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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****Fifty-fifth session**

Geneva, 1-5 July 2019

Item 6 (e) of the provisional agenda

**Miscellaneous proposals for amendments to the Model Regulations  
on the Transport of Dangerous Goods:  
other miscellaneous proposals****Harmonisation of the requirement “structurally serviceable”****Transmitted by the expert from Germany and the European Chemical  
Industry Council (CEFIC)\*****Introduction**

1. At the previous sessions of the Sub-Committee, the experts from Germany and CEFIC presented proposals for a harmonisation of the requirement “structurally serviceable” for all containers (see informal document INF. 13 (fifty-third session) and ST/SG/AC.10/C.3/2018/98)).

2. Special requirements to be met by cargo transport units for the transport of substances of Class 1 are set forth in 7.1.3.3 of the Model Regulations. Section 7.1.3.3 also requires that freight containers, road vehicles and rail wagons be structurally serviceable. “Structurally serviceable” is defined in 7.1.3.3.1 (b): “Structurally serviceable means that the freight container, road vehicle or rail wagon is free from major defects in its structural components, e.g. top and bottom side rails, top and bottom end rails, door sill and header, floor cross members, corner posts, and corner fittings in a freight container.” It further includes a quantitative specification of defects, i.e. there must be no dents or bends greater than 19 mm in depth and the number of splices inserted in case of a repair is limited to one or two depending on the structural component.

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\* In accordance with the programme of work of the Sub-Committee for 2019-2020 approved by the Committee at its ninth session (see ST/SG/AC.10/C.3/108, paragraph 141 and ST/SG/AC.10/46, paragraph 14).

3. In the IMDG Code, these requirements to be met by cargo transport units for Class 1, except for division 1.4, have been implemented accordingly (7.1.2 of the IMDG Code); in European land transport, corresponding structural serviceability requirements have been implemented generally for all large containers, irrespective of the class transported (7.1.4 of RID/ADR). Thus, the application of structural serviceability requirements is not harmonised across the different modes of transport, with the sole exception of bulk containers or flexible bulk containers, the requirements in 4.3.1.15 and 4.3.1.16 of the Model Regulations, which are included in the IMDG Code and in RID/ADR accordingly. The lack of harmonisation has already been the subject of an informal document INF.15 prepared by CEFIC for the RID/ADR/ADN Joint Meeting in September 2017<sup>1</sup>.

4. Therefore, from the perspective of the Model Regulations, in particular the following questions arise:

- (a) Why do the requirements in 7.1.3.3.1 only apply to Class 1?;
- (b) What is the technical reasoning behind the 19 mm limit for dents and bents?;
- (c) What is the technical reasoning behind the reference to splices inserted in case of a repair?.

## Background

5. According to information from the Secretariat, the limitation of applicability to Class 1 has historical reasons: before the TDG Sub-Committee, there was a TDG Committee with two sub-groups, one of which was the group of experts on explosive substances. This group developed special recommendations for Class 1 which, in 1981, were incorporated in Part 4 of the United Nations Recommendations on the Transport of Dangerous Goods applicable at that time.

6. The origin of the 19 mm criterion is not completely clear. According to one information it was taken from an internal inspection standard from the United States of America coast guard. Another idea was that it may have been taken from a former standard of the International Institute of Container Lessors (IICL). But the 19 mm do not appear in the current IICL-6 standard<sup>2</sup>. This standard was not a safety standard but a quality standard, it is a repair standard which was not developed to assess the container for a concrete transport operation. Furthermore, the former requirements on the limitation of the number of splices in a structural member are no longer contained in the actual repair standards. Containers which would be repaired by splices are no longer in use, welded inserts or patches are used instead of splices. The repairs are carried out in accordance with the relevant repair and inspection standard<sup>3</sup>.

7. In the meantime, IMO has also been dealing with the assessment of damage to containers. IMO publishes “Recommendations on harmonized interpretation and implementation of the International Convention for Safe Containers, 1972”. These recommendations have already been updated several times and also include guidance on serious structural deficiencies in containers (Annex III of CSC). The corresponding Circular CSC.1/Circ.138/Rev.1 was provided in informal document INF.13/Add.1 at the fifty-third session. It also includes criteria on the assessment of damage to various structural components. The criteria were developed to give guidance to authorized control officers to make immediate out-of-service determinations or impose transport restrictions.

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<sup>1</sup> <http://www.unece.org/trans/main/dgdb/ac1/inf190917.html>

<sup>2</sup> Guide for Container Equipment Inspection, 6th edition

<sup>3</sup> See UCIRC - Unified Container Inspection & Repair Criteria

## Conclusion

8. All cargo transport units used for the transport of dangerous goods should be structurally serviceable. The text referring to structurally serviceable should be moved from the special provisions applicable to the transport of explosives to the general provisions in 7.1.1. The definition of structurally serviceable should be amended taking into account the technical development during recent years. References to dents or bends greater than 19 mm in depth and to splices should be deleted. There is no technical justification for the 19mm criterion and the application leads to problems in practice as it obstructs a qualitative assessment based on expertise. Furthermore, relevant text on the distortion of the over-all configuration and damage to lifting attachments or handling equipment interface features (see 4.3.1.15) should be added.

9. All cargo transport units to be loaded with dangerous goods should be subject to an appropriate visual inspection prior to loading. This inspection should also include a check of relevant residues of previous cargo and that the interior is free from protrusions, as these are factors which may influence the integrity of the packages to be loaded inside.

