



**WORKING PAPER**

**DANGEROUS GOODS PANEL (DGP)  
WORKING GROUP MEETING (DGP-WG/21)**

Virtual Meeting, 24 to 28 May 2021

- Agenda Item 3: Managing safety risks posed by the carriage of lithium batteries by air**  
**3.5: Consider the need for specific measures to mitigate safety risks posed by lithium batteries packed with or contained in equipment**

**REVISIONS TO PACKING INSTRUCTIONS 967 AND 970**

(Presented by D. Brennan)

**SUMMARY**

This working paper proposes revisions to the packing instructions applicable to lithium batteries contained in equipment (Packing Instructions 967 and 970) to ensure that multiple pieces of equipment packed into the same outer packaging are packed in such a way to prevent damage due to contact between the pieces of equipment. It is also proposed to revise the allowance for equipment containing lithium batteries in Packing Instructions 967 and 970 to be in other than strong outer packagings.

Action by the DGP-WG is in paragraph 2.

**1. INTRODUCTION**

1.1 Packing Instructions 967 and 970, which apply to lithium batteries contained in equipment, are written with the assumption that each outer packaging will either contain a single piece of equipment or, where multiple pieces of equipment are placed in an outer packaging, that these will be individually packaged.

1.2 However, this is not explicitly stated and there is no specific requirement where there are multiple pieces of equipment in one outer packaging that they be packed to prevent damage due to contact between the pieces of equipment.

1.3 There are also conflicting requirements in both Section I and Section II of these packing instructions where the general requirements clearly state that the equipment must be packed in strong outer packagings but the additional requirements permit other than strong outer packagings where the battery is afforded equivalent protection by the equipment in which it is contained.

1.4 While it may be appropriate for larger equipment prepared in accordance with Section I to be offered for transport in other than strong outer packagings, it is believed that for equipment prepared in accordance with Section II, most of which are consumer electronic such as calculators, mobile phones, tablets and laptops, strong outer packagings must be the minimum requirement.

1.5 To address these issues it is proposed to add an additional condition to the additional requirements to specify that where there are multiple pieces of equipment packed into the same outer packaging that the equipment must be packed and protected against contact with other equipment so as to prevent damage.

1.6 It is then proposed to remove the allowance in the additional requirements in Section II for the equipment to be packed in other than strong outer packagings. For Section I it is proposed to revise the provisions to align the wording more closely to that in the UN Model Regulations to avoid having two separate but slightly conflicting requirements.

## 2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to consider the revisions to Packing instructions 967 and 970 as shown in the appendix to this working paper.

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APPENDIX

PROPOSED AMENDMENTS TO PACKING INSTRUCTIONS 967 AND 970 OF THE  
TECHNICAL INSTRUCTIONS

Part 4

PACKING INSTRUCTIONS

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Packing Instruction 967

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

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I. SECTION I

Each cell or battery must meet the provisions of 2;9.3.

I.1 General requirements

Equipment must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1). Large equipment can be offered for transport unpackaged or on pallets when the cells or batteries are afforded equivalent protection by the equipment in which they are contained.

UN number and proper shipping name	Package quantity (Section I)	
	Passenger	Cargo
UN 3481 <b>Lithium ion batteries contained in equipment</b>	5 kg of lithium ion cells or batteries	35 kg of lithium ion cells or batteries

I.2 Additional requirements

- The equipment must be secured against movement within the outer packaging and be packed so as to prevent accidental operation during air transport.
- ~~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.~~ Where multiple pieces of equipment are packed in the same outer packaging, each piece of equipment must be packed and protected against contact with other equipment so as to prevent damage.
- Batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.

I.3 Outer packagings

*Boxes*

Aluminium  
Fibreboard  
Natural wood  
Other metal  
Plastics  
Plywood  
Reconstituted wood  
Steel

*Drums*

Aluminium  
Fibre  
Other metal  
Plastics  
Plywood  
Steel

*Jerricans*

Aluminium  
Plastics  
Steel

## Packing Instruction 967

### 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.~~ Where multiple pieces of equipment are packed in the same outer packaging, each piece of equipment must be packed and protected against contact with other equipment so as to prevent damage.
- 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.
  - This requirement does not apply to:
    - packages containing only button cell batteries installed in equipment (including circuit boards); and
    - packages containing no more than four cells or two batteries installed in equipment, where there are not more than two packages in the consignment.
  - Where a consignment includes packages bearing the lithium battery mark, the words "lithium ion batteries, in compliance with Section II of PI967" 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.
- 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 970

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

### 1. Introduction

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#### I. SECTION I

Each cell or battery must meet the provisions of 2;9.3.

#### I.1 General requirements

Equipment must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1). Large equipment can be offered for transport unpackaged or on pallets when the cells or batteries are afforded equivalent protection by the equipment in which they are contained.

UN number and proper shipping name	Package quantity (Section I)	
	Passenger	Cargo
UN 3091 <b>Lithium metal batteries contained in equipment</b>	5 kg of lithium metal cells or batteries	35 kg of lithium metal cells or batteries

#### I.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.
- ~~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.~~ Where multiple pieces of equipment are packed in the same outer packaging, each piece of equipment must be packed and protected against contact with other equipment so as to prevent damage.
- The quantity of lithium metal contained in any piece of equipment must not exceed 12 g per cell and 500 g per battery.

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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.~~ Where multiple pieces of equipment are packed in the same outer packaging, each piece of equipment must be packed and protected against contact with other equipment so as to prevent damage.
- 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.
  - This requirement does not apply to:
    - packages containing only button cell batteries installed in equipment (including circuit boards); and
    - packages containing no more than four cells or two batteries installed in equipment, where there are not more than two packages in the consignment.
  - Where a consignment includes packages bearing the lithium battery mark, the words "lithium metal batteries, in compliance with Section II of PI970" 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.
- 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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