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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-ninth session

Geneva, 27 June – 6 July 2016

Item 4 (d) of the provisional agenda

Electric storage systems: miscellaneous

**Requirements for packaging damaged or defective lithium
batteries**

Transmitted by the Rechargeable Battery Association (PRBA)¹

Introduction

1. In previous sessions, the Sub-Committee has discussed the requirements for transporting damaged or defective lithium batteries. In particular, it has been noted that the text in special provision 376 leads to confusion and inconsistency in determining whether a cell or battery poses a risk of producing a dangerous evolution of heat, fire or short circuit in transport. Currently SP 376 indicates that a damaged or defective battery is one that does not conform to the type tested according to the applicable provisions of the applicable provisions of the Manual of Tests and Criteria. Whether a cell or battery continues to be capable of meeting the provisions of the Manual of Tests and Criteria is not necessarily directly related to whether it presents a risk of producing a dangerous evolution of heat, fire or short circuit in transport. Making a determination relative to the whether a cell or battery continues to be capable of meeting the provisions of the Manual of Tests and Criteria is difficult and impractical especially for consumers, retail store employees and distribution centers. Nevertheless, appropriate requirements must be in place to prevent unsafe cells and batteries to be placed into transport without appropriate risk mitigation measures (e.g. thermally insulated packaging). On this basis, it is proposed that SP 376 be revised.

¹ In accordance with the programme of work of the Sub-Committee for 2015–2016 approved by the Committee at its seventh session (see ST/SRG/AC.10/C.3/92, paragraph 95 and ST/SRG/AC.10/42, para. 15).

2. In many instances, damaged cells or batteries must be shipped by consumers, retail store employees or employees at facilities that do not normally ship fully regulated dangerous goods. The fact that even small cells and batteries that normally can be shipped according to the exceptions from training, transport documents and labelling in special provision 188 must be shipped as fully regulated Class 9 dangerous goods accompanied by a signed dangerous goods transport document in many instances prevents the return of these cells and batteries. Individuals at such facilities are not generally trained according to the requirements of Chapter 1.3 of the Model Regulations makes return of damaged cells and batteries impractical.
3. Considering the reduced risk posed by small damaged or defective lithium cells or batteries it is proposed a new Special Provision be added authoring the use of the lithium battery mark (Figure 5.2.5) in lieu of the Class 9 label be authorized for small damaged and defective batteries offered for road, rail and sea transport. This would alleviate the burdens associated with returns of small cells, batteries and consumer electronics from consumers, retail facilities and distribution centers and with applying for and processing competent authority approvals.

Proposals

4. PRBA proposes to amend Special Provision 376 as follows:

376 Lithium ion cells or batteries and lithium metal cells or batteries identified as being damaged or defective ~~such that they do not conform to the type tested according to the applicable provisions of the Manual of Tests and Criteria~~ shall comply with the requirements of this special provision. Prior to transporting a cell battery that is suspected of being damaged or defective the consignor shall determine it may pose a risk of producing a dangerous evolution of heat, fire or short circuit in transport. This determination should be based on information provided by the manufacturer, supplier, safety agencies or a technical analysis by qualified technical staff. If suspected cells or batteries cannot be diagnosed prior to transport then they shall be transported according to the requirements of this special provision.

For the purposes of this special provision, damaged or defective cells or batteries may include, but are not limited to:

- Cell or battery design types that have experienced a dangerous evolution of heat, fire or short circuit in storage, use or transport;
- Cells or batteries identified as being defective for safety reasons;
- Cells or batteries that have leaked or vented and continue to pose a risk in transportation;
- Cells or batteries that cannot be diagnosed prior to transport; or
- Cells or batteries that have sustained physical or mechanical damage.

NOTE: In assessing a battery as damaged or defective, the type of battery and its previous use and misuse shall be taken into account.

Cells and batteries shall be transported according to the provisions applicable to UN 3090, UN 3091, UN 3480 and UN 3481, except Special Provision 230 and as otherwise stated in this special provision.

Packages shall be marked “DAMAGED/DEFECTIVE LITHIUM-ION BATTERIES” OR “DAMAGED/DEFECTIVE LITHIUM METAL BATTERIES”, as applicable.

Cells and batteries shall be packed in accordance with packing instructions P908 of 4.1.4.1 or LP904 of 4.1.4.3, as applicable.

Cells and batteries liable to rapidly disassemble, dangerously react, produce a flame or a dangerous evolution of heat or a dangerous emission of toxic, corrosive or flammable gases or vapours under normal conditions of transport shall not be transported except under conditions specified by the competent authority.

5. In Chapter 3.3, add new Special Provision XXX to read:

“XXX Small damaged or defective cells and batteries are not subject to any other additional requirements of these Model Regulations (e.g., Class 9 label, transport document) if they meet all of the following conditions:

- (a) For lithium ion cells, the Watt-hour rating is not more than 20 Wh;
- (b) For lithium ion batteries, the Watt-hour rating is not more than 100 Wh;
- (c) For a lithium metal cell, the lithium content is not more than 1 g;
- (d) For a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g;
- (e) Cell or battery design types have passed the tests in accordance with the *Manual of Tests and Criteria* and were manufactured according to a quality assurance programme according to 2.9.4 prior to being suspected or identified as damaged or defective according to SP 376;
- (f) Each package is marked with the words "Damaged/Defective Lithium-Ion Batteries" or "Damaged/Defective Lithium-Metal Batteries" and the lithium battery mark (figure 5.2.5) as appropriate on the outer packaging.
- (g) Not more than one cell or battery or equipment containing a cell or battery are placed in a single package that meet the requirements of Packing Instruction P908 unless approved by the competent authority; and
- (h) Consignors have received adequate instructions to safely prepare and offer the packagings for transport.”.