
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

Bern, 20-24 March 2023

Item 4 of the provisional agenda

Interpretation of RID/ADR/ADN

9 February 2023

Interpretation of capacity to determine the maximum degree of filling according to 4.1.1.4

Transmitted by the Government of Belgium

Introduction

1. The maximum capacity in 1.2.1 of RID/ADR/ADN is defined as: *“the maximum inner volume of receptacles or packaging including intermediate bulk containers (IBCs) and large packagings expressed in cubic meters or liters”*.
2. In Belgium it is understood that this is the same as the water capacity.
3. In 4.1.3.3 of RID/ADR/ADN it is specified that the allowed maximum capacity in the different packing instructions is as defined in 1.2.1.
4. 6.1.5.2.1, 6.5.6.9.2 and 6.6.5.2.1 require that the packagings, IBCs and large packagings containing liquids are filled to at least 98 % of their maximum capacity for performing the required testing by the RID/ADR/ADN. While in 6.1.5.8.1, 6.5.6.14.1 and 6.6.5.4.2 it is required that the maximum capacity of the packagings, IBCs and large packagings is mentioned in the test report.
5. The second and third paragraph of 4.1.1.4 contain two different prescriptions to determine the maximum filling degree at a temperature of 15 °C. The second paragraph (a) allows to determine the filling degree based on the boiling point, while the third paragraph (b) takes account of the relative densities and the cubic expansion of the liquid for a temperature difference of 35 °C. Nevertheless, in these paragraphs only capacity is referenced without further specification.
6. In addition, manufacturers frequently give a nominal capacity which is not defined in the regulations for the transport of dangerous goods.
7. As the nominal capacity isn't necessarily the same as the maximum or water capacity that is defined in the regulations for the transport of dangerous goods, discussion has arisen on whether the calculations in 4.1.1.4 (a) and (b) require the nominal capacity to be used or the maximum capacity.
8. Belgium is of the opinion that the intention of 4.1.1.4 (a) and (b) is that the maximum capacity as defined in the RID/ADR/ADN is used for determining the maximum filling degree.
9. As such, Belgium proposes to have this understanding clarified in 4.1.1.4 (a) and (b).
10. In addition, during the discussions it was suggested that there might be a technical reason for the nominal capacities given by the manufacturers and that the nominal capacity should be the limiting capacity. Belgium would like to hear the opinion of the Joint Meeting on this issue.

Proposal

11. Amend 4.1.1.4 (a) and (b) as follows (new text is underlined):

“(a)

Boiling point (initial boiling point) of the substance in °C	< 60	≥ 60 < 100	≥ 100 < 200	≥ 200 < 300	≥ 300
Degree of filling as a percentage of the <u>maximum</u> capacity of the packaging	90	92	94	96	98

or

(b) degree of filling = $\frac{98}{1 + \alpha(50 - t_F)}$ % of the maximum capacity of the packaging

In this formula α represents the mean coefficient of cubic expansion of the liquid substance between 15 °C and 50 °C; that is to say, for a maximum rise in temperature of 35 °C,

α is calculated according to the formula: $\alpha = \frac{d_{15} - d_{50}}{35 \times d_{50}}$

d_{15} and d_{50} being the relative densities¹ of the liquid at 15 °C and 50 °C and t_F the mean temperature of the liquid at the time of filling.”

Discussion

12. Even though the nominal capacity is currently not defined in the Regulations on the Transport of Dangerous Goods, it might be the case that the nominal capacity given by the manufacturer is given as a maximum capacity in the light of safety. Belgium welcomes any views on this topic and might return with a proposal at the next session.
