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30 June 2023

EN

Joint Coordinating Group of Experts
(Bern, hybrid, 6 September 2023)

Agenda item 3: Analyses of draft proposal for migration of wagon-related requirements from RID to UTP and TSIs

1 b - Design and construction of vehicles: way of specifying; functional/technical solutions

Information from ERA on behalf RID and Railway experts involved in the dedicated workshops and working group meetings

The following items from the priority list are reflected in the draft proposal for migration of wagon-related requirements from RID to UTP and TSIs:

- 6.8.2.1.2 on maximum permissible load on tank-wagons,
- 6.8.3.1.6 on tank protection, and
- other input since 2017: central coupling and harmonised energy absorption.

Introduction

The Agency would like to thank the RID experts and the Railway experts for their participation to the workshops organised by the Agency in accordance with the conclusions of the 14th session of the RID Standing Group (see paragraphs 25 and 26 of OTIF/RID/CE/GTP/2022-A).

This document contains the final draft proposal covering all the priority items of the JCGE Priority list aiming at transferring in UTP/TSI the requirements applicable to the wagons which shall be assessed by the Assessing Entities / Notified Bodies in accordance with the UTP / TSI respectively.

As indicated in RID_CE_GTP_2022_INF 7, the good coordination of this action and the resulting proposal is of crucial importance for the fulfilment of the EU policy consisting of increase the usage of the railway transport mode, and one of the most important enablers which is the adoption of the 'Digital Automatic Coupling' (DAC) within the EU Railway System.

It is of utmost importance that Dangerous Goods can continue being transported before/during and after the introduction of the DAC within EU.

Therefore, the current proposal takes into account the possibility to implement the proposed RID, UTP and TSI amendments before, during and after DAC is implemented.

Method of working

A first workshop to identify requirements to be transferred from RID to TSI/UTP and a risk analysis to identify new requirements to be addressed, such as 'domino effect' and 'ATEX' was held on 12.10.2022.

The working methodology was also agreed in this workshop:

- The workshop to identify all requirements and develop the concrete TSI text would meet as many times as required. The workshop met 5 times between 12.10.2022 and 5.6.2023, with the following participants: NSA IT, CER, UK DfT, UIP, NSA FR, NSA BE, UNIFE, DG MOVE, UIRR, UIC, EU Rail EDDP, ALE, IT MoT, OTIF Secretariat, NSA FI, NL MoT, NSA LV, NSA AT, CEFIC.
- A subgroup of experts in both TSI and RID would meet to ensure consistency in the changes brought to these three regulations. This subgroup met 3 times between 17.01.2023 and 19.04.2023, with the following participants: CER, CEFIC, UK DfT, UIP, NSA BE, UNIFE, DG MOVE, OTIF Secretariat, OTIF, NSA AT, UIRR.

The amendments proposed to the TSI WAG and RID have been agreed in both the workshop and subgroup meetings.

Taking into consideration that TSIs are normally transferred without significant changes into UTPs, the groups concentrated on the development of consistent RID and TSI requirements. However, the groups noted that UTP should consider reviewing in addition the case of rolling stock intended to be operated on 1520 mm track gauge, which is outside the scope of the TSI.

The TWG Freight@DAC chaired by the Agency continues its working process on the development of a complete specification of DAC for any wagon type to be included in the TSIs. The agency ensures the coordination between this group and the two working groups above focussing on the specific requirements for the transport of Dangerous Goods. The following TWGs met three times between 14.12.2022 and 4.4.2023 and feedbacks were provided.

Possible timing for adoption and entry into force

The proposal is to be seen as a package amendment in RID, UTP and TSI, which needs to enter into force either on 1st January 2025 or on 1st January 2027, at the earliest possible date, depending on the respective adoption constraints of the involved Committees, namely RID, CTE and RISC.

The JCGE was established, among other aims, to facilitate coordinated development of the above legislation, based on JCGE advice and reports to be sent to the respective relevant Committees.

Ideally, in the current circumstance, it would be suggested that the JCGE endorse this proposal and that the relevant Committees adopt the proposal, with non-substantial change, to allow a consistent modification of RID, UTP and TSI for the targeted biennium.

