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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****Thirty-ninth session**

Geneva, 20–24 June 2011

Item 5 (a) of the provisional agenda

**Miscellaneous proposals of amendments to the Model Regulations  
on the Transport of Dangerous Goods: packagings****Vibration tests for IBCs over 1 500 kg gross mass carrying  
liquids****Transmitted by the expert from the United Kingdom<sup>1</sup>**

1. The expert from the United Kingdom has identified a problem concerning the provisions for vibration tests for IBCs over 1500 l/kg carrying liquids in Chapter 6.5 of the Model Regulations. At this stage no firm proposals are made but it is suspected from discussions with other experts that other members of the Sub-Committee are encountering similar problems to the ones outlined below. The Sub-Committee is invited to consider this discussion paper and the options listed at paragraph 8 and if a modification to Chapter 6.5 is agreed the United Kingdom will make a formal proposal at the next session of the Sub-Committee.

**Background**

2. At the twenty-eight session of the Sub-Committee in December 2005 the Sub-Committee agreed that the adoption of a vibration test should be studied under the following conditions:

- "Appropriate justification must be provided, bearing in mind that a broad consensus was necessary for introducing additional requirements that would significantly affect

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<sup>1</sup> 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).

the packaging industry, while the case of packagings other than IBCs should not be addressed;

- The issues mentioned in para. 10 of the report of the working group (informal document INF.5) must be resolved;
- Account must be taken of the availability and cost of test equipment worldwide, particularly with a view to the effective possibility of applying this test in developing countries" (ST/SG/AC.10/C.3/56 para. 38).

Para 10 of the working group report stated:

"Several issues were raised during discussion that need to be resolved including:

- Clarifying the methodology of the fixed frequency test (for example, see also ICPP paper in Annex 4);
- The place in the sequence of tests for the vibration test;
- Should there be a cut-off for the size of IBC to be tested;
- Reproducibility of the test between testing facilities;
- Should IBCs for solid cargoes be tested;
- The relationship between the life time of the IBC and the test duration;
- How should IBCs rated for high density substances be tested;
- What are the acceptance criteria for the test".

3. France and the United States led a correspondence group and at the twenty-ninth session they produced document ST/SG/AC.10/C.3/2006/32 and a modified version of the text was adopted in informal document INF.69 at that session.

4. The United Kingdom played an active part in the working group and the various debates in Sub-Committee but along with others opposed the principle on the grounds that:

- There was no real evidence to indicate that the vibration test would identify the main complaints that lead to the establishment of the working group namely the collapse of IBCs stacked during transport particularly in freight containers;
- The adoption of such a test would go against the basic principles that the UN tests for packagings and IBCs, these were that the tests were relatively simple and could be applied anywhere in the world;
- The establishment of a vibration test introduced a complexity which many countries could not address economically;
- There were also concerns expressed that there would not be facilities to undertake this work.

5. The last two points listed above are causing concern in Europe with a number of European competent authorities, including the United Kingdom, where package testing has been undertaken since the 1970's. This is a real problem; those Sub-Committee members who are parties to RID and ADR will be aware that the United Kingdom has initiated a multilateral agreement exempting IBCs above 1 500 gross mass from vibration testing. A copy is attached in annex.

## The current position

6. As a proportion of packaging certificates of all types the number of IBC approvals in total (liquid and solid) account for less than 10% (in the United Kingdom there are about 100 IBC design types in total and just over 50% are for liquids).

7. Since the beginning of 2010 IBC manufacturers have been attempting to get their IBCs vibration tested in time for the application date of 1 January 2011. In most countries for IBCs up to a mass of 1 500 kg this has been carried out without difficulty. However there are many design types of IBC that exceed this threshold (the United Kingdom have a few that are 3 000 L).

8. To date in the United Kingdom no IBC has failed the vibration test.

9. The main package testing facilities in Europe have facilities for testing packages and pallets for all goods up to 1 500 kg. In addition most vibration equipment is designed to take standard pallets (1 m x 1 m or 1.2 m x 1 m) but there is no requirement that an IBC meets this standard "footprint" and the United Kingdom has some that exceed this e.g. 2.3 m x 1.5 m. Therefore vibration facilities for the larger IBCs do not exist in many package testing facilities.

10. The United Kingdom and a number of other competent authorities identified test facilities with the potential capacity to test these larger IBCs and all (except one) have refused on the basis that the tests:

- Involve the use of liquids, their facilities are not appropriate for testing such a medium, and
- The "footprint" of their machines may not be capable of taking certain types of IBC.

They are not prepared to make the investment to modify the test facility on the basis that the demand is so small.

11. Many of these larger IBCs for liquids (in excess of 1 500 kg) are produced in relatively small numbers and for specialist use very often within fixed distribution chains and are often not designed for stacking or moving in freight containers.

12. The economics of setting up vibration facilities for these larger IBCs outweigh the safety benefits. It is estimated that a facility for the full range of IBCs (up to 3 000 L capacity) could cost in the region of \$500,000 and for possibly less than 100 design types throughout Europe.

## Possible solutions

13. The possible solutions include:

(a) Remove the requirement for a vibration test from Chapter 6.5; The expert from the United Kingdom realises this may be a step too far for some members of the Sub-Committee but it should at least be considered as the United Kingdom is not convinced there was overwhelming evidence that this was justified nor that even a rudimentary cost benefit analysis was attempted. In addition the test requirements were only adopted by a very small majority on a split vote; or

(b) Retain a vibration test for smaller IBCs (up to 1 500 kg). These are IBC design types that are moved commonly around the world and exempt IBCs above this mass; or

(c) IBCs not suitable for stacking are exempted and be marked accordingly and should not be required to undertake vibration testing. The original argument for the vibration this was that this would assist in identifying weak IBCs that if stacked could cause damage. The United Kingdom is of the view that most IBCs stacked during transport are usually of 1 000 L capacity and will rarely have a mass of more than 1 500 kg. The suggestion of only requiring the stack test for the smaller IBCs will reduce some of the incidents that occur particularly in containerised transport.

14. The expert from the United Kingdom would welcome a debate with other members of the Sub-Committee on the practical problems of trying to undertake vibration testing on these large IBCs.

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Annex

English only

**Multilateral Agreement M229**

*Department for*  
**Transport**

**MULTILATERAL AGREEMENT M229**  
in accordance with section 1.5.1 of ADR  
concerning the vibration testing of Intermediate Bulk Containers (IBCs)

(1) By derogation from the provisions of section 6.5.6.13 of ADR, IBCs for liquids with a gross mass exceeding 1500 kilograms when filled for test do not need to be vibration tested in accordance with this section. The following conditions shall apply to an IBC that has not been vibration tested by way of this derogation:

- (a) The IBC shall have passed all the other appropriate tests for its design type according to the requirements of Chapter 6.5 of ADR;
- (b) The IBC primary marking shall be in accordance with 6.5.2 except that the IBC shall be clearly marked "not vibration tested" adjacent to the IBC primary marking.
- (c) Approval documents issued by the state authorising the IBC marking shall be endorsed "Issued in accordance with Multilateral Agreement M229".

(2) This Agreement shall be valid until the 31<sup>st</sup> December 2015 for the carriage on the territories of the ADR Contracting Parties signatory to this Agreement. If it is revoked before that date by one of the signatories, it shall remain valid until the above mentioned date only for carriage in the territories of those contracting parties signatory to this Agreement which have not revoked it.

**Done in London on 15<sup>th</sup> December 2010**

**The competent authority for ADR in the United Kingdom**



**JEFFREY M HART**

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