



**OTIF/RID/CE/GTP/2021/4**

25 October 2021

Original: German

**RID:** 13<sup>th</sup> Session of the RID Committee of Experts' standing working group  
(Geneva, 15 – 19 November 2021)

**Subject:** Fitting safety valves to tanks for flammable liquefied gases

**Proposal transmitted by the Secretariat**

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### Introduction

1. On the basis of Liquid Gas Europe's proposal in OTIF/RID/RC/2021/36 – ECE/TRANS/WP.15/AC.1/2021/36, which was submitted on behalf of the BLEVE working group, the Joint Meeting decided at its meeting from 21 September to 1 October 2021 to prescribe the mandatory fitting of safety valves on tank-vehicles and tank-containers for the carriage of flammable liquefied gases.
2. To this end, 6.8.3.2.9, which previously dealt with the optional fitting of safety valves to tanks for compressed, liquefied or dissolved gases, was amended to include additional technical requirements for these safety valves. The new text of 6.8.3.2.9 applies to both columns of ADR (fixed tanks (tank-vehicles), demountable tanks, tank-containers and tank swap bodies) and only to the right-hand column of RID (tank-containers and tank swap bodies).
3. At the RID/ADR/ADN Joint Meeting (Geneva, 21 September to 1 October 2021), the Secretariat raised the question of whether the new provisions of 6.8.3.2.9 should not also be applied, at least in part, to tank-wagons. The Joint Meeting recommended that this issue be dealt with at the next session of the RID Committee of Experts' standing working group (see report OTIF/RID/RC/2021-B – ECE/TRANS/WP.15/AC.1/162, paragraph 16).

4. The text adopted for tank-vehicles and tank-containers reads as follows (see report OTIF/RID/RC/2021-B – ECE/TRANS/WP.15/AC.1/162 Annex II):

**6.8.3.2.9** Amend to read as follows (RID: right-hand column only/ADR: both columns):

**“6.8.3.2.9** Tanks intended for the carriage of flammable liquefied gases shall be fitted with safety valves. Tanks intended for the carriage of compressed gases, non-flammable liquefied gases or dissolved gases may be fitted with safety valves. Safety valves, where fitted, shall meet the requirements of 6.8.3.2.9.1 to 6.8.3.2.9.5.

**6.8.3.2.9.1** Safety valves shall be capable of opening automatically under a pressure between 0.9 and 1.0 times the test pressure of the tank to which they are fitted. They shall be of such a type as to resist dynamic stresses, including liquid surge. The use of dead weight or counterweight valves is prohibited. The required capacity of the safety valves shall be calculated in accordance with the formula contained in 6.7.3.8.1 and the safety valve shall conform at least to the requirement of 6.7.3.9.

**NOTE** For the application of this paragraph, the value "120 % of the MAWP" given in 6.7.3.8.1 shall be replaced by 0.9 times the test pressure of the tank.

Safety valves shall be designed to prevent or be protected from the entry of water or other foreign matter which may impair their correct functioning. Any protection shall not impair their performance.

**6.8.3.2.9.2** If tanks required to be hermetically closed are equipped with safety valves, these shall be preceded by a bursting disc and the following conditions shall be met:

- (a) The minimum burst pressure at 20 °C, tolerances included, shall be greater than or equal to 1.0 times the test pressure;
- (b) The maximum burst pressure at 20 °C, tolerances included, shall be equal to 1.1 times the test pressure; and
- (c) The bursting disc shall not reduce the required discharge capacity or correct operation of the safety valve.

A pressure gauge or another suitable indicator shall be provided in the space between the bursting disc and the safety valve, to enable detection of any rupture, perforation or leakage of the disc.

**6.8.3.2.9.3** Safety valves shall be directly connected to the shell or directly connected to the outlet of the bursting disc.

**6.8.3.2.9.4** Each safety valve inlet shall be situated on top of the shell in a position as near to the transverse centre of the shell as reasonably practicable. All safety valve inlets shall, under maximum filling conditions, be situated in the vapour space of the shell and the devices shall be so arranged as to ensure that the escaping vapour is discharged unrestrictedly. For flammable liquefied gases, the escaping vapour shall be directed away from the shell in such a manner that it cannot impinge upon the shell. Protective

devices which deflect the flow of vapour are permissible provided the required safety valve capacity is not reduced.

