

OTIF



**ORGANISATION INTERGOUVERNEMENTALE POUR
LES TRANSPORTS INTERNATIONAUX FERROVIAIRES**

**ZWISCHENSTAATLICHE ORGANISATION FÜR DEN
INTERNATIONALEN EISENBAHNVERKEHR**

**INTERGOVERNMENTAL ORGANISATION FOR INTER-
NATIONAL CARRIAGE BY RAIL**

OCTI/RID/CE/41/4b)

27 October 2004

Original: German

RID: 41st Session of the Committee of Experts on the Transport of Dangerous Goods
(Meiningen (Germany), 15 - 18 November 2004)

Subject: Protective measures to prevent damage caused by the overriding of buffers

Proposal transmitted by Germany

Introduction

At the 40th session of the RID Committee of Experts (Sinaia, 17 – 21 November 2003), Germany's document OCTI/RID/CE/40/7d) contained proposals for protective measures to prevent damage caused by the overriding of buffers. That proposal came about after the RID Committee of Experts working group on tank and vehicle technology had considered that additional protective measures were necessary for certain tank-wagons.

Germany's proposal was to incorporate a new special requirement TE xx into 6.8.4 (b), with 3 alternatives:

- (a) Increasing the wall thickness of the tank ends to at least 12 mm (if the tank is constructed of a reference steel),
- (b) Sandwich cover on the tank ends with a specific energy absorption capacity of 22 kJ (corresponding to a wall thickness of 6 mm)
Wall thickness of the ends according to the requirements of RID,
- (c) Protective cover at each end of the wagon with a minimum wall thickness of 6 mm (if it is constructed of a reference steel)
Wall thickness of the ends according to the requirements of RID.

For reasons of cost, only a limited number of copies of this document have been made. Delegates are asked to bring their own copies of documents to meetings. The Central Office only has a small number of copies available.

For particularly dangerous goods (gases with an LC₅₀ value less than 400 ml/m³ and substances for which the letter "k" is shown in the "special provisions" column in 4.1.4.1, packing instruction P200, Table 3), Germany proposed that in every case, in addition to (a) or (b), a protective shield should be provided so that the protection equals an equivalent tank end wall thickness of 18 mm.

According to paragraph 31, item 5) of the final report of the 40th session of the RID Committee of Experts (document A 81-03/501.2004), this last provision was rejected, despite a majority of votes in favour (4 in favour, 0 against), owing to an insufficient number of votes in favour.

In order to comply with the decision of the RID Committee of Experts working group on tank and vehicle technology to tighten the transport provisions for very dangerous gases, the proposal has been revised and worded more precisely. This proposal was dealt with at the last meeting of the Working Group on tank and vehicle technology held in Duisburg on 24/25.06.2004 (INF. CH 1). It was decided to include UN 1749 chlorine trifluoride in the list of substances for which the wall thickness of the tank ends must be at least 18 mm, and minor editorial amendments were adopted and have been taken into account in the following proposal. In addition, a transitional provision for existing tank-wagons is proposed. The amendments and additions are shown in red.

Proposal

6.8.4 (b) Insert the following new special requirement TE xx (left-hand column only):

"TE xx The shells of tank-wagons shall also be protected by at least one of the following or equivalent measures to prevent damage caused by the overriding of buffers.

- (a) Increasing the wall thickness of the tank ends or using other materials with a greater energy absorption capacity

In this case, the wall thickness of the tank ends shall be at least 12 mm.

The ends of tanks intended for the carriage of gases UN 1017 chlorine, UN 1749 chlorine trifluoride, UN 2189 dichlorosilane, UN 2901 bromine chloride and UN 3057 trifluoroacetyl chloride shall have a minimum wall thickness of 18 mm.

- (b) Sandwich cover for tank ends

If protection is provided by a sandwich cover, it shall cover the entire area of the tank ends and shall have a specific energy absorption capacity of at least 22 kJ (corresponding to a wall thickness of 6 mm). If the risk of corrosion cannot be eliminated by structural measures, it must be made possible to undertake an inspection of the external wall of the tank ends, e.g. by providing a removable cover.

- (c) Protective shield at each end of the wagon

If a protective shield is used at each end of the wagon, the following requirements shall apply:

- the protective shield shall cover the whole width of the tank;
- measured from the top edge of the buffer beam, the protective shield shall cover
 - either two thirds of the tank diameter

- or at least 900 mm and shall also be equipped with an arresting device for climbing buffers;
- the protective shield shall have a wall thickness of at least 6 mm;
- the protective shield and its attachment points shall be such that the risk of the tank walls being penetrated by the protective shield itself is minimized.

The wall thicknesses referred to in paragraphs (a), (b) and (c) relate to reference steel. If other materials are used, except if mild steel is used, the equivalent thickness shall be calculated in accordance with the formula in 6.8.2.1.18. The values of Rm and A to be used shall be specified minimum values according to material standards."

Chapter 3.2

Table A Insert "TE xx" in column 13 against the following entries:

- Tanks for gases of Class 2 with classification codes containing the letter(s) T, TF, TC, TO, TFC or TOC
- Tanks for substances of classes 3 to 8 with tank code L15CH, L15DH or L21DH.

Section 1.6.3

Insert two new transitional provisions as follows:

- 1.6.3.x** Tank-wagons constructed before 1 January 2007 which do not conform to the requirements of 6.8.4 (b), special provision TExx in force from 1 January 2007 may still be used; see, however, 1.6.3.y.
- 1.6.3.y** Tank-wagons intended for the carriage of gases UN 1017 chlorine, UN 1749 chlorine trifluoride, UN 2189 dichlorosilane, UN 2901 bromine chloride and UN 3057 trifluoroacetyl chloride on which the wall thickness of the tank ends does not conform to special provision TExx (a) shall be equipped with devices in accordance with special provision TExx (b) or (c) by no later than 1 January 2015.

With regard to the definitive wording of the transitional provisions, the discussion on document OCTI/RID/CE/41/6f) will have to be taken into account.

Justification

Safety:

This measure (increasing the wall thickness of the tank ends to 18 mm) or the combination of two measures would improve the standard of safety for particularly dangerous gases. This additional protection is necessary because for certain gases (e.g. chlorine, calculation pressure 22 bar or higher), the special requirement TExx that was agreed does not result in any improvement in safety. Today, these tanks already have wall thicknesses that vary only marginally from 12 mm.

Feasibility:

Retrofitting must be carried out no later than when the tank undergoes its next periodic inspection (inspection period 8 years) (same principle applied as for crash buffers).

Applicability:

Unlimited continued use is ensured for existing tank-wagons intended for the carriage of substances not mentioned in transitional provision 1.6.3.y.
