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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

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Item 4 of the provisional agenda

LISTING, CLASSIFICATION AND PACKING

Amendment to UN 3468, Hydrogen in a metal hydride storage system

Transmitted by the US Fuel Cell Council

Reference: ST/SG/AC.10/C.3/2008/74

Background

Reference: ST/SG/AC.10/C.3/2008/74

1. The USFCC submitted to the UN SCTDG 33rd session held July 2008 paper UN/SC/SG/AC.10/C.3/2008/35 proposing new provisions for UN3468. During the discussion of the paper several suggestions and proposals for improvements were offered. Paper ST/SG/AC.10/C.3/2008/74 submitted at the 34th session of SCETDG takes into account these proposals and suggestions as well as some made subsequently. During the ensuing discussion of ST/SG/AC.10/C.3/2008/74, some members of the Sub-Committee suggested that it would be better to incorporate all of the requirements for UN 3468 into packing instruction P200 instead of adding a new packing instruction as proposed in ST/SG/AC.10/C.3/2008/74. This revised paper takes this suggested approach.

2. In preparation for this 34th session of the SCETDG, ISO submitted an informal paper (UN/SCETDG/34/INF. 9) which advises that ISO 16111 has been published as an International Standard following a successful FDIS vote.

3. Based on these factors, this paper now proposes, for UN 3468 HYDROGEN IN A METAL HYDRIDE STORAGE SYSTEM:

(a) The amendment of some parts of Part 6, Chapter 6.2 to include references to ISO 16111,

(b) The amendment of packing instruction P200 as a replacement for P099 and

(c) The adoption of new special provisions 32x and 32y.

Proposal

1. In the Dangerous Goods List of Chapter 3.2:

In column (6) for UN 3468 add special provisions 32x and 32y.
In column (8) replace P099 with P200:

2. Insert in Section 3.3.1 the following new special provisions:

32x Metal hydride storage system(s) intended to be used as fixed fuel storage onboard hydrogen fuelled vehicles must be approved by the competent authority for these goods, before acceptance for transport. A copy of the competent authority approval shall accompany each consignment or the transport document shall include an indication that the package was approved by the competent authority.

32y A metal hydride storage system is a single complete hydrogen storage system, including shell (receptacle), metal hydride, pressure relief device, shut-off valve, other appurtenances and internal components.

3. Amendments to Chapter 4, sub-section 4.1.4.1, packing instruction P200:

In (2), delete “and” after “liquefied” and add “and absorbed” after “dissolved”.

In (3), add a new sub-paragraph (e) to read as follows:

“(e) For UN 3468, hydrogen in a metal hydride storage system, see (4), special packing provision “bb”.”.

In (4), add new sub-paragraphs (aa), (bb) and (cc) to read as follows:

“aa: For hydrogen stored in metal hydride storage systems, only receptacles not exceeding 150 litres in water capacity and having a maximum developed pressure not exceeding 25 MPa, where hydrogen is the only transferred media, are covered by this packing instruction.

bb: Hydrogen stored in hydride storage systems shall be certified under ISO 16111-2008 and meet the service conditions, design criteria, rated capacity, type tests, batch tests and routine tests, periodic test requirements and test periods for transportable hydride-based hydrogen storage systems specified in ISO 16111-2008. The periodic test period shall not exceed five years.

cc: The test pressure and pressure relief devices of a metal hydride storage system shall be in accordance with ISO 16111-2008.”

In Table 2, change the title of the table to delete “GASES AND” after “LIQUEFIED” and to add “AND ABSORBED” after “DISSOLVED”.

In Table 2, add "3468", "HYDROGEN IN METAL HYDRIDE STORAGE SYSTEM", "2.1" and "X" under "Cylinders" "Tubes" "Pressure Drums" and "bb" under "Test period, years" and "cc" under "Test pressure, bar[a]" and "aa" under "Maximum working pressure, bar[a]" and "d, cc, bb" under "Special packing provisions" as follows:

P200	**PACKING INSTRUCTION *(cont'd)***													**P200**
Table 2: LIQUEFIED ~~GASES AND~~ DISSOLVED AND ABSORBED GASES														
UN No.	Name and description	Class or division	Subsidiary risk	LC_{50} ml/m	Cylinders	Tubes	Pressure drums	Bundles of cylinders	MEGCs	Test period, years	Test pressure, bar[a]	Maximum working pressure, bar[a]	Special packing provisions	
3468	HYDROGEN IN METAL HYDRIDE STORAGE SYSTEM	2.1			X	X	X			bb	cc	aa	d, cc, bb	

4. Amendments to Chapter 4.1:

4.1.6.1.8 In (d), delete "or" at the end;

In (e), add "; or" at the end;

Add a new sub-paragraph "(f)" to read as follows:

"(f) For hydrogen in a metal hydride storage system, UN 3468, the valve protections requirements specified in ISO 16111:2008 shall be met.".

5. **Amendments to Chapter 6.2:**

6.2.1.1.5 Add the following sentence at the end:

"The test pressure and pressure relief devices of a metal hydride storage system shall be in accordance with ISO 16111-2008."

6.2.1.2.3 Insert a new paragraph to read as follows:

"Metal hydride storage system components shall be made of materials that are suitable for the range of conditions expected over the life of the metal hydride storage system. Components that are in contact with gaseous hydrogen or metal hydride material shall be sufficiently resistant to their chemical and physical action under normal service conditions to maintain operational and pressure containment integrity. Hydrogen absorbing alloys or metal hydride materials that are classified as Type I explosive materials according to the UN

Recommendations on the Transport of Dangerous Goods shall not be used in a metal hydride storage system.”.

6.2.2.1.5 Insert a new paragraph to read as follows:

“The following standards apply for the design, construction, and initial inspection and test of hydrogen in a metal hydride storage system, UN 3468, except that inspection requirements related to the conformity assessment system and approval shall be in accordance with 6.2.2.5,

ISO 16111:2008	Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride

6.2.2.3 Insert the following sentence and table at the end of current text:

“For hydrogen in a metal hydride storage system, UN 3468, the requirements specified in the following standard apply to closures and their protection:

ISO 16111:2008	Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride

6.2.2.4 In the introductory sentence, insert:

“gas storage devices containing hydrogen absorbed in reversible metal hydride and” after “transportable” and add the following row at the end of the table:

ISO 16111:2008	Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride

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