



**Committee of Experts on the Transport of Dangerous Goods
and on the Globally Harmonized System of Classification
and Labelling of Chemicals****Sub-Committee of Experts on the Transport of Dangerous Goods****Forty-first session**

Geneva, 25 June – 4 July 2012

Item 4 (c) of the provisional agenda

Electric storage systems: waste or damaged/defective lithium batteries**New Special Provision and Packing Instruction for Damaged
or Defective Lithium Batteries****Transmitted by the Rechargeable Battery Association (PRBA) and the
International Association for the Promotion and Management of
Portable Rechargeable Batteries (RECHARGE)¹****Introduction**

1. There are no provisions in the Model Regulations for transporting damaged or defective lithium cells and batteries. This issue was discussed at length during the lunchtime working groups at the thirty-ninth and fortieth sessions of the UN Sub-Committee. To address this issue, PRBA and RECHARGE are proposing to add a Special Provision and two new Packing Instructions for incorporation into the Model Regulations for transporting damaged or defective lithium cells and batteries.
2. There were two key issues discussed at the lunchtime working groups during the fortieth session of the Sub-Committee: defining a damaged or defective lithium cell or battery and establishing the necessary packaging for transporting them.
3. PRBA and RECHARGE's proposed Special Provision YYY provides an example of a damaged or defective cell and battery: "... (e.g., a cell or a battery that has lost a part of its mechanical or electrical integrity (external or internal)) that have the potential of producing a dangerous evolution of heat, fire or short circuit..." The language is generally consistent with the ICAO Technical Instructions but also adds an example of what may be

¹ In accordance with the programme of work of the Sub-Committee for 2011-2012 approved by the Committee at its fifth session (refer to ST/SG/AC.10/C.3/76, para. 116 and ST/SG/AC.10/38, para. 16).

considered damaged or defective. In addition, a requirement has been added that cells or batteries be inspected prior to transport for one or more of the following, but not limited to: mechanical integrity, temperature, signs of rupture, venting, disassembly and leakage or open circuit voltage. After inspection, appropriate steps must be taken to eliminate the potential for a dangerous evolution of heat or fire during transport.

4. Packing Instructions P9XX and LP9XX also are being proposed for packaging damaged and defective lithium cells and batteries for transport. They include PG II packaging, a requirement that each cell, battery or equipment be individually packed in an inner packaging inside an outer packaging and surrounded by cushioning material that is non-combustible and non-conductive. Leaking cells and batteries would require sufficient inert absorbent material to absorb any release of electrolyte. In addition, cells and batteries must be packaged to prevent excessive movement within the packaging that may lead to venting or rupture during transport.

Proposal

5. In consideration of the foregoing, PRBA and RECHARGE invite the Sub-Committee to consider the following proposal for a new Special Provision, Packing Instruction and Large Packing Instruction for the transport of damage or defective lithium batteries.

SP YYY

When offered for transport, lithium ion cells and batteries and lithium metal cells or batteries identified as being defective for safety reasons, or that have been damaged (*e.g.*, a cell or a battery that has lost a part of its mechanical or electrical integrity (external or internal)), that have the potential of producing a dangerous evolution of heat, a fire or a short circuit, shall be packaged in accordance with Packing Instructions P9XX or LP 9XX, as applicable. Before being packaged and offered for transport, the cells or batteries shall be inspected for one or more of the following, but not limited to: mechanical integrity, temperature, signs of rupture, venting, disassembly and leakage or open circuit voltage. After inspection, appropriate steps (measures) shall be taken to eliminate the potential for a dangerous evolution of heat or fire during transport.

Package shall be marked with package orientation arrows and “Damaged/Defective Lithium ion Batteries” or “Damaged/Defective Lithium Metal-Batteries”, as applicable.

P9XX	PACKING INSTRUCTION	P9XX
This instruction applies to UN Nos. 3090, 3091, 3480 and 3481		
<p>The following packagings are authorized for damaged or defective lithium ion cells and batteries and lithium metal cells and batteries including those contained in equipment, provided the general provisions of 4.1.1 and 4.1.3 are met:</p> <p>For cells and batteries and equipment containing cells and batteries:</p> <p style="padding-left: 40px;">Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G);</p> <p style="padding-left: 40px;">Boxes (4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2);</p> <p style="padding-left: 40px;">Jerricans (3A2, 3B2, 3H2).</p> <p>Packagings shall conform to the packing group II performance level or a more restrictive packaging provision of this regulation.</p> <p>Each cell or battery or equipment containing such cells and batteries shall be individually packed in an inner packaging placed inside of an outer packaging. The inner packaging shall be surrounded by cushioning material that is non-combustible and non-conductive.</p> <p>In addition, cells or batteries with a gross mass of 12 kg or more and employing a strong, impact resistant outer casing, may be packed in metal, plastic or wooden outer packagings that does not meet the requirements of 4.1.1.3 provided the packaging is equivalent to the packing group II performance requirements.</p>		
<p>Additional requirements:</p> <p>Cells or batteries shall be protected against short circuit. For leaking cells or batteries, sufficient inert absorbent material shall be added to the inner or outer packaging to absorb any release of electrolyte. In addition, appropriate measures shall be taken to prevent excessive movement of the cells or batteries within the packaging that may lead to short-circuit, venting or rupture of the cells or batteries during transport.</p>		

LP9XX	PACKING INSTRUCTION	LP9XX
This instruction applies to UN Nos. 3090, 3091, 3480 and 3481		
<p>The following packagings are authorized for damaged or defective lithium ion cells and batteries and lithium metal cells and batteries including those contained in equipment, provided the general provisions of 4.1.1 and 4.1.3 are met</p> <p>For cells and batteries and equipment containing cells and batteries:</p> <ul style="list-style-type: none"> steel (50A) aluminium (50B) metal other than steel or aluminium (50N) rigid plastics (50H) natural wood (50C) plywood (50D) reconstituted wood (50F) rigid fibreboard (50G) <p>Packagings shall conform to the packing group II performance level or a more restrictive packaging provision of this regulation.</p> <p>Each cell or battery or equipment containing such cells and batteries shall be individually packed in an inner packaging placed inside of an outer packaging. The inner packaging shall be surrounded by cushioning material that is non-combustible and non-conductive.</p>		
<p>Additional requirements:</p> <p>Cells or batteries shall be protected against short circuit. For leaking cells and batteries, sufficient inert absorbent material shall be added to the inner or outer packaging to absorb any release of electrolyte. In addition, appropriate measures shall be taken to prevent excessive movement of the cells or batteries within the packaging that may lead to venting or rupture of the cells or batteries during transport.</p>		