

## Economic Commission for Europe

### Inland Transport Committee

#### Working Party on the Transport of Dangerous Goods

##### Joint Meeting of the RID Committee of Experts and the Working Party on the Transport of Dangerous Goods

Bern, 21–25 March 2011

Item 5 (b) of the provisional agenda

##### Proposals for amendments to RID/ADR/ADN

### Transport of damaged lithium batteries

#### Transmitted by the Government of Germany

1. At the 37<sup>th</sup> session of the UN Sub-Committee of Experts on the Transport of Dangerous Goods in June 2010 Germany submitted INF.56 in which it described different cases as regards used lithium batteries.
2. Three main issues were identified:
  - Carriage of damaged lithium batteries during the developing process;
  - Carriage of used lithium batteries at the end of their lifetime; and
  - Carriage of lithium batteries which show evidence of damage.
3. More information can be found in (UN/SCETDG/37/INF.56) which is annexed to this INF document.
4. As there is an urgent need for carrying these lithium batteries, but the discussion at the UN Sub-Committee of Experts on the Transport of Dangerous Goods has not yet been concluded, some practicable requirements should be introduced into ADR.

#### Proposal

5. Germany therefore proposes the following:
6. For UN 3090 and UN 3480, a new line should be inserted in the Dangerous Goods List with the same name, class, classification code, labels and requirements for limited quantities and excepted quantities as well as the hazard identification code (for RID only).
7. The following description should be added in column (2) of the entries referred to: “damaged batteries”.
8. No packing group should be indicated in column (4).
9. Only the new RID/ADR/ADN-specific special provision 6xx should be indicated in column (6).
10. In column (8), packing instruction P099 should be inserted.
11. Instead of a transport category and tunnel restriction code, the following should be added in column (15): “(see special provision 6xx)”.

12. Furthermore, a new RID/ADR/ADN-specific special provision 6xx should be introduced and added to the new line for UN 3090 and 3480 as follows:

“Carriage of damaged batteries is permitted only under the conditions laid down by the competent authority of the country of origin. The competent authority approval shall include the applicable transport category and the tunnel restriction code.

Damaged lithium batteries are in particular:

- batteries identified by the manufacturer as being defective for safety reasons,
  - batteries with damaged or considerably deformed cases,
  - leaking or venting batteries or
  - batteries that are not diagnostic-capable.”
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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****17 June 2010****Thirty-seventh session**

Geneva, 21–30 June 2010

Item 4 of the provisional agenda

**Electric storage systems****Transport of used or damaged lithium batteries****Transmitted by the Expert from Germany****Introduction**

1 Document ST/SG/AC.10/C.3/2010/7 raises the question what are the appropriate transport conditions for the transport for used or damaged lithium batteries. Further consultations with affected industry led to a more detailed definition of possible need of actions. Three main issues have been identified:

- Transport of damaged lithium batteries while developing process;
- Transport of used lithium batteries at the end of their life time; and
- Transport of lithium batteries with indication of damage.

**Transport of damaged lithium batteries while developing process**

2 When prototypes of lithium cells or batteries are transported for testing they are exempted from the testing requirements in Chapter 38.3 of the Manual of Test and Criteria if packed as specified in SP 310 (outer packaging meeting PG I , inner packaging for each cell and battery and cushioning material). According to the German interpretation of the wording of SP 310 “transported for testing” this covers all necessary testing (not only the testing according to the Manual of Test and Criteria), it covers the transport to the testing site as well as the transport back, irrespective if the destination is a disposal site or a laboratory for further examinations of the batteries. At this stage, it is very likely that the batteries are damaged by the performed tests: prototypes may fail the tests according to Chapter 38.3 of the Manual of Test and Criteria or other tests, e.g. crash tests, cause necessarily the damage of a battery. Dependent on the character of the extent of the damage, further measures may be necessary to ensure the safety of transport. Possible measures may be e.g. additional absorbing material in the inner packaging, securing in such a way that they cannot slip or leak, cooling or a period of storage before transport. The determination of the concrete measures can be left to the responsibility of the industry as the measures may be influenced by the knowledge which kind of tests have been carried out and how the battery reacted. This is not a typical transport operation. Nevertheless,

SP 310 should be amended by adding a requirement, saying that additional measures have to be taken, if the batteries have been damaged by the tests and the requirements described under (a) and (b) are not sufficient to ensure their safe transport.

### **Transport of used lithium batteries at the end of their life time**

3 Used lithium batteries at the end of their life time can be treated in the same way as new batteries if there are no indications that they are damaged. They still comply with SP 230.

### **Transport of lithium batteries with indication of damage**

4 The UN Model Regulations currently do not differentiate between new and used/damaged lithium batteries. But damaged lithium batteries are forbidden for air transport. Special provision A 154 of ICAO TI reads as follows “Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).” Such batteries can not be prohibited for all modes of transport, on the spot disposal is usually not possible. Nevertheless the existing provisions for the transport of lithium batteries may be not appropriate for damaged batteries. A new packing instruction for damaged lithium batteries should be included in the UN Model Regulations. This new packing instruction should take into consideration the following aspects:

- Only approved packagings should be allowed, also for larger batteries of a gross mass of 12 kg or more. If the batteries are too large for approved packagings which have to comply with the limits of 6.1.1.1 (net mass not more than 400 kg and capacity not more than 450l) only packagings which are approved by the competent authority for these batteries may be used.
- The packagings shall conform to the packing group [I] performance level.
- The cells or batteries are packed in a tight closable inner packaging made from non-flammable material, the inner packaging has to be resistant against possible leaking liquids.
- Free spaces in the inner packaging are filled completely with non-combustible, non-conductive, absorbing material.
- The cells or batteries are packed and fixed to prevent short-circuits.
- [Used] cells or batteries have to be stored at least for [5] days prior to transport.
- Alternative measures should be allowed only if they

5 The new packing instruction should apply to new damaged batteries (e.g. lithium batteries that are subject to recall campaigns) as well as to used damaged batteries. A special provision, assigned to UN 3090, UN 3091, UN 3480 and UN 3481, should be included in the Model Regulations to define the scope of the new packing instruction. The content of this special provision should be as follows:

- Used lithium batteries at the end of their life time may be packed according to P 903.

- Used lithium batteries with indication of damage that may have impact on the safety during transport have to comply with the new packing instruction.
6. Lithium batteries with indication of damage are in particular:
- Batteries identified by the manufacturer as being defective for safety reasons,
  - Batteries with damaged or considerably deformed cases,
  - Batteries with leakage or venting or
  - Batteries that are not diagnostic-capable.

## **Proposal**

7. The Sub-Committee is invited to discuss the possible amendments regarding the transport of damaged lithium batteries. If the Sub-Committee agrees to the concept described above – amendment of SP 310 and insertion of new packing instruction for damaged lithium batteries combined with a new SP defining damaged batteries – Germany is willing to submit a new proposal along those lines.

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