This means that the target adoption by each Committee should intervene in parallel, following the JCGE advice, and would occur at the earliest date, as following:

- 1st Quarter 2024 – Adoption of TSI amendment by RISC Committee
- May 2024 – Adoption of RID amendments by the RID Committee of Experts
- June 2024/2025 – Adoption of UTP amendments by the OTIF Committee of Technical Experts
- Before end 2024 – Adoption of updated Directive on the Transport of Dangerous Goods

This planning would allow for an entry into force either in 2025 or in 2027 depending on the possibility to adopt the UTP in due time.

Main elements of the proposed amendments

Concerning RID

The detailed proposed amendments of RID are reported in Annex I, they include the following aspects:

- Introduction of high-level safety objectives concerning vehicle-related provisions in Chapter 7.1, including
 - Construction requirements, moved from the pre-existing RID sections, including new ATEX general provision;
 - Special provisions, concerning wagon equipment, moved from the pre-existing RID sections;
 - Consistent integration of the pre-existing note in 7.1.1 for derailment-related equipment.
- Introduction of a new abbreviation
 - Facilitation of the referencing to UTP Wagon;
 - Mandatory application of the TSI wagon in EU region when UTP Wagon is referred to in RID.

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- Usage of column (14) of table A in Chapter 3.2
 - Defining applicable wagon equipment depending on the concerned UN number.
- Introduction of transitional measures
 - For consistent application of marking of tank equipment (TC and TE) and wagon equipment (WE) respectively
- Withdrawing of two provisions, identified as not relevant anymore during the preparation of the proposal
 - TE16, not considered relevant anymore by Joint Meeting experts and RID experts contributing to this proposal
 - The alternative in 6.8.2.1.29 was considered not relevant anymore.

Concerning UTP Wagon / TSI Wagon

The detailed proposed amendments of TSI include the following aspects:

- Introduction of the new clause 4.2.6 and Appendix I, which specifically addresses the vehicle-related provisions in Chapter 7.1 of RID, including
 - Construction requirements, moved from the pre-existing RID sections:
 - Strength of vehicle body
 - Energy absorbing requirements for coupling systems (both manual or central automatic)
 - Overriding related provisions
 - Derailment prevention or mitigation provisions (former note 7.1.1 of RID)
 - Addition of new ATEX general provision.
- Amendment of table 1 to justify the inclusion of the clause by referring to the corresponding essential requirements
- Amendment of clause 4.8, to include compliance with WE of RID as new parameters in ER-ATV.

Justification

The proposal is transferring wagon-related provisions in UTP/TSI without affecting the current RID requirements. This will allow the assessment of the already existing requirements in the RID by the notified bodies of the TSI and avoid the risk of double checks or inconsistency in the assessment process.

In addition to the transfer of pre-existing RID vehicle requirements, this proposal is fully considering and facilitating the on-going revision process of the TSI WAG and the TSI LOC&PAS to introduce the DAC and its future use in freight wagons intended to carry dangerous goods with equivalent or higher safety level.

The benefits foreseen with this proposal are significantly higher than the effort required to adapt TC and TE marking and to introduce WE marking.

The proposal clarifies the requirements to be assessed by the Assessing Entities / Notified Bodies and will have a positive effect on Safety and Interoperability, including the vehicle-authorisation process.

Annex I: Proposed Amendments to RID
(new text bold and underlined; deleted text in bold and stricken through)

In 1.2.3, add a new abbreviation after 'UNECE'

“UTP WAG” means Appendix F to COTIF: “Uniform Technical Prescription applicable to the subsystem Rolling Stock – Freight Wagon”.

NOTE: Within the European Union, UTP WAG means the Technical Specification for Interoperability relating to the subsystem “rolling stock – freight wagons” (TSI WAG) of the rail system in the European Union.

Amend 1.6.3.27, 1.6.3.32, 1.6.3.33, 1.6.3.36 as following

- 1.6.3.27 (a) For tank-wagons and battery-wagons not fitted with automatic couplers
- for gases of Class 2 with classification codes containing the letter(s) T, TF, TC, TO, TFC or TOC, and
 - for substances of classes 3 to 8 carried in the liquid state and to which tank code L15CH, L15DH or L21DH is assigned in column (12) of Table A of Chapter 3.2,

constructed before 1 January 2005 the devices defined in special provision TE 22 of 6.8.4 **in force from 1 January 2005 to 31 December 2024 and in special provision for wagon equipment WE 2 of 7.1.2.2 in force from 1 January 2025** need to be capable of absorbing at least 500 kJ of energy at each end of the wagon.

