



International Civil Aviation Organization

WORKING PAPER

DGP/29-WP/26

30/08/23

Addendum

19/10/23

DANGEROUS GOODS PANEL (DGP)

TWENTY-NINTH MEETING

Montréal, 13 to 17 November 2023

Agenda Item 4: Managing safety risks posed by the carriage of lithium batteries by air (Ref: Job Card DGP.003.04)

REDUCED CHARGE FOR VEHICLES POWERED BY LITHIUM ION, LITHIUM METAL OR SODIUM ION BATTERIES

(Presented by D. Brennan)

ADDENDUM

SUMMARY

DGP/29-WP/26 proposes an amendment to Packing Instruction 952 to require that vehicles powered by lithium ion batteries be shipped with the lithium ion battery discharged as far as practicable and where charge remains, the indicated range or indicated battery capacity must not exceed 25 per cent. This addendum to DGP/29-WP/26 proposes to also apply the requirement to vehicles powered by lithium metal batteries and sodium ion batteries.

Action by the DGP: The DGP is invited to consider the proposal to amend Packing Instruction 952 to include vehicles powered by lithium metal batteries (UN 3557) and sodium ion batteries (UN 3558) in addition to vehicles powered by lithium ion batteries (UN 3557) as shown in the appendix to this working paper. The additional text introduced through this addendum is highlighted in yellow in the appendix.

Note.— Amendments to Packing Instruction 952 proposed in DGP/29-WP/14 for the sake of harmonization with the twenty-third revised edition of the Recommendations on the Transport of Dangerous Goods, UN Model Regulations have been incorporated (without redline or strikeout) in the appendix to this working paper.

1. INTRODUCTION

1.1 DGP/29-WP/26 proposes an amendment to Packing Instruction 952 to require that vehicles powered by lithium ion batteries be shipped with the lithium ion battery discharged as far as practicable and where charge remains, the indicated range or indicated battery capacity must not exceed 25 per cent.

1.2 Since the working paper was developed and submitted to ICAO for DGP/29, the author has become aware of the existence of vehicles that are powered by solid state, rechargeable lithium metal batteries (see <https://www.blue-solutions.com/en/battery-technology/>). There is also development underway for the use of sodium ion batteries in vehicles, with some estimates that these will be in production by 2024.

1.3 Based on this new information, it is proposed to modify the proposal in DGP/29-WP/26 to also require that vehicles powered by lithium metal batteries (UN 3557) and vehicles powered by sodium ion batteries (UN 3558) must be shipped with the battery discharged as far as practicable and where charge remains, the indicated range or indicated battery capacity must not exceed 25 per cent.

2. ACTION BY THE DGP

2.1 The DGP is invited to consider the proposal to amend Packing Instruction 952 to include vehicles powered by lithium metal batteries (UN 3557) and sodium ion batteries (UN 3558) in addition to vehicles powered by lithium ion batteries (UN 3557) as shown in the appendix to this working paper. The additional text introduced through this addendum is highlighted in yellow in the appendix.

Note.— Amendments to Packing Instruction 952 proposed in DGP/29-WP/14 for the sake of harmonization with the twenty-third revised edition of the Recommendations on the Transport of Dangerous Goods, UN Model Regulations have been incorporated without redline or strikeout in the appendix to this working paper.

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 952

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Amendments proposed in DGP/29-WP/14 are incorporated in this proposal.

ADDITIONAL PACKING REQUIREMENTS

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Battery-powered vehicles or equipment must meet the following requirements:

Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) If spillable batteries are installed, and it is possible for the vehicle or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 870.
- 2) If lithium batteries or sodium ion batteries are installed:
 - i) batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport; and
 - ii) lithium batteries must meet the provisions of Part 2;9.3 and sodium ion batteries must meet the provisions of Part 2;9.4, unless otherwise approved by the appropriate authority of the State of Origin, except that pre-production prototypes of lithium or sodium ion batteries or cells, when these prototypes are transported for testing, or low production runs of lithium or sodium ion batteries or cells that have not been tested to the requirements in Part III, subsection 38.3 of the UN *Manual of Tests and Criteria* may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the State of the Operator. A copy of the document of approval must accompany the consignment.
 - iii) where the battery is removed from the vehicle and is packed separate from the vehicle in the same outer packaging, the package must be consigned as UN 3481— **Lithium ion batteries packed with equipment**, UN 3552 — **Sodium ion batteries packed with equipment** or UN 3091 — **Lithium metal batteries packed with equipment** and packed according to Packing Instruction 966, 977 or 969, as applicable.
 - iv) vehicles powered by lithium ion batteries (UN 3556), lithium metal batteries (UN 3557) or sodium ion batteries (UN 3558) must have the battery(ies) discharged as far as practicable, and where charge remains, the indicated range or indicated battery capacity must not exceed 25 per cent. This requirement does not apply where the lithium ion battery(ies) powering the vehicle has a Watt-hour rating not exceeding 100 Wh.

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