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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**

Geneva, 17–21 September 2018

Item 2 of the provisional agenda

Tanks**Fiber Reinforced Plastic (FRP) tanks tank coding****Transmitted by the Government of the Netherlands* , *****Summary*

- Executive summary:** This proposal reflects the outcome of the discussion in the Working Group on Tanks at the September 2017 session of the RID/ADR/ADN Joint Meeting where the majority of the experts were of the opinion that a tank code would be useful for FRP tanks and that the tank code of the substance should be indicated.
- Action to be taken:** Introduce a new third indent to subsection 6.9.6.1, a new subsection to section 4.4.2 and a new transitional measure in subsection 1.6.3.50
- Related documents:** Informal document INF.18 (September 2017 session) and ECE/TRANS/WP.15/AC.1/148/Add.2 paragraphs 28 and 29

* In accordance with the programme of work of the Inland Transport Committee for 2018-2019, (ECE/TRANS/2018/21/Add.1, Cluster 9, (9.2)).

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Introduction

1. A tank code needs to be marked on demountable tanks and tank-containers made of Fibre Reinforced Plastics (FRP). For fixed tanks of FRP, a tank code has to be given on the ADR certificate of approval of the tank vehicle.
2. However the calculation pressure in the tank code of the substances allowed for carriage may confuse the filler if the actual calculation pressure of FRP tanks, which may be lower, is given in the marked tank code. This is in particular the case for corrosive substances of Class 8 allowed by 4.4.1.
3. This topic was earlier discussed in the Working Group on Tanks at the September 2017 session of the RID/ADR/ADN Joint Meeting and the majority of the experts were of the opinion that a tank code would be useful and that the tank code of the substance should be indicated.

Proposals

Proposal 1

Introduce a new third indent to 6.9.6.1 to read (new wording in *italic script*):

- “6.9.6.1 The requirements of 6.8.2.5 shall apply to the marking of FRP tanks, with the following amendments;
- the tank plate may also be laminated to the shell or be made of suitable plastics materials;
 - the design temperature range shall always be marked;
 - *the tank code to be marked on the tank according to 6.8.2.5.2 [or entered in the ADR certificate of approval of 9.1.3.5 under item 9.5 (ADR only)] shall be that of the highest value of the substances allowed for carriage in the type approval certificate.*”.

Proposal 2

Introduce a new subsection to 4.4.2 to read (new wording in *italic script*):

- “4.4.2.4 *The tank code marked on the demountable tank or tank-container[, or entered in the certificate of approval of the vehicle under item 9.5 (ADR only)] may contain a higher value for the calculation pressure than the actual calculation pressure of the tank on the tank plate.*”.

Proposal 3

Introduce a new transitional measure in 1.6.3.xx to read (new wording in *italic script*):

- “1.6.3.xx *FRP tanks constructed before 1 July 2021 in accordance with the requirements in force up to 31 December 2019 but which however do not meet the requirements for the marking of the tank code of 6.8.2.5.2 and 6.9.6.1 applicable as from 1 January 2021 may continue to be marked in accordance*

with the requirements up to 31 December 2020 until the next periodic inspection after 1 July 2021.”.

Justification

4. The type approval of FRP tanks are required by 6.9.4.4.3 to have an exhaustive list of substances that are allowed to be carried. In such the tank code has no value to match tank and substance. The tank code could be deleted as marking. However in a previous session of the RID/ADR/ADN Joint Meeting it was stated that the marking of tank code would be preferred as the absence of a code might also cause confusion to fillers.

5. The design of FRP tanks shall either be based on 6.8.2.1.14 (a) or (b). In these cases substances are allowed to be carried with the letter “G “ for the calculation pressure in the tank code in column 12 of table A of 3.2.1. However subsection 4.4.1 allows substances with a vapour pressure of not more than 1.1 bar (absolute) and a tank code in column 12 in table A of 3.2.1 where the calculation pressure is not higher than 4 bar.

6. FRP tanks for corrosive substances often have top discharge and may require pressure discharge. In practice, 2 bar discharge pressure is common resulting in a calculation pressure of $(2.04 \times 1.3) = 2.65$ bar.

7. Some examples of popular substances to be carried in FRP tanks are:

(a) UN 1789, Hydrochloric Acid, with a tank code L4BN and no special provision.

According to 4.4.1, UN 1789 may be carried in FRP tanks because:

- it is classified as Class 8 and substances of Classes 3, 5.1, 6.1, 6.2, 8 or 9 are allowed;
- It is allowed to be carried in a tank (has a tank code);
- it has a vapour pressure not exceeding 110 kPa (1.1 bar absolute) at 50 °C;
- the calculation pressure in part 2 of the tank code of the substance does not exceed 4 bar.

According to 6.9.2.8 the relevant calculation pressure for FRP tanks is specified in 6.8.2.1.14 (a) or (b).

The tank is designed for pressure discharge at 2 bar with a calculation and test pressure of $(2.04 \times 1.3) = 2.65$ bar.

Based on the design the tank may receive a tank code either of LGxN or L2.65xN. LGxN or L2.65xN of the tank is not an allowed match with the tank code of L4BN for UN 1789. Marking (or deleting) the tank code for this substance may solve the problem.

(b) UN 1791, Hypochlorite solution, with a tank code L4BV(+) and special (tank) provision TE 11. Special provision TE 11 is applicable concerning the prevention of building up of overpressure due to decomposition.

UN 1791 is another popular substance that is carried in FRP tanks according to 4.4.1. However it has tank code L4BV(+) and TE 11 and can this substance be carried when L4BN would be marked?

In subsection 4.3.4.1.3 paragraph 1 last sentence reads “*Higher value tanks according to the provision at the end of the table in 4.3.4.1.2 may be used with due regard to the special provisions indicated in column (13) of Table A in chapter 3.2.*”. TE 11 requires

prevention of foreign matter and any building up of dangerous excess pressure which may be a safety valve. A safety valve is also required for a tank code L4BN.