- (b) Tank-wagons and battery-wagons not fitted with automatic couplers
- for gases of Class 2 with classification codes containing only the letter F, and
 - for substances of classes 3 to 8 carried in the liquid state and to which tank code L10BH, L10CH or L10DH is assigned in column (12) of Table A of Chapter 3.2,

constructed before 1 January 2007 and which do not conform to the applicable requirements of special provision TE 22 of 6.8.4 in force from 1 January 2007 **to 31 December 2024 and in special provision for wagon equipment WE 2 of 7.1.2.2 in force from 1 January 2025**, may still be used.

Tank-wagons and battery-wagons for the carriage of these gases and substances fitted with automatic couplers, constructed before 1 July 2015 and which do not conform to the applicable requirements of special provision TE 22 of 6.8.4 in force from 1 January 2015 **to 31 December 2024 and in special provision for wagon equipment WE 2 of 7.1.2.2 in force from 1 January 2025**, may still be used.

Tank-wagons fitted with energy absorption conforming to special provision TE 22 of 6.8.4b and to special provision for wagon equipment WE 2 of 7.1.2.2, and which are marked with TE 22 in accordance with 6.8.2.5.2, do not need to display WE 2 marking as required in 7.1.2.4, until the next intermediate or periodic inspection after 1 January 2025.

1.6.3.32 Tank-wagons

- for gases of Class 2 with classification codes containing the letter(s) T, TF, TC, TO, TFC or TOC, and

1.6.3.32.1 for liquids of classes 3 to 8 to which tank code L15CH, L15DH or L21DH is assigned in column (12) of Table A of Chapter 3.2,

constructed before 1 January 2007 and which do not conform to the applicable requirements of special provision TE 25 of 6.8.4 (b) **and in special provision for wagon equipment WE 3 of 7.1.2.2** in force from **1 January 2025** may still be used.

Tank-wagons for the carriage of gases UN 1017 chlorine, UN 1749 chlorine trifluoride, UN 2189 dichlorosilane, UN 2901 bromine chloride and UN 3057 trifluoroacetyl chloride, whose wall thickness of the ends does not meet the requirements of special provision TE 25 (b), shall however ~~be fitted with~~ **meet the requirements of special provision WE 3 for wagon equipment of 7.1.2.2** in force from **1 January 2025** or devices in accordance with special provision TE 25 (c)

Tank-wagons conforming to special provision TE 25 (a), (d) or (e) of 6.8.4b in force from 1 January 2005 to 31 December 2024 and to special provision for wagon equipment WE 3 of 7.1.2.2 in force from 1 January 2025 and which are marked with TE 25 in accordance with 6.8.2.5.2, do not need to display WE 3 marking as required in 7.1.2.4 until the next intermediate or periodic inspection after 1 January 2025.

- 1.6.3.33 Tank-wagons and battery-wagons for gases of Class 2 constructed before 1 January 1986 in accordance with the requirements applicable up to 31 December 1985 and which do not conform to the requirements of 6.8.3.1.6 concerning the buffers in force until 31 December 2024 and which do not conform to the requirements of special provision for wagon equipment WE 1 of 7.1.2.2 in force from 1 January 2025, may still be used.

- 1.6.3.36 Tank-wagons constructed before 1 January 2011 in accordance with the requirements in force up to 31 December 2010, but which do not conform to the requirements of 6.8.2.1.29 concerning the minimum distance between the headstock plane and the most protruding point at the shell extremity applicable from 1 January 2011 to 31 December 2024 and which do not conform to the requirements of 7.1.2.1.4 in force from 1 January 2025, may still be used.

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In 3.2.1, under the title Column (13), first paragraph, replace the words ‘have additionally to’ with ‘shall additionally’

In 3.2.1, after Column (13), add

Column (14) “Wagon equipment”

Contains the alphanumeric codes starting with the letters “WE” of the special provisions for wagon equipment which shall be met in accordance with 7.1.2.2.

In Table A:

Add a new column:

- With the title **“Wagon Equipment”**
- With reference **4.3.2, 7.1.2.2**
- With the column number **(14)**

as shown below.

