

## 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

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Item 2 of the provisional agenda

Tanks

### Filling degree of substances carried at and above 50 °C

#### Transmitted by the Government of the Netherlands

#### Introduction

1. Recently an incident occurred in which a substance was spilled from a tank due to overfilling. The tank was filled with a molten substance above 50 °C, that solidified during carriage and was liquefied again by heating above the initial filling temperature not far from the intended point of discharge. In the leg of the journey from the point of heating to the point of discharge the spill occurred.

2. Degree of filling of substances of which the temperature is maintained above 50 °C during carriage is regulated in 4.3.2.2.3 of which the text is reproduced below.

*“4.3.2.2.3 The provisions of 4.3.2.2.1 (a) to (d) above shall not apply to tanks whose contents are, by means of a heating device, maintained at a temperature above 50 °C during carriage. In this case the degree of filling at the outset shall be such, and the temperature so regulated, that the tank is not full to more than 95% of its capacity and that the filling temperature is not exceeded, at any time during carriage.”*

3. The Netherlands is of the opinion that the text of 4.3.2.2.3 is open to interpretation and that it does not cover the situations that apply in practice. Comparing to the wording of 4.2.1.9.5 it may be noticed that the scope of application is wider, and that heating up during the transport operation above the filling temperature is taken into account.

*“4.2.1.9.5 The provisions of 4.2.1.9.2 to 4.2.1.9.4.1 do not apply to portable tanks which contain substances maintained at a temperature above 50 °C during carriage (e.g. by means of a heating device). For portable tanks equipped with a heating device, a temperature regulator shall be used to ensure the maximum degree of filling is not more than 95% full at any time during carriage.”*

*4.2.1.9.5.1 The maximum degree of filling (in %) for solids carried above their melting point and for elevated temperature liquids shall be determined by the following formula:*

$$\text{Degree of filling} = 95 \frac{d_r}{d_f}$$

*In which  $d_f$  and  $d_r$  are the densities of the liquid at the mean temperature of the liquid during filling and the maximum mean bulk temperature during carriage respectively.”*

4. The Netherlands seeks the opinion of the Joint Meeting’s working group on tanks on the following questions:

## Questions

Question 1: Provision 4.3.2.2.3 seems to address only carriage above 50 °C on the condition of a heating system.

- Is the presence of a heating system on the tank the issue or the use of a heating system?

- Is the interpretation correct that in case of carriage above 50 °C without a heating system present or applied on the tank, that there are no requirements at all for a maximum degree of filling?

Question 2: Does provision 4.3.2.2.3 apply to liquids carried above 50 °C, or also to solids above the melting point?

Question 3: The text of provision 4.3.2.2.3 deliberately drafted not to allow heating up above the filling temperature during carriage (*not full to more than 95% of its capacity and that the filling temperature is not exceeded, at any time during carriage*)?

Remark: This seems not to reflect the practice as molten substances are allowed to cool down during carriage and are heated up before discharge, many discharge facilities are not equipped, or do not allow, heating up on their premises resulting in heating up before the final leg of the carriage.

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