



**INF. 6**

2 November 2021

Original: German

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

**Subject:** Revision of the requirements concerning protection of the tank against the overriding of buffers (special provisions TE 22/TE 25)

**Discussion document from the International Union of Wagon Keepers (UIP)**

1. At the Joint Coordinating Group of Experts (JCGE) meeting in September 2020, UIP agreed to make proposals to develop further the rules on protection against the overriding of buffers (special provisions TE 22 and TE 25). In document OTIF/RID/CE/GTP/2020/11, UIP submitted an initial proposal to the standing working group in November 2020 on how to proceed.
2. In principle, there was agreement on the aim of limiting RID to protection objectives and transferring the technical requirements for wagons to the TSIs or to standards referred to in the TSIs.
3. The proposal for a stepped approach in relation to different risks concerning the substances to be carried was also positively received and should be developed further:
  - Level 1: Insofar as the provision of 6.8.2.1.29 (minimum distance of 300 mm between the headstock plane and the most protruding point at the shell extremity) was still considered necessary, it should apply to all dangerous goods.
  - Level 2: Measures that are suitable to reduce the risk of buffers overriding (e.g. crash buffers or devices to protect against the overriding of buffers). These measures apply to those substances to which special provision TE 22 is currently assigned.
  - Level 3: Measures that are suitable to reduce the damage caused by the overriding of buffers (e.g. protective shield, strengthened tank ends or sandwich cover). These measures apply to all substances to which special provision TE 25 is currently assigned.

4. The new approach should take into account the fact that, where appropriate, a higher value measure (e.g. complying with TE 25) may include/replace a lower value measure (e.g. complying with TE 22). This approach is thus similar to the approach already contained in the regulations for the classification of tanks in terms of the tank hierarchy.
5. As the UIP already reported at the JCGE meeting in September 2021, the complexity of this task has increased significantly, as:
  - it has now been clarified that extra-large tank-containers are also to be shunted freely, at least as an option, and are therefore subject to higher operating stresses than standard containers operated multimodally,
  - the idea of introducing digital automatic coupling (DAC) has become more tangible and thus raises further questions regarding the protection objectives.
6. Unfortunately, for various reasons, it was not possible to hold a meeting of the working group on tank and vehicle technology in autumn 2020 as planned.
7. The following questions now arise for UIP:

**(a) What operational stresses can be assumed for the tank if shunting restrictions are waived?**

For tank-containers, the right-hand column of 6.8.2.1.2 specifies 2 g in the longitudinal direction. The tests carried out by CEFIC/BASF on hump shunts with retarders have shown accelerations of up to 3 g. For tank-wagons, the left-hand column of 6.8.2.1.2 refers to tests carried out by the competent authority in the rail sector, which, in accordance with a requirement of standard EN 12663-2 for wagons of category F1 that can be used without restriction, are tested at impact speeds of up to 12 km/h, where accelerations of > 5 g may occur.

The question has already been raised in a sector working group with a view to the increasingly modular design of freight wagons, and requires regulation. With regard to dangerous goods, corresponding requirements would then have to be included in 6.8.2.1.2.

**(b) Requirements for protection against the overriding of buffers in special provisions TE 22 and TE 25 were developed as a result of experience gained after shunting accidents and were finally introduced.**

These accidents occurred at impact speeds of > 12 km/h. If it is assumed that extra-large tank-containers are shunted freely with the corresponding carrying wagons, requirements comparable to those for tank-wagons would have to be made for these operations. In terms of implementation, this would mean that, for example, when crash buffers or protective shields are used on such carrying wagons, these would have to be technically and structurally designed for the associated load cases (which standard intermodal wagons of current construction series usually are not).

The possible requirement to implement tank-related measures (sandwich cover or increased end wall thickness) also entails such specific construction requirements for tanks. In addition, RID/ADR would have to stipulate the appropriate marking of tank-wagons and tank-containers for which such protective measures have been implemented on the tank.

In the meantime, CEFIC/BASF have already proposed to position tank-containers at greater distances from the headstock plane in order to achieve the same level of safety as for tank-wagons. However, this measure would have to be implemented purely operationally and decisions on how large the distance has to be, and whether this can replace the requirements of special provisions TE 22 and TE 25 or can be done freely on the basis of the risk assessment of the RUs carrying the goods, would require further discussion and definition.

- (c) A risk assessment carried out by BASF and supported by tests states that when buffers override, the required **distance of 300 mm between the tank and the headstock plane** (for tank-wagons, see RID 6.8.2.1.29) does not provide any demonstrable safety gain. The requirement of 6.8.2.1.29 originates historically from the UIC regulations and was established long before the requirements of special provisions TE 22 and TE 25. Based on the experience described above, UIP is of the view that this additional requirement could be waived, at least for wagons where alternative or higher-quality protective measures have been implemented.
- (d) The new system of **digital automatic coupling (DAC)** to be introduced would have to be re-assessed in terms of its risks and possibilities. In this way, the overriding of buffers (in the sense of the word) can be ruled out. However, climbing in case of increased shunting forces would still be possible, depending on the type of coupling. In this case, a requirement for safe catching and holding of the coupling halves would be useful.

In RID, special provision TE 22 only specified an energy absorption level of 130 kJ per wagon end for central couplings – this was primarily with reference to existing couplings on SMGS wagons. If they were to be introduced widely in Europe, the requirements for such coupling systems would have to be discussed and defined.

8. UIP plans to hold a workshop on these issues with the sector by no later than early 2022 and proposes a session of the working group on tank and vehicle technology before the standing working group meeting in May 2022.

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