RID Tanks		<u>Wagon Equipment</u>	Transport category	Special provisions for carriage			Colis express (express parcels)	Hazard identification No.
Tank code	Special provisions			Packages	Bulk	Loading, unloading and handling		
4.3	4.3.5, 6.8.4	<u>4.3.2</u> <u>7.1.2.2</u>	1.1.3.1(c)	7.2.4	7.3.3	7.5.11	7.6	5.3.2.3
(12)	(13)	<u>(14)</u>	(15)	(16)	(17)	(18)	(19)	(20)

In new column (14) :

- Add **WE1** for gases
- Add **WE2** for substances which have now TE22
- Add **WE3** for substances which have now TE25

In column (13) :

- Delete every instance of **“TE22”**

After 4.3.2.1.1 add sub-paragraphs 4.3.2.1.1.1 and 4.3.2.1.1.2, as follows:

4.3.2.1.1.1 Wagons may be subject to additional special provisions for wagon equipments aiming at ensuring the necessary level of protection of the substance carried as well as the interoperability of the wagon in use.

4.3.2.1.1.2 The required wagon equipment is given in code form in Column (14) of Table A in Chapter 3.2. The applicable special provisions of each wagon equipment code (WE) are defined in 7.1.2.2.

NOTE: Wagons equipped with additional wagon equipment conforming to a WE code in accordance with 7.1.2.2 but which is not required in Column (14) of Table A in Chapter 3.2 may also be used.

Amend first and second paragraph of TU 38 (left hand column only) as follows:

When energy absorption elements **(special provision for wagon equipment WE 2 in accordance with 7.1.2.2)** have undergone plastic deformation ~~in accordance with 6.8.4, special provision TE 22~~, the tank-wagon or battery-wagon shall, after undergoing an inspection, be removed to a repair workshop immediately.

If the loaded tank-wagon or loaded battery-wagon is capable of absorbing the shocks of ~~a collision~~ **an impact** that might occur in normal conditions of rail transport, e.g. after the energy absorption ~~equipment buffers~~ fitted have been replaced with ~~normal buffers~~ **equipment of lower energy absorption** or after the damaged energy absorption ~~elements~~ **equipment** ~~has~~ been temporarily blocked off, the tank-wagon or battery wagon may, after undergoing an inspection, be moved for the purpose of emptying and finally to a repair workshop.

Amend 6.8.1.1, as follows:

- 6.8.1.1 The requirements across the whole width of the page apply both to tank-wagons, to demountable tanks and battery-wagons, and to tank-containers, tank swap bodies and MEGCs. Those contained in a single column apply only:
- To **the tanks of** tank-wagons, demountable tanks and **elements of** battery-wagons (left hand column);
 - to tank-containers, tank swap bodies and MEGCs (right hand column).

Amend 6.8.1.2, as follows:

- 6.8.1.2 These requirements shall apply to **the tanks of** tank-wagons, demountable tanks and **elements of** battery-wagons | tank-containers, tank swap bodies and MEGCs used for the carriage of gaseous, liquid, powdery or granular substances.

Add a second sentence in 6.8.1.4 as follows:

- 6.8.1.4 For provisions concerning **the** use of these tanks, see Chapter 4.3. **For the provisions concerning the wagons , see 4.3.2.1.1.1, 4.3.2.1.1.2 and Chapter 7.1.**

Amend left-hand column of 6.8.2.1.2 as follows:

~~6.8.2.1.2 Tank wagons shall be constructed as to be capable of withstanding, under the maximum permissible load, the stresses which occur during carriage by rail.² As regards these stresses, reference should be made to the tests prescribed by the competent authority~~

Tank wagons shall be capable of absorbing under the maximum permissible load the forces defined in 7.1.2.1.1.

Tank-containers³ and their fastenings shall, under the maximum permissible load be capable of absorbing the forces equal to those exerted by:

- in the direction of travel: twice the total mass;
- horizontally at right angles to the direction of travel: the total mass; (where the direction of travel is not clearly determined, twice the total mass in each direction);
- vertically upwards: the total mass;
- vertically downwards: twice the total mass.

(right-hand column unchanged)

At the end of 6.8.2.1.13 (left-hand column only) add the sentence “**In addition, the applicable provisions of 7.1.2.1.1 shall be met.**”

Amend left-hand column of 6.8.2.1.29, as follows:

6.8.2.1.29 The provisions of 7.1.2.1.4 and the construction requirements of UTP WAG, Appendix I, section D shall apply.

~~The minimum distance between the headstock plane and the most protruding point at the shell extremity on tank wagons shall be 300 mm.~~

~~Alternatively for tank wagons for substances other than those for which the requirements of special provision TE 25 of 6.8.4 (b) apply, buffer override protection of a design approved by the competent authority shall be provided. This alternative is only applicable to tank wagons used solely on railway infrastructure requiring a freight vehicle gauge smaller than G1⁷.~~

