United Nations ST/SG/AC.10/C.3/2018/51

Secretariat

Distr.: General
5 April 2018

Original: English

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

Fifty-third session
Geneva, 25 June-4 July 2018
Item 4 (e) of the provisional agenda
Electric storage systems: sodium-ion batteries

Requirements for damaged or defective lithium cells and batteries in special provision 376

Transmitted by the Rechargeable Battery Association (PRBA), the Medical Device Battery Trade Council (MDBTC), and the Advanced Rechargeable & Lithium Batteries Association (RECHARGE)*

Introduction

1. During the last several sessions of the Sub-Committee, the issues associated with transporting and defining damaged or defective lithium cells and batteries have been discussed. These issues also were addressed at the 26th meeting of the ICAO Dangerous Goods Panel (DGP) in October 2017 that led to amendments in the ICAO Technical Instructions based on a proposal submitted by the panel member from Australia. The amendments agreed to by the DGP helped to clarify special provision A154 in the Technical Instructions by including text that address cells or batteries that cannot be diagnosed as damaged or defective prior to transport.

2. It is generally recognized that the requirements of special provision 376 in the Model Regulations do not adequately provide for certain scenarios involving the transport of damaged or defective lithium batteries and in some instances, results in confusion amongst shippers and carriers. The proposed amendments to special provision 376 provided in this paper are intended to address what has become a very common scenario facing shippers of damaged or defective lithium batteries:the transport of cells, batteries, or equipment

* In accordance with the programme of work of the Sub-Committee for 2017–2018 approved by the Committee at its eighth session (see ST/SG/AC.10/C.3/100, paragraph 98 and ST/SG/AC.10/44, para. 14).

containing cells or batteries that have been damaged but do not pose any additional risk in transport.

3. Special provision 376 and the applicable packing instructions (*i.e.*, P908, P911) for transporting damaged or defective lithium batteries provide for the following scenarios:

(a) A lithium battery is damaged or defective because the safety components within the battery may have been compromised but the battery is not liable to react in transport. The battery still holds a state or charge or voltage. This scenario presents a uniquely different hazard than when the battery was first manufactured and transported. The battery is therefore authorized for transport provided it is packaged in accordance with packing instruction P908.

(b) A lithium battery is damaged or defective and is liable to react. The battery is authorized for transport provided it is packaged in accordance with packing instruction P911 or subject to approval by a competent authority.

4. The amendments proposed in this paper for special provision 376 and the new "Notes" will provide for a different, but very common scenarios, then the two listed above. It is proposed that the following scenarios be considered:

(a) A cell or battery is damaged or defective but does not present any additional hazard in transport. For example, a battery that has had a thermal event and fully reacted (e.g., there is no residual voltage or energy, no remaining electrolyte) should not be required to be transported according to P903, P908 or P911; or

(b) The battery is damaged but is deemed to not present any additional hazard because the damage has not affected the safety components in the battery. Under such scenarios, a shipper should have the option of shipping the battery in accordance with the applicable requirements in the Model Regulations (e.g., packing instruction P903, special provision 188).

5. To ensure the cells, batteries or equipment are properly assessed and identified prior to being transported, two "Notes" are being proposed that provide instructions for how a cell or battery could be assessed based on the manufacturer's expertise, a safety check list, or an individual's knowledge of the battery's history and safety components. These instructions in the notes provide a practical approach for individuals trying to determine how to package and transport their damaged lithium cells, batteries, or equipment.

Proposal

6. 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.

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.

***Note 1**: In accessing a cell or battery as damaged or defective, the type of cell or battery and its previous use and misuse and the condition of the cell or battery safety components shall be taken into account. The assessment or evaluation of a cell or battery should be completed in coordination with the cell, battery or product manufacturer's safety protocols (e.g., with a safety check list that includes criteria from the manufacturer or technical expert with knowledge of the battery's safety components).*

***Note 2**: If an assessment of the cell or battery, or cell or battery contained in equipment shows the safety components of that design type are still intact and the product will not pose a risk of producing a dangerous evolution of heat, fire, or short circuit in transport, the cell, battery or equipment may be transported in accordance with the applicable provisions of these Regulations.*

***Note 3**: Cells, single cell batteries or batteries that have experienced a thermal event, that no longer meet the definition of "cell" or "battery" and have been proven to no longer pose a risk in transport (e.g., no residual electrolyte, no energy, no ability to produce a dangerous evolution of heat, fire or short circuit), are not subject to these Regulations unless they meet the criteria for inclusion in another class.*

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.

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 identified as damaged or defective and liable to rapidly disassemble, dangerously react, produce a flame or a dangerous evolution of heat or dangerous emission of toxic, corrosive or flammable gases or vapours under normal conditions of transport shall be packed and transported in accordance with packing instruction P911 of 4.1.4.1 or L96 of 4.1.4.3, as applicable. Alternative packing and/or transport conditions may be authorized by the competent authority.

Packages shall be marked "DAMAGED/DEFECTIVE" in addition to the proper shipping name, as stated in 5.2.1. The transport document shall include the following statement "Transport in accordance with special provision 376."

If applicable, a copy of the competent authority approval shall accompany the transport.".