- 6.8.3.2.9.5** Arrangements shall be made to protect the safety valves from damage caused by the tank overturning or striking overhead obstacles. Where possible, safety valves shall not project outside of the profile of the shell.”
5. The OTIF Secretariat is of the view that in future, safety valves fitted to tank-wagons on a voluntary basis should also meet the technical requirements laid down for tank-vehicles and tank-containers.
6. Paragraph 7 shows how 6.8.3.2.9 might appear in RID. The tank experts are asked to check which provisions are not absolutely necessary for tank-wagons. This might be the case, for example, for the new 6.8.3.2.9.5.

### Proposal

7. 6.8.3.2.9 could read as follows in RID (the new provisions proposed for tank-wagons are underlined):

<b>6.8.3.2.9</b>	Tanks intended for the carriage of compressed or liquefied or dissolved gases,	Tanks intended for the carriage of flammable liquefied gases shall be fitted with safety valves. Tanks intended for the carriage of compressed gases, non-flammable liquefied gases or dissolved gases, may be fitted with spring-loaded safety valves. <u>Safety valves, where fitted, shall meet the requirements of 6.8.3.2.9.1 to 6.8.3.2.9.5.</u>
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**6.8.3.2.9.1** Safety valves shall be capable of opening automatically under a pressure between 0.9 and 1.0 times the test pressure of the tank to which they are fitted. They shall be of such a type as to resist dynamic stresses, including liquid surge. The use of dead weight or counterweight valves is prohibited. The required capacity of the safety valves shall be calculated in accordance with the formula contained in 6.7.3.8.1 and the safety valve shall conform at least to the requirements of 6.7.3.9.

**NOTE** For the application of this paragraph, the value "120 % of the MAWP" given in 6.7.3.8.1 shall be replaced by 0.9 times the test pressure of the tank.

Safety valves shall be designed to prevent or be protected from the entry of water or other foreign matter which may impair their correct functioning. Any protection shall not impair their performance.

**6.8.3.2.9.2** If tanks required to be hermetically closed are equipped with safety valves, these shall be preceded by a bursting disc and the following conditions shall be met:

(a) The minimum burst pressure at 20 °C, tolerances included, shall be greater than or equal to 1.0 times the test pressure;

(b) The maximum burst pressure at 20 °C, tolerances included, shall be equal to 1.1 times the test pressure; and

(c) The bursting disc shall not reduce the required discharge capacity or correct operation of the safety valve.

A pressure gauge or another suitable indicator shall be provided in the space between the bursting disc and the safety valve, to enable detection of any rupture, perforation or leakage of the disc.

**6.8.3.2.9.3** Safety valves shall be directly connected to the shell or directly connected to the outlet of the bursting disc.

**6.8.3.2.9.4** Each safety valve inlet shall be situated on top of the shell in a position as near to the transverse centre of the shell as reasonably practicable. All safety valve inlets shall, under maximum filling conditions, be situated in the vapour space of the shell and the devices shall be so arranged as to ensure that the escaping vapour is discharged unrestrictedly. For flammable liquefied gases, the escaping vapour shall be directed away from the shell in such a manner that it cannot impinge upon the shell. Protective devices which deflect the flow of vapour are permissible provided the required safety valve capacity is not reduced.

**6.8.3.2.9.5** Arrangements shall be made to protect the safety valves from damage caused by the tank overturning or striking overhead obstacles. Where possible, safety valves shall not project outside of the profile of the shell.

#### **Justification**

8. RID/ADR 6.8.2.2.10 already sets out conditions for hermetically closed tanks fitted with safety valves. For tanks intended for the carriage of compressed, liquefied or dissolved gases, this paragraph refers to the requirements of the competent authority with regard to the arrangement of the bursting disc and safety valve. In the context of the amendments to 6.8.3.2.9, it was decided no longer to refer to the competent authority requirements in 6.8.2.2.10, but to the new technical specifications in 6.8.3.2.9, for all tanks. Consequently, 6.8.3.2.9.2 is also required for tank-wagons.
9. 6.8.3.2.9.4 was taken from 6.7.3.11.1, which applies to portable tanks, and should also apply to tank-wagons.