



**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****Fourtieth session**

Geneva, 28 November – 7 December 2011

Item 3 (c) of the provisional agenda

Electric storage systems: waste or damaged/defective lithium batteries**Proposal on transporting damaged or defective lithium cells
and batteries****Transmitted by the Portable Rechargeable Battery Association (PRBA)
and the International Association for the Promotion and Management
of Portable Rechargeable Batteries RECHARGE****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 session. 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. Two key issues were discussed at the lunchtime working groups during the thirty-ninth 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 considered damaged or defective.
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.

5. An alternative to P9XX and LP9XX is provided in SP YYY if approved by the competent authority. This is necessary because it is very common for manufacturers of large format lithium batteries to have customized packaging that in fact exceeds the PG II performance requirements and provides for an equivalent level of safety than what is being proposed in P9XX and LP9XX. However, this packaging may not have been tested in accordance with the PG II requirements.

Proposal

SP YYY Damaged or defective lithium ion cells and batteries and lithium metal cells and batteries (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 shall be packaged in accordance with Packing Instructions P 9XX, LP 9XX or, when approved by the competent authority, in strong outer packagings, in protective enclosures (e.g., in fully enclosed or wooden slatted crates), or on pallets or other handling devices).

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> <ul style="list-style-type: none"> Drums (1A2, 1B2, 1N2, 1H2, 1D, 1G); Boxes (4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2); Jerricans (3A2, 3B2, 3H2). <p>Each cell, battery or equipment shall be individually packed in an inner packaging inside an outer packaging and surrounded by a sufficient amount of cushioning material that is non-combustible and non-conductive in order to protect against any dangerous evolution of heat, fire or short circuit during transport.</p> <p>Packagings shall conform to the packing group II performance level.</p> <p>For leaking cells and batteries, sufficient inert absorbent material shall be added to absorb any release of electrolyte.</p> <p>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>		

LP9XX	PACKING INSTRUCTION	LP9XX
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This instruction applies to UN Nos. 3090, 3091, 3480 and 3481

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

For cells and batteries and equipment containing cells and batteries:

- 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)

Each cell, battery or equipment shall be individually packed in an inner packaging inside an outer packaging and surrounded by a sufficient amount of cushioning material that is non-combustible and non-conductive in order to protect against any dangerous evolution of heat, fire or short circuit during transport.

Packagings shall conform to the packing group II performance level.

For leaking cells and batteries, sufficient inert absorbent material shall be added to absorb any release of electrolyte.

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.