



NOTA DE ESTUDIO

GRUPO DE EXPERTOS SOBRE MERCANCÍAS PELIGROSAS (DGP)

VIGESIMOSEGUNDA REUNIÓN

Montreal, 5 - 16 de octubre de 2009

- Cuestión 5 del orden del día:** Resolución, en la medida de lo posible, de las cuestiones que no se presentan periódicamente, previstas por la Comisión de Aeronavegación o por el grupo de expertos:
- 5.3:** Examen de las disposiciones sobre mercancías peligrosas relacionadas con acumuladores/baterías
- a) baterías de litio
 - b) dispositivos accionados con acumuladores
 - c) ayudas motrices accionadas con acumuladores

**BATERÍAS DE LITIO Y EQUIPO QUE CONTIENE
BATERÍAS DE LITIO**

[Nota presentada por PRBA – Rechargeable Battery Association en coordinación con RECHARGE (European Rechargeable Battery Association), EUROBAT (Association of European Storage Battery Manufacturers – Automotive and Industrial Batteries), Verband der Automobilindustrie (VDA - German Association of Automobile Industry), Zentralverband Elektrotechnik- und Elektronikindustrie (ZVEI – German Battery Association)]

RESUMEN

Debido a la falta de recursos, sólo se han traducido el resumen y las enmiendas que figuran en el Apéndice

En esta nota se propone modificar la limitación de 35 kg para los envíos que constan de una batería de litio o de una sola pieza de equipo que contiene baterías de litio.

Medidas recomendadas al DGP: Se invita al DGP a considerar la asignación de una nueva disposición especial a las baterías de ión litio (ONU 3480), las baterías de metal litio (ONU 3090), las baterías de ión litio instaladas en un equipo (ONU 3481) y las baterías de metal litio instaladas en un equipo (ONU 3091), según se indica en el Apéndice.

1. INTRODUCTION

1.1 In May 2009, the Dangerous Goods Panel Working Group of the Whole considered a proposal to eliminate the 35 kg mass limitation applicable to lithium ion and lithium metal batteries (DGP/22-WP/3, paragraph 3.5.1.11 refers). It was noted during discussions that the 35 kg limit for small batteries was appropriate and if this restriction were to be removed, it would allow much bigger packages

of larger batteries or larger aggregates of batteries. However, there also was recognition that a higher limit might be considered, especially if environmental issues raised were taken into account (DGP/22-WP/3, paragraph 3.5.1.11.2 refers).

1.2 After considering the concerns raised at DGP-WG09 regarding this proposal and the environmental issues, PRBA, in coordination with the world's leading automotive and lithium battery manufacturers, is proposing a 400 kg mass limitation for lithium batteries but only for consignments consisting of an individual battery or a single piece of equipment containing lithium batteries. That is, consignments consisting of one battery, or batteries contained in one piece of equipment with a battery net mass of up to 400 kg would be authorized for transport on cargo aircraft provided all other requirements of the Technical Instructions are met. This change to the Technical Instructions can be accomplished by adding a new special provision to Table 3-2 as noted on page 3. (In addition to coordinating with the battery and automobile organizations listed above, this proposal has been discussed with the Japan Automobile Manufacturers Association and Japan Automobile Research Institute Battery Working Group.)

1.3 PRBA's proposal is generally consistent with the current requirements for items consigned under UN 3171 (**Battery-powered equipment** or **Battery-powered vehicle**) where no mass limitation is applied.

1.4 Lithium batteries are being developed as a solution to the critical global warming environmental issue and with the objective of reducing dependency on fossil fuels. These issues were raised at DGP-WG09 in an information paper (DGP/22-WP/3, paragraph 3.5.1.11.2 refers). Excerpts of the paper are provided below:

Societal goals and political guidelines for CO₂ reduction can only be met with the help of suitable technical solutions. Within this context, large rechargeable lithium batteries could be used for storage in energy production from renewable sources such as solar, wind and hydropower, in particular in decentralized installations.

An additional focus in CO₂ reduction is to reduce consumption of fossil fuels in the automotive sector through the use of large rechargeable lithium batteries, in particular as traction batteries in hybrid and electric vehicles. The future high volume production of large rechargeable lithium batteries is, in the interim, being driven by competition between automotive companies.

