



فريق خبراء البضائع الخطرة

الاجتماع الثامن والعشرون

اجتماع افتراضي، من ١٥ إلى ١٩/١١/٢٠٢١

البند رقم ٤ من جدول الأعمال: إدارة المخاطر المرتبطة بالسلامة والناجمة عن نقل بطاريات الليثيوم عن طريق الجو
(المرجع: بطاقة المهام لفريق خبراء البضائع، رقم 003.03)

خفض مستوى الشحن بنسبة لا تزيد عن ٣٠ في المائة فيما

يخص الفئة UN 3481 وفقاً لتعليمات التعبئة رقم ٩١٠ من

"الإضافة للتعليمات الفنية"

(ورقة مقدمة من س. شوارتز)

الموجز

تتضمن ورقة العمل هذه اقتراحاً بتعديل "تعليمات التعبئة" رقم ٩١٠ فيما يخص "الإضافة للتعليمات الفنية" لإدراج الفئة رقم UN 3481 - بطاريات أيونات الليثيوم المعبأة بالمعدات والفئة رقم UN 3481 - بطاريات أيونات الليثيوم الموجودة في المعدات مع متطلبات "المستوى الأقصى للشحن" (SOC) واشترط أن يجري عرض جميع الشحنات التي تحتوي على بطاريات الليثيوم النموذجية وذات الإنتاج المنخفض (الفئتان UN 3480 و UN 3481) لأغراض النقل بأدنى مستوى عملي للشحن، على ألا يتجاوز ذلك نسبة ٣٠ في المائة.

الإجراء المعروف على فريق خبراء البضائع الخطرة: تُدعى مجموعة العمل التابعة لفريق خبراء البضائع الخطرة إلى مراعاة التعديلات بالشكل المفصل في المرفق بورقة العمل هذه.

1. INTRODUCTION

1.1 Packing Instruction 910 of the Supplement applies to low production run and prototype lithium batteries and cells that may not have met the UN 38.3 test criteria.

1.2 When the 30 per cent state of charge (SOC) requirement for UN 3480 — **Lithium ion batteries** was implemented in Packing Instruction 965 of the Technical Instructions, 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.

1.3 Thermal runaway propagation and explosive gas generation normally decreases as SOC is reduced, and therefore the DGP is invited to consider whether Packing Instruction 910 of the Supplement should be amended to require UN 3480 to be offered for transport at the lowest practical SOC, but no higher than 30 per cent.

1.4 It has been assumed that the equipment in UN 3481 — **Lithium ion batteries packed with equipment** and UN 3481 — **Lithium ion batteries contained in equipment** provides adequate protection from both thermal runaway propagation and explosive gas generation, but little data has been presented to demonstrate this. Additionally, battery energy density has been increasing and electronic component size (and presumably the protection it affords in the case of a battery failure) has been decreasing. It is therefore proposed to require UN 3481 shipped in accordance with Packing Instruction 910 be shipped at the lowest practical state of charge, but not to exceed 30 per cent.

1.5 Since there is no requirement that the lithium ion batteries and cells covered by Packing Instruction 910 of the Supplement be subjected to the UN 38.3 tests, further limiting the SOC in air transport would be an important safety enhancement to prevent propagation of thermal runaway, reduce the energy available to initiate a fire in the event of an internal short circuit, and limit the amount of explosive gas generated during a thermal runaway for both UN 3480 and UN 3481.

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 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.

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Lithium ion cells and batteries ([both UN 3480 and UN 3481](#)) must be offered for transport at [a-the lowest practical](#) state of charge [but](#) 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 State of the Operator.

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