



WORKING PAPER

**DANGEROUS GOODS PANEL (DGP)
WORKING GROUP MEETING (DGP-WG/20)**

Montréal, 19 to 23 October 2020

- Agenda Item 3: Managing safety risks posed by the carriage of lithium batteries by air**
3.6: Develop provisions aimed at improving compliance throughout the transport supply chain (Ref: Job Card DGP.003.02)

REMOVAL OF EXTRANEOUS TEXT FROM PACKING INSTRUCTIONS 966 AND 969

(Presented by D. Brennan)

SUMMARY

This working paper proposes the deletion of text that refers to equipment being equipped with an effective means of preventing accidental activation in Packing Instructions 966 and 969, which apply to lithium batteries packed with equipment. There is also a lack of consistency in the requirements across Sections I and II, and in places there is a mix of the use of “or” and “and” that creates confusion. It is proposed that this be clarified and the requirements harmonized.

Action by the DGP-WG: The DGP-WG is invited to consider the revisions to the packing instructions as shown in the appendix to this working paper.

1. INTRODUCTION

1.1 Packing Instructions 966 and 969 apply to lithium ion batteries packed with equipment and lithium metal batteries packed with equipment respectively. However, both packing instructions, in both Section I and Section II, have text that states that the equipment must be equipped with an effective means of preventing accidental activation.

1.2 The presence of this text implies that the packing instructions allow the equipment to be shipped with installed lithium batteries, which is not the case. Where the lithium cells or batteries are installed in the equipment, then the applicable packing instructions are 967 and 970, or if the shipper wishes to pack equipment with installed cells or batteries and include spare cells or batteries in the same package, then the shipper must comply with all applicable parts of both packing instructions.

1.3 The inclusion of text that only applies where the cells or batteries are installed in the equipment that does not apply to these packing instructions has created confusion for shippers, and

reinforces the view that the lithium battery packing instructions are very complex and challenging to comply with. It is therefore proposed that the requirement for equipment to be protect against accidental activation be deleted.

1.4 In reviewing these packing instructions for the development of this proposal it was identified that there are other inconsistencies within these packing instructions that may further confuse users and impact on compliance.

1.5 In Section I of both PI 966 and PI 969 under the “Additional requirements” the second bullet point states “lithium (ion, metal) cells **or** batteries must:”. However, in Section II under the “Additional requirements” the text reads “lithium (ion, metal) cells **and** batteries must:”. It is believed that the appropriate conjunction is “and”.

1.6 In Section I, the first bullet under “Additional requirements” is that “Lithium (ion, metal) cells and batteries must be protected against short circuits.”. However, in Section II, the equivalent text reads “Cells and batteries must be protected so as to prevent short circuits.”. Clearly the expectation is the same, but the use of different wording implies that there must be a different method used. In addition, in Section II there is additional text in the bullet point that states that “This includes protection against contact with electrically conductive material within the same packaging that could lead to a short circuit.”. Logically the same requirement should apply in Section I.

2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to consider revisions to Sections I and II of Packing Instructions 966 and 969 as shown in the appendix to this working paper.

APPENDIX

PROPOSED AMENDMENT TO PART 4 OF THE TECHNICAL INSTRUCTIONS

Packing Instruction 966

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

1. Introduction

This entry applies to lithium ion or lithium polymer batteries packed with equipment.

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I. SECTION I

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I.2 Additional requirements

- Lithium ion cells and batteries must be protected against short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- Lithium ion cells ~~or~~ and batteries must:
 - be placed in inner packagings that completely enclose the cell or battery then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance requirements; or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with equipment in a packaging that meets the Packing Group II performance requirements.
- 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 number required for the equipment's operation, plus two spare sets. A "set" of cells or batteries is the number of individual cells or batteries that are required to power each piece of equipment.
- Batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.

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~~ against short circuits. This includes protection against contact with electrically conductive material 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 number required for the equipment's operation, plus two spare sets. A "set" of cells or batteries is the number of individual cells or batters that are required to power each piece of equipment.
- 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 marked with the appropriate lithium battery mark (Figure 5-3).
 - the package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.
- The words "lithium ion batteries, in compliance with Section II of PI966" must be placed on the air waybill, when an air waybill is used. Where packages of Section II lithium batteries from multiple packing instructions are included on one air waybill, the compliance statement for the different lithium battery types and/or

packing instructions may be combined into a single statement provided that the statement identifies the applicable lithium battery type(s), packing instruction numbers and “CAO”, when applicable.

- Where a package contains a combination of lithium batteries contained in equipment and lithium batteries packed with equipment that meet the limits for lithium cells or batteries of Section II, the following additional requirements apply:
 - the shipper must ensure that all applicable parts of both packing instructions are met. The total mass of lithium batteries contained in any package must not exceed 5 kg;
 - the words “lithium ion batteries, in compliance with Section II of PI966” 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 the functions for which they are responsible.

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Packing Instruction 969

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

1. Introduction

This entry applies to lithium metal or lithium alloy batteries packed with equipment.

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I. SECTION I

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I.2 Additional requirements

- Lithium metal cells and batteries must be protected against short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
- Lithium metal cells ~~or~~ and batteries must:
 - be placed in inner packagings that completely enclose the cell or battery, then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance requirements; or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with equipment in a packaging that meets the Packing Group II performance requirements.
- 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 number required for the equipment's operation, plus two spare sets. A “set” of cells or batteries is the number of individual cells or batteries that are required to power each piece of equipment.
- For lithium metal cells and batteries prepared for transport on passenger aircraft as Class 9:
 - cells and batteries offered for transport on passenger aircraft must be packed in intermediate or outer rigid metal packaging surrounded by cushioning material that is non-combustible and non-conductive and placed inside an outer packaging.

II. SECTION II

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II.2 Additional requirements

- Lithium metal 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~~ against short circuits. This includes protection against contact with electrically conductive material 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 number required for the equipment's operation, plus two spare sets. A “set” of cells or batteries is the number of individual cells or batteries that are required to power each piece of equipment.

- 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 marked with the appropriate lithium battery mark (Figure 5-3).
 - the package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.
- The words “lithium metal batteries, in compliance with Section II of P1969” must be placed on the air waybill, when an air waybill is used. Where packages of Section II lithium batteries from multiple packing instructions are included on one air waybill, the compliance statement for the different lithium battery types and/or packing instructions may be combined into a single statement provided that the statement identifies the applicable lithium battery type(s), packing instruction numbers and “CAO”, when applicable.
- Where a package contains a combination of lithium batteries contained in equipment and lithium batteries packed with equipment that meet the limits for lithium cells or batteries of Section II, the following additional requirements apply:
 - the shipper must ensure that all applicable parts of both packing instructions are met. The total mass of lithium batteries contained in any package must not exceed 5 kg;
 - the words “lithium metal batteries, in compliance with Section II of P1969” 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 the functions for which they are responsible.

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