



WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTY-EIGHTH MEETING

Virtual, 15 to 19 November 2021

Agenda Item 4: Managing safety risks posed by the carriage of lithium batteries by air (Ref: Job Card DGP.003.03)

REDUCED STATE OF CHARGE NOT EXCEEDING 30 PER CENT FOR UN 3480 THROUGH PACKING INSTRUCTION 965

(Presented by S. Schwartz)

SUMMARY

This working paper proposes to amend Packing Instruction 965 of the Technical Instructions to require that UN 3480 — **Lithium ion batteries** be offered for transport at the lowest practical state of charge, but not exceeding 30 per cent.

Action by the DGP: The DGP-WG is invited to consider amendments as detailed in the appendix to this working paper.

1. INTRODUCTION

1.1 When the 30 per cent state of charge (SOC) requirement for UN 3480 — **Lithium ion batteries** was implemented, it was seen as a way to quickly and easily reduce the general risk they pose in air transport. The 30 per cent level was based on tests demonstrating significantly reduced risk from many cells and batteries offered for transport, but it was never accepted as providing a safe level for all cells and batteries. Some cells and batteries pose significant risk if they enter thermal runaway in air transport when shipped at 30 per cent SOC.

1.2 Thermal runaway propagation and explosive gas generation normally decreases as SOC is reduced, so to minimize risk in transport the target should be the lowest possible SOC, not 30 per cent.

1.3 Therefore, the DGP is invited to consider whether the Technical Instructions should be amended to require UN 3480 — **Lithium ion batteries** to be offered for transport at the lowest practical SOC, but no higher than 30 per cent.

2. **ACTION BY THE DGP**

2.1 The DGP-WG is invited to consider amendments as detailed in the appendix to this working paper.

APPENDIX

PROPOSED AMENDMENT TO PART 4 OF THE TECHNICAL INSTRUCTIONS

Part 4

PACKING INSTRUCTIONS

Chapter 11

CLASS 9 — MISCELLANEOUS DANGEROUS GOODS

Packing Instruction 965

Cargo aircraft only for UN 3480

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IA. SECTION IA

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

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IA.1 General requirements

- Part 4;1 requirements must be met.
- Lithium ion cells and batteries must be offered for transport at ~~a~~-the lowest practical state of charge but not exceeding 30 per cent of their rated capacity. Cells and/or batteries at a state of charge greater than 30 per cent of their rated capacity may only be shipped with the approval of the State of Origin and the State of the Operator under the written conditions established by those authorities.

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IB. SECTION IB

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IB.1 General requirements

- Cells and batteries 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).
- Lithium ion cells and batteries must be offered for transport at ~~a~~-the lowest practical state of charge but not exceeding 30 per cent of their rated capacity. Cells and/or batteries at a state of charge greater than 30 per cent of their rated capacity may only be shipped with the approval of the State of Origin and the State of the Operator under the written conditions established by those authorities.

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II. SECTION II

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II.1 General requirements

- Cells and batteries 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).
- Lithium ion cells and batteries must be offered for transport at ~~a~~-the lowest practical state of charge but not exceeding 30 per cent of their rated capacity.

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