(Reserved)

And **Delete the footnote 7.**

Amend left-hand column of 6.8.2.5.2 as follows:

<p>6.8.2.5.2 The following particulars shall be inscribed on both sides of the tank-wagon (on the tank itself or on plates):</p> <ul style="list-style-type: none"> – vehicle keeper mark or name of operator¹⁷; – capacity¹⁶; – unladen mass of tank-wagon¹⁶; – load limits according to the characteristics of the wagon and the nature of the lines used; – for the substances according to 4.3.4.1.3, the proper shipping name of the substance(s) accepted for carriage; – tank code according to 4.3.4.1.1; – for substances other than those according to 4.3.4.1.3, the alphanumeric codes of all special provisions TC and TE (<u>except TE 25</u>) which are shown in column (13) of Table A of Chapter 3.2 for the substances to be carried in the tank; – the alphanumeric code TE 25 if the tank-wagon conforms to TE25 (b) or (c). – <u>the alphanumeric codes of all wagon equipment WE according to which the tank-wagon is equipped (see 7.1.2.3)</u>; and – date (month, year) of the next inspection in accordance with 6.8.2.4.2 and 6.8.2.4.3 or with the TT special provisions of 6.8.4 for the substance(s) accepted for carriage. If the next inspection is an inspection in accordance with 6.8.2.4.3, the date shall be followed by the letter "L". 	<p>The following particulars shall be inscribed on the tank-container (on the tank itself or on plates):</p> <ul style="list-style-type: none"> – names of owner and of operator; – capacity of the shell¹⁶; – tare¹⁶; – maximum permissible gross mass¹⁶; – for the substances according to 4.3.4.1.3, the proper shipping name of the substance(s) accepted for carriage; – tank code according to 4.3.4.1.1; and – for substances other than those according to 4.3.4.1.3, the alphanumeric codes of all special provisions TC and TE which are shown in column (13) of Table A of Chapter 3.2 for the substances to be carried in the tank.
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Amend 6.8.3.1.5, as follows:

6.8.3.1.5 Elements and their fastenings

of battery wagons **shall be capable of absorbing under the maximum permissible load the forces defined in 7.1.2.1.1.**

and the frame of MEGCs **shall be capable of absorbing under the maximum permissible load the forces defined in 6.8.2.1.2.**

~~shall be capable of absorbing under the maximum permissible load the forces defined in 6.8.2.1.2.~~ Under each force the stress at the most severely stressed point of the element and its fastenings shall not exceed the value defined in 6.2.5.3 for cylinders, tubes, pressure drums and bundles of cylinders and for tanks the value of s defined in 6.8.2.1.16.

Amend 6.8.3.1.6, as follows:

6.8.3.1.6 **(Deleted)**

(Reserved)

NOTE: This provision is superseded by WE1 defined in 7.1.2.2.

~~Tank wagons and battery wagons shall be fitted with buffers with a minimum energy absorption capacity of 70 kJ. This provision does not apply to tank wagons and battery wagons fitted with energy absorption elements in accordance with the definition in 6.8.4, special provision TE 22.~~

Delete TE 16, as follows:

TE 16 **(Deleted)**

(Reserved)

Replace current TE 22 by the following text:

TE 22 **(Deleted)**

(Reserved)

Note: Former TE 22 is superseded by WE 2 defined in 7.1.2.2.

Replace current TE 25 by the following text:

TE 25 **In order to reduce the extent of damage to the tank in the event of an impact affecting the tank-wagon or if the tank-wagon is involved in a collision, the tank of the tank-wagon shall be equipped with one of the following measures:** (Reserved)

a) ~~_____ (Deleted)~~

Note: Former TE 25 a) is superseded by WE 3 defined in 7.1.2.2.

~~**Measures to limit damage when buffers override**~~

b) Increasing the tank ends resistance

Increasing The wall thickness of the tank ends **shall be increased** or **using shall use** other materials with a greater energy absorption capacity.

In this case, the wall thickness of the tank ends

shall be at least 12 mm.

However, the wall thickness of the ends of tanks 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 in this case be at least 18 mm.

c) ~~Sandwich cover for tank ends~~ Protecting the tank ends by a sandwich cover

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), which shall be measured in accordance with the method described in Annex B to EN standard 13094 "Tanks for the transport of dangerous goods – Metallic tanks with a