



NOTA DE ESTUDIO

GRUPO DE EXPERTOS SOBRE MERCANCÍAS PELIGROSAS (DGP)

VIGESIMOQUINTA REUNIÓN

Montreal, 19 – 30 de octubre de 2015

Cuestión 5 del orden del día: Formulación de una estrategia global para mitigar los riesgos relacionados con el transporte de baterías de litio que incluya la elaboración de normas basadas en las características funcionales de los embalajes e iniciativas para facilitar el cumplimiento

**CONDICIÓN RELATIVA AL ESTADO DE CARGA
PARA EXPEDICIONES DE BATERÍAS DE IÓN LITIO (ONU 3480)**

(Nota presentada por M. Rogers)

Por falta de recursos, sólo se han traducido el resumen y el apéndice

RESUMEN

En esta nota de estudio se propone añadir una condición relativa al estado de carga (SOC) para la expedición de **Baterías de ión litio** (ONU 3480) en aeronaves.

Medidas recomendadas al DGP: Se invita al DGP a considerar la adopción de las revisiones de la Instrucción de embalaje 965 que se presentan en el apéndice de la presente nota.

1. INTRODUCTION

1.1 At the second International Multidisciplinary Lithium Battery Transport Coordination Meeting (Cologne, Germany, 9 to 11 September 2014), a recommendation was made by the group to limit the State of Charge (SOC) of lithium ion cells to 30 per cent during transport (Recommendation 3/14). This recommendation was made as an interim measure to reduce the probability of propagation of thermal runaway between cells, based on testing conducted by the United States Federal Aviation Administration (FAA) at the William J. Hughes Technical Center in Atlantic City, New Jersey.

1.2 At the DGP Working Group of the Whole Meeting in Rio de Janeiro in October 2014 (DGP-WG/14, 20 to 24 October 2014), and again at the DGP Working Group Meeting in Montreal in April 2015 (DGP-WG/15, 27 April to 1 May 2015), The Rechargeable Battery Association (PRBA) presented information on the safety issues that could arise if lithium ion cells are discharged to a low SOC. According to information presented by PRBA, prolonged low voltage following cell discharge could lead to cell degradation and undesirable effects. A graph attached to the information paper presented at DGP-WG/15 showed voltage decay beginning at approximately 10 per cent SOC, and stated

that a discharge rate of 2 per cent per month was typical (temperatures above 30°C could double that rate).

1.3 PRBA subsequently justified a limit of 55 per cent SOC due to a need to store cells after air transport for prolonged periods of time (greater than four to six months). The Technical Instructions, however, govern dangerous goods while in transport. It is the responsibility of the shipper and consignee to ensure that dangerous goods do not present a risk while in storage six months or more after transport has been completed. Furthermore, it would be inappropriate to permit a SOC that has been shown in testing to promote propagation of thermal runaway (55 per cent) during transport in order to reduce the risk to cells that had been stored for six months or more.

1.4 Based on the information presented by the FAA Technical Center and the recommendation of the second International Multidisciplinary Lithium Battery Transport Coordination Meeting, an upper limit of a 30 per cent SOC would reduce the probability of the propagation of thermal runaway in transport. Based on the information from PRBA that voltage decay begins around 10 per cent SOC and with a maximum discharge rate of 4 per cent per month, a lower SOC limit of 15 per cent would ensure that lithium ion cells remain above 10 per cent while in air transport.

2. ACTION BY THE DGP

2.1 The DGP is invited to adopt the revisions to Packing Instruction 965 as shown in the appendix to this working paper.

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APÉNDICE

ENMIENDA PROPUESTA DE LA PARTE 4 DE LAS INSTRUCCIONES TÉCNICAS

Parte 4

INSTRUCCIONES DE EMBALAJE

Capítulo 11

CLASE 9 — MERCANCÍAS PELIGROSAS VARIAS

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<p>Instrucción de embalaje 965 Aeronaves de pasajeros y de carga para ONU 3480</p> <p>...</p> <p>IA. SECCIÓN IA</p> <p>Cada pila o batería debe satisfacer todas las disposiciones de 2;9.3.</p> <p>IA.1 Condiciones generales</p> <ul style="list-style-type: none">— Deben satisfacerse las condiciones de la Parte 4;1.— <u>Las pilas y baterías de ión litio deben expedirse con un estado de carga (SOC) no superior al 30% y no inferior al 15%.</u> <p>...</p> <p>IB.1 Condiciones generales</p> <ul style="list-style-type: none">— Las pilas y baterías deben embalarse en embalajes exteriores resistentes que se ajusten a lo prescrito en la Parte 4;1.1.1, 1.1.3.1 y 1.1.10 (excepto 1.1.10.1).— <u>Las pilas y baterías de ión litio deben expedirse con un estado de carga (SOC) no superior al 30% y no inferior al 15%.</u> <p>...</p>
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