International proliferation of new battery technologies to support achievement of the goals described above is directly linked with the ability to transport large rechargeable lithium batteries. **As a result, revision of the dangerous goods transportation regulations for large rechargeable lithium batteries, e.g. for automotive applications or as energy store for renewable energy, is urgently required** (emphasis added by PRBA).

1.5 In addition, over the past several years there has been a significant increase in the use of large lithium batteries in many military, aerospace and stationary applications. For example, large lithium ion batteries and battery assemblies are being designed for use in uninterruptible power supply (UPS) systems, which historically have been powered by lead batteries. Lithium batteries designed for aerospace and military applications (e.g. submarine or satellite batteries) include significant qualifications and severe specifications by the nature of such applications that often exceed the testing requirements in the UN *Manual of Tests and Criteria*.

1.6 DGP-WG09 was also provided with an elaborate description of the high levels of safety features of large lithium batteries. Excerpts from the description are provided below:

To meet the requirements e.g. in hybrid vehicles and pure electric vehicles,, lithium cells with the necessary performance characteristics are subjected to comprehensive tests and then built into complex battery systems. In addition to thermal management, such batteries typically have an electrical management system which monitors and controls the conditions of each cell during charge and discharge. Such systems are typically housed in a robust secondary casing, in order that the mechanical requirements of the application can be met. The required performance data, safety requirements, reliability and operating life can only be achieved in this way.

Regarding safety tests for transportation according to subparagraph 38.3 of the UN Manual of Tests and Criteria, certain adaptations should be made which reflect this situation more specifically.

Note.— A UN Working Group has been established to update the lithium battery tests in 38.3 of the UN Manual of Tests and Criteria.

1.7 The chart below was presented to DGP-WG09 (DGP/22-WP/3, paragraph 3.5.1.11 refers) to highlight the mass of the lithium ion cells, battery components and packaging materials from large lithium ion batteries shipped by PRBA members. The chart clearly shows that the packaging and components of a large lithium ion battery, which are not dangerous goods, can average 60% of the gross mass of a consignment.

LIST OF RECENT SHIPMENTS OF LARGE LITHIUM BATTERIES BY PRBA MEMBERS			
Chemistry	Mass of Cells	Mass of Components and Packaging (non-dangerous goods)	Total Gross Mass (Packaging, components and cells)
Lithium ion	300 kg	270 kg (47%)	570 kg
Lithium ion	130 kg	110 kg (45%)	240 kg
Lithium ion	52 kg	123 kg (70%)	175 kg
Lithium ion	48 kg	170 kg (78%)	218 kg

APÉNDICE

PROPUESTA DE ENMIENDA DE LAS INSTRUCCIONES TÉCNICAS

Parte 3

LISTA DE MERCANCÍAS PELIGROSAS, DISPOSICIONES ESPECIALES Y CANTIDADES LIMITADAS Y EXCEPTUADAS

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Capítulo 3

DISPOSICIONES ESPECIALES

Partes de este capítulo resultan afectadas por las discrepancias estatales AU 2, CA 7, CA 8, GB 3, IR 3, JM 1, NL 1, US 11, ZA 1; véase la Tabla A-1

La Tabla 3-2 enumera las disposiciones especiales a que se refiere la columna 7 de la Tabla 3-1 y la información en ella contenida es adicional a la que aparece junto a la anotación pertinente. Cuando el texto de las disposiciones especiales equivale a aquél de la Reglamentación Modelo de las Naciones Unidas, el número de la disposición especial correspondiente de las Naciones Unidas figura entre paréntesis.

Tabla 3-2. Disposiciones especiales

<i>IT</i>	<i>ONU</i>
<u>AXXX</u>	<u>Independientemente de los límites de masa máxima especificados en la columna 13 de la Tabla 3-1 para ONU 3480 y ONU 3090 y los límites de masa especificados en las instrucciones de embalaje 965, 967, 968 y 970, los envíos que incluyan una batería de litio o una sola pieza de equipo que contenga baterías de litio y que en todos los otros aspectos se ajusten a las condiciones de la instrucción de embalaje aplicable, pueden transportarse en aeronaves de carga siempre que la masa neta de las baterías no supere 400 kg. En el documento de transporte de mercancías peligrosas debe señalarse que el transporte se realiza conforme a esta disposición especial.</u>

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