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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, 3 – 11 December 2012
Item 2 (c) of the provisional agenda
Recommendations made by the Sub-Committee on its thirty-ninth, fortieth and forty-first sessions and pending issues: electric storage systems

Special Provision and Packing Instructions 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. At the thirty-eighth, thirty-ninth and fortieth sessions, there were extensive discussions and multiple lunchtime working groups regarding PRBA's and RECHARGE's proposals that address the transport of damaged and defective lithium batteries. Currently, there are no provisions in the Model Regulations that provide for the transport of these cells and batteries and members of the Sub-Committee have expressed on numerous occasions that there is a real need for these provisions in the Model Regulations. The fact is, damaged and defective batteries are being packaged and transported under the existing regulations, which has created a great deal of uncertainty for the battery industry, companies that transport these batteries and regulatory authorities.

2. PRBA's and RECHARGE's proposals contained in this document reflect comments from the Sub-Committee members that have been received over the past 18 months during the Sub-Committee meetings and lunchtime working groups and via email correspondence. Every attempt has been made to factor in all of the comments and varying opinions on this issue in order to develop "practical, feasible and enforceable" regulations.

3. The proposal provides for a new Special Provision SP YYY and two new Packing Instructions P9XX and LP9XX.

[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).

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4. SP YYY also includes a provision that states a damaged or defective battery conforming to the design type may be transported in accordance with other provision of the Model Regulations. These types of batteries may include, but are not limited to, batteries with slightly deformed cases or batteries that do not hold a state of charge as long as originally designed. While in both cases the batteries may be considered "defective", they still may meet the design type or testing requirements in the UN Manual of Tests and Criteria and thus present no additional risk in transport.

5. Packing Instructions P9XX and LP9XX require:

- Each cell or battery or equipment containing such cells and batteries to be individually packed in inner packaging;
- Cushioning material that is non-combustible and non-conductive to address the concerns regarding a thermal event and packaging that meets the Packing Group II requirements;
- Measures be taken to prevent movement of cells or batteries within the package that may lead to damage during transport;
- Absorbent materials for leaking cells or batteries; and
- Batteries with a net mass of 30 kg or more limited to not more than one battery per outer package.

Proposal

6. In consideration of the foregoing, PRBA and RECHARGE invite the Sub-Committee to consider the following proposal for a special provision and packing instructions for the transport of damaged and defective batteries:

SP YYY Lithium ion cells and batteries and lithium metal cells or batteries identified as being damaged or defective, that no longer conform to the design type shall comply with the requirements of this Special Provision.

For the purposes of this Special Provision, these may include, but are not limited to:

- Cells or batteries identified as being defective for safety reasons;
- Cells or batteries that have leaked or vented;
- Cells or batteries that cannot be diagnosed prior to transport; or
- Cells or batteries that have sustained physical or mechanical damage.

Cells and batteries shall be packed in accordance with Packing Instructions P9XX or LP9XX, as applicable.

Packages shall be marked "Damaged/Defective Lithium ion Batteries" or "Damaged/Defective Lithium Metal–Batteries", as applicable, and marked and labeled in accordance with the requirements of these regulations applicable to UN3090, UN3091, UN3480 and UN3481, as appropriate, except that the requirements of Section 2.9.4 do not apply.

Damaged or defective cells or batteries that have been inspected and found to be free from mechanical integrity, elevated temperature, rupture, venting, disassembly and leakage that could lead to a dangerous evolution of heat may be transported in accordance with other applicable provisions of these Regulations (*e.g.*, Special Provision 188, P903 or P903a).

P9XX	PACKING INSTRUCTION	P9XX

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:

Drums (1A2, 1B2, 1N2, 1H2, 1D)
Boxes (4A, 4B, 4N, 4C1, 4C2, 4D, 4H2)
Jerricans (3A2, 3B2, 3H2)

Packagings shall conform to the packing group II performance level.

Each cell or battery or equipment containing such cells and batteries:

1. Shall be individually packed in an inner packaging and placed inside of an outer packaging. The inner packaging shall be surrounded by sufficient thermal insulation (*e.g.*, non combustible and non conductive cushioning material) to protect against a dangerous evolution of heat; or
2. Shall be individually packed in an inner packaging that is made from non-combustible and non-conductive material and placed inside an outer packaging that is made from non-combustible material.

Appropriate measures shall be taken to prevent movement of the cells or batteries within the package that may lead to further damage and a dangerous condition during transport. Cushioning material that is non-combustible and non-conductive also may be used to meet this requirement.

For leaking cells or batteries, sufficient inert absorbent material shall be added to the inner or outer packaging to absorb any release of electrolyte.

A cell or battery with a net mass of 30 kg or more shall be limited to not more than one battery per outer package.

Additional requirements:

Cells or batteries shall be protected against short circuit.

LP9XX	PACKING INSTRUCTION	LP9XX

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)
plywood (50D)

Packagings shall conform to the packing group II performance level.

Each cell or battery or equipment containing such cells and batteries:

1. Shall be individually packed in an inner packaging and placed inside of an outer packaging. The inner packaging shall be surrounded by sufficient thermal insulation (e.g., non combustible and non conductive cushioning material) to protect against a dangerous evolution of heat; or
2. Shall be individually packed in an inner packaging that is made from non-combustible, non-conductive material and placed inside an outer packaging that is made from non-combustible material.

Appropriate measures shall be taken to prevent movement of the cells or batteries within the package that may lead to further damage and a dangerous condition during transport. Cushioning material that is non-combustible and non-conductive may also be used to meet this requirement.

For leaking cells or batteries, sufficient inert absorbent material shall be added to the inner or outer packaging to absorb any release of electrolyte.

Additional requirements:

Cells or batteries shall be protected against short circuit**.**