



WORKING PAPER

**DANGEROUS GOODS PANEL (DGP)
WORKING GROUP MEETING (DGP-WG/25)**

Delhi, India, 21 to 25 April 2025

- Agenda Item 2: Managing air-specific safety risks and identifying anomalies (REC-A-DGS-2027)**
- 2.2: Develop proposals, if necessary, for amendments to the Technical Instructions for the *Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2027-2028 Edition**
 - 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 2027-2028 Edition**

**NUMBER OF SPARE FUEL CELL CARTRIDGES APPLICABLE TO PACKING
INSTRUCTION 497**

(Presented by L. Cascardo)

SUMMARY

This working paper addresses a potential inconsistency in Packing Instruction 497 regarding the number of fuel cell cartridges permitted in an intermediate packaging. Recent updates to Packing Instructions Packing Instructions 966, 969, and 977 introduced the term “spare sets” to provide greater clarity. However, Packing Instruction 497 remains unchanged, raising concerns from industry representatives. This paper suggests aligning Packing Instruction I497 with the updated instructions to ensure uniformity and avoid misinterpretations. The proposed amendment is provided in the appendix.

Action by the DGP-WG is in paragraph 2.

1. INTRODUCTION

1.1 Packing Instruction 497, applicable to UN 3476 – **Fuel cell cartridges packed with equipment**, currently states:

“The maximum number of fuel cell cartridges in the intermediate packaging must be the minimum number required to power the equipment, plus two spares.”

1.2 Recent amendments to Packing Instructions 966, 969, and 977 were made to clarify the meaning of “spares” by introducing the term “spare sets”, explicitly defining a “set” as the number of cells or batteries needed to power a single piece of equipment. The revised text now reads:

“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.”

1.3 Industry representatives from our State have questioned whether Packing Instruction 497 should follow the same approach as Packing Instructions 966, 969, and 977 or whether the intention was to explicitly limit the number of spare cartridges to two, regardless of the power requirements of the equipment.

1.4 This working paper presents both interpretations and invites the panel to consider whether an amendment aligning Packing Instruction 497 with the other packing instructions is necessary or, alternatively, whether the existing text should be further clarified to avoid confusion.

2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to:

- a) consider whether the intent of Packing Instruction 497 aligns with the updated approach in Packing Instructions 966, 969, and 977, in which case the proposed amendment in the appendix to this working paper could be adopted; or
- b) if the intent differs, consider whether additional clarification in Packing Instruction 497 is necessary to ensure consistent interpretation.

APPENDIX

PROPOSED AMMENDMENT TO PACKING INSTRUCTION 497

Part 4

PACKING INSTRUCTIONS

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Chapter 6

CLASS 4 – FLAMMABLE SOLIDS; SUBSTANCES
LIABLE TO SPONTANEOUS COMBUSTION;
SUBSTANCES WHICH, IN CONTACT WITH WATER,
EMIT FLAMMABLE GASES

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6.2 PACKING INSTRUCTIONS

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Packing Instruction 497

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ADDITIONAL PACKING REQUIREMENTS

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- The ~~maximum~~ number of fuel cell cartridges in the intermediate packaging must be not exceed the ~~minimum~~ number required to power the equipment for the equipment's operation, plus two spares sets. A "set" of fuel cell cartridges is the number of individual fuel cell cartridges that are required to power each piece of equipment.

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