number of packages in the consignment must be placed on the air waybill, when an air waybill is used.
- Consignments of lithium metal batteries prepared in accordance with the provisions of Section II must not be consolidated with other shipments of dangerous goods or non-dangerous goods and must not be loaded into a unit load device before being offered to the operator.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

II.3 Outer packagings, strong outer packagings, such as

Boxes

Aluminium
Fibreboard
Natural wood
Other metal
Plastics
Plywood
Reconstituted wood
Steel

Drums

Aluminium
Fibre
Other metal
Plastics
Plywood
Steel

Jerricans

Aluminium
Plastics
Steel

Strong outer packagings

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Packing Instruction 969

Passenger and cargo aircraft for UN 3091 (packed with equipment) only

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II. SECTION II

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II.2 Additional requirements

- Lithium metal cells or batteries must:
 - be placed in inner packagings that completely enclose the cell or battery, then placed in a strong rigid outer packaging; or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in a strong rigid outer packaging.
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- The number of cells or batteries in each package must not exceed the appropriate number for the equipment's operation, plus two spares.
- Each package of cells or batteries, or the completed package, must be capable of withstanding a 1.2 m drop test in any orientation without:
 - damage to cells or batteries contained therein;
 - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
 - release of contents.
- Each package must be labelled with a lithium battery handling label (Figure 5-32).
- Each package must be marked with the name and address of the shipper and the consignee unless packages are placed in an overpack, in which case the name and address of the shipper and the consignee must either be marked on the outside of the overpack or must be clearly visible.
- Each consignment must be accompanied with a document with an indication that:
 - the package contains lithium metal cells or batteries;
 - the package must be handled with care and that a flammability hazard exists if the package is damaged;
 - special procedures must be followed in the event the package is damaged, to include inspection and repacking if necessary; and
 - a telephone number for additional information.
- The words "lithium metal batteries, in compliance with Section II of PI969" and the number of packages in the consignment must be placed on the air waybill, when an air waybill is used.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

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Jerricans

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Plastics
Steel

Strong outer packagings

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Packing Instruction 970

Passenger and cargo aircraft for UN 3091 (contained in equipment) only

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II. SECTION II

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II.2 Additional requirements

- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- Cells and batteries must be protected so as to prevent short circuits.
- The equipment must be packed in strong rigid outer packagings constructed of suitable material of adequate strength and design in relation to the packaging's capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained.
- Each package containing more than four cells or more than two batteries installed in equipment must be labelled with a lithium battery handling label (Figure 5-32) (except button cell batteries installed in equipment (including circuit boards)).
- Each package bearing the lithium battery handling label must be marked with the name and address of the shipper and the consignee unless packages are placed in an overpack, in which case the name and address of the shipper and the consignee must either be marked on the outside of the overpack or must be clearly visible.
- Each consignment with packages bearing the lithium battery handling label must be accompanied with a document with an indication that:
 - the package contains lithium metal cells or batteries;
 - the package must be handled with care and that a flammability hazard exists if the package is damaged;
 - special procedures must be followed in the event the package is damaged, to include inspection and repacking if necessary; and
 - a telephone number for additional information.
- Where a consignment includes packages bearing the lithium battery handling label, the words "lithium ion batteries, in compliance with Section II of PI970" and the number of packages in the consignment must be placed on the air waybill, when an air waybill is used.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

II.3 Outer packagings, strong outer packagings, such as

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Strong outer packagings

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