



WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTY-SEVENTH MEETING

Montréal, 16 to 20 September 2019

Agenda Item 2: Managing air-specific safety risks and identifying anomalies

2.3: Develop proposals, if necessary, for amendments to the *Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc 9284SU)* for incorporation in the 2021-2022 Edition

ALLOWANCE IN PACKING INSTRUCTION 910 FOR THE USE OF LARGE PACKAGINGS

(Presented by D. Brennan)

SUMMARY

This working paper proposes that consideration be given to making allowance in Packing Instruction 910 for large packagings for large prototype and low production run lithium batteries that have not passed the tests of the UN *Manual of Tests and Criteria*, Part III, subsection 38.3.

Action by the DGP: The DGP is invited to consider the amendment to Packing Instruction 910 of the Supplement and consequential changes to the Supplement as shown in the appendices to this working paper.

1. INTRODUCTION

1.1 Working papers were presented to the eighteenth and nineteenth working group meetings of the Dangerous Goods Panel (DGP-WG/18, Montréal, 1 to 5 October 2018 and DGP-WG/19, Montréal, 1 to 5 April 2019) proposing to permit large packagings for prototype or low production run lithium batteries shipped under an approval in accordance with Special Provision A88.

1.2 Following discussion at DGP-WG/19, a revised proposal, incorporating comments provided by panel members, was submitted in a flimsy (see paragraph 3.2.3.3 of the DGP-WG/19 Report). There was overall support for the revised proposal, although panel members requested more time to consult with their experts before agreeing to the proposed changes.

1.3 Comments have been provided by a number of States and the proposals in this working paper have taken those comments into account.

2. **ACTION BY THE DGP**

2.1 The DGP is invited to consider the changes to the Supplement and Packing Instruction 910 as shown in the appendices to this working paper.

APPENDIX A

PROPOSED AMENDMENT TO PART S-4 OF THE SUPPLEMENT

Part S-4

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Chapter 13

LARGE PACKAGINGS

Note.— This chapter has no corresponding chapter in the Technical Instructions.

13.1 GENERAL

Large packagings may be used for the transport of articles in accordance with the provisions of this chapter only when the following conditions are met:

- a) transport is on cargo aircraft only;
- b) approval of the appropriate authority of the State of Origin and the State of the Operator is obtained; and
- c) there is a specific allowance for the use of large packagings provided for in Part S-4 or the value indicated in column 13 of Table 3-1 of the Technical Instructions shows "no limit".

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APPENDIX B

PROPOSED AMENDMENT TO PART S-4 OF THE SUPPLEMENT TO THE TECHNICAL
INSTRUCTIONS

Part S-4

PACKING INSTRUCTIONS

(ADDITIONAL INFORMATION
FOR PART 4 OF THE TECHNICAL INSTRUCTIONS)

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Chapter 11

CLASS 9 — MISCELLANEOUS DANGEROUS GOODS

Packing Instruction 910

Cargo aircraft only

Introduction

This instruction applies to UN Nos. 3090, 3091, 3480 and 3481 annual production runs consisting of not more than 100 cells or batteries and to pre-production prototypes of cells or batteries when these prototypes are transported for testing.

General requirements

Part 4, Chapter 1 requirements of the Technical Instructions must be met.

Lithium ion cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity unless a higher state of charge is specifically approved by the States of Origin and the Operator.

ADDITIONAL PACKING REQUIREMENTS

- Packagings, including large packagings, must meet the Packing Group I performance requirements.
- Cells and batteries must be protected against short circuit. Protection against short circuits includes, but is not limited to:
 - individual protection of the battery terminals;
 - inner packaging to prevent contact between cells and batteries;
 - batteries with recessed terminals designed to protect against short circuits; or
 - the use of an electrically non-conductive and non-combustible cushioning material to fill empty space between the cells or batteries in the packaging.

Cells and batteries, including when packed with equipment

- 1) Batteries and cells, including equipment, of different sizes, shapes or masses must be packaged in an outer packaging of a tested design type listed below provided the total gross mass of the package does not exceed the gross mass for which the design type has been tested. Rigid large packagings, as shown below, are permitted for a single battery, including when packed with or contained in equipment;
- 2) Each cell or battery must be individually packed in an inner packaging and placed inside an outer packaging;
- 3) Each inner packaging must be completely surrounded by sufficient non-combustible and electrically non-

conductive thermal insulation material to protect against a dangerous evolution of heat;

- 4) Appropriate measures must be taken to minimize the effects of vibration and shocks and prevent movement of the cells or batteries within the package that may lead to damage and a dangerous condition during transport. Cushioning material that is non-combustible and electrically non-conductive may be used to meet this requirement;
- 5) Non-combustibility must be assessed according to a standard recognized in the State where the packaging is designed or manufactured;
- 6) A cell or battery with a net mass of more than 30 kg ~~must be~~ is limited to one cell or battery per outer packaging.

Cells and batteries contained in equipment

- 1) Equipment of different sizes, shapes or masses must be packed in an outer packaging of a tested design type listed below provided the total gross mass of the package does not exceed the gross mass for which the design type has been tested;
- 2) The equipment must be constructed or packaged in such a manner as to prevent accidental operation during transport;
- 3) Appropriate measures must be taken to minimize the effects of vibration and shocks and prevent movement of the equipment within the package that may lead to damage and a dangerous condition during transport. When cushioning material is used to meet this requirement it must be non-combustible and electrically non-conductive; and
- 4) Non-combustibility must be assessed according to a standard recognized in the State where the packaging is designed or manufactured.

~~Equipment or batteries~~ Packagings not subject to Part 6 of ~~these~~ the Technical Instructions

The equipment or ~~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 packed in strong outer packagings or protective enclosures not subject to the requirements of Part 6 of ~~these~~ the Technical Instructions under conditions specified by the appropriate national authority. Additional conditions that may be considered in the approval process include, but are not limited to:

- 1) The equipment or the battery must be strong enough to withstand the shocks and loadings normally encountered during transport, including trans-shipment between [cargo transport units] [unit load devices] and between [cargo transport units] [unit load devices] and warehouses as well as any removal from a pallet or unit load device for subsequent manual or mechanical handling; and
- 2) The equipment or the battery must be fixed in cradles or crates or other handling devices in such a way that it will not become loose during normal conditions of transport.

OUTER PACKAGINGS

Boxes

Aluminium (4B)
Fibreboard (4G)
Natural wood (4C1, 4C2)
Other metal (4N)
Plywood (4D)
Reconstituted wood (4F)
Plastics (4H1, 4H2)
Steel (4A)

Drums

Aluminium (1B2)
Fibre (1G)
Other metal (1N2)
Plastics (1H2)
Plywood (1D)
Steel (1A2)

Jerricans

Aluminium (3B2)
Plastics (3H2)
Steel (3A2)

RIGID LARGE PACKAGINGS

Boxes

Aluminium (50B)
Fibreboard (50G)
Natural wood (50C)
Other metal (50N)
Plastics (50H)
Plywood (50D)
Reconstituted wood (50F)
Steel (50A)

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