10. At the previous session, most of the delegations who expressed an opinion considered that the current text could be improved and supported the proposal in principle. Detailed comments were provided orally during the discussion. The experts from Germany and CEFIC prepared a revised proposal as shown in paragraph 11, taking into account the comments received. The proposal to include a reference to the International Convention for Safe Containers (CSC) and to the information in Circular CSC.1/Circ.138/Rev.1 as guidance material was not transferred to the revised proposal. The requirements referring to the serviceability and the weather-tight integrity (see 7.1.1.1(c)) are maintained as provisions applicable to the transport of explosives only.

## Proposal

11. Amend 7.1.1.6 to read as follows (deleted text is ~~struck through~~; new text is underlined):

“7.1.1.6 The interior and the exterior of a cargo transport unit shall be inspected prior to loading to ensure that there is no damage that could affect its integrity or that of the packages to be loaded in it.

The cargo transport unit shall be checked to ensure it is structurally serviceable, that it is free of possible residues incompatible with the cargo and that the interior floor, walls and ceiling, where applicable, are free from protrusions or deterioration that could affect the cargo inside.

Structurally serviceable means that the cargo transport unit is free from major defects in its structural components. Structural components of containers are e.g. top and bottom side rails, top and bottom end rails, door sill and header, floor cross members, corner posts, and corner fittings. Major defects include:

- (a) Bends, cracks or breaks in structural or supporting members and any damage to service or operational equipment that affect the integrity of the container;
- (b) Door hinges and hardware that are seized, twisted, broken, missing or otherwise inoperative;
- (c) Door seals that are damaged or missing; or
- (d) Any distortion of the over-all configuration and any damage to lifting attachments or handling equipment interface features great enough to prevent

proper alignment of handling equipment, mounting and securing on chassis, vehicle or wagon, or insertion into ships' cells.

NOTE: For filling portable tanks and multiple-element gas containers (MEGCs), see Chapter 4.2. For filling bulk containers, see Chapter 4.3

## Consequential amendments

12. Amend 4.3.1.15 to read as follows (deleted text is ~~struck through~~; new text is underlined):

“4.3.1.15 Before a bulk container is filled it shall be visually examined to ensure it is structurally serviceable, its interior walls, ceiling and floors are free from protrusions or damage that could affect the cargo and that any inner liners or substance retaining equipment are free from rips, tears or any damage that would compromise its cargo retention capabilities. Structurally serviceable means the bulk container does not have major defects in its structural components, such as top and bottom side rails, top and bottom end rails, door sill and header, floor cross members, corner posts, and corner fittings. Major defects include:

- (a) Bends, cracks or breaks in the structural or supporting members and that affect the integrity of the container; any damage to service or operational equipment that affect the integrity of the container; More than one splice or an improper splice (such as a lapped splice) in top or bottom end rails or door headers;
- ~~(c) More than two splices in any one top or bottom side rail;~~
- ~~(d) Any splice in a door sill or corner post;~~
- (eb) Door hinges and hardware that are seized, twisted, broken, missing, or otherwise inoperative;
- (fc) Door seals that are damaged or missing; or
- (gd) Any distortion of the overall configuration and any damage to lifting attachments or handling equipment interface features great enough to prevent proper alignment of handling equipment, mounting and securing chassis or vehicle, or insertion into ships' cells;
- ~~(h) Any damage to lifting attachments or handling equipment interface features;~~  
~~or~~
- ~~(i) Any damage to service or operational equipment.”~~

13. Amend 7.1.3.3.1 to read as follows:

~~7.1.3.3.1 Freight containers, road vehicles and rail wagons shall not be offered for the transport of explosive substances and articles of Class 1, unless the freight container, road vehicle or rail wagon is structurally serviceable as witnessed by a current International Convention for Safe Containers (CSC) approval plate (applicable to freight containers only) and a detailed visual examination as follows:~~

- ~~(a) Prior to loading a freight container, road vehicle or rail wagon with explosives, it shall be checked to ensure it is free of any residue of previous cargo and to ensure it is structurally serviceable and the interior floor and walls are free from protrusions;~~
- ~~(b) Structurally serviceable means that the freight container, road vehicle or rail wagon is free from major defects in its structural components, e.g. top and bottom side rails, top and bottom end rails, door sill and header, floor cross members, corner posts, and corner fittings in a freight container. Major defects are dents or bends in structural members greater than 19 mm in depth, regardless of length; cracks or breaks~~

~~in structural members; more than one splice or an improper splice (e.g. a lapped splice) in top or bottom end rails, or door headers or more than two splices in any one top or bottom side rail or any splice in a door sill or corner post; door hinges and hardware that are seized, twisted, broken, missing or otherwise inoperative, gaskets and seals that do not seal; or for freight containers, any distortion of the over all configuration great enough to prevent proper alignment of handling equipment, mounting and securing on chassis, vehicle or wagon, or insertion into ships' cells;~~

(e) ~~In addition, deterioration~~ Deterioration in any component of the container, road vehicle or rail wagon, regardless of the material of construction, such as rusted-out metal in sidewalls or disintegrated fibreglass is unacceptable. Normal wear, however, including oxidization (rust), slight dents and scratches and other damage that do not affect serviceability or the weather-tight integrity of the units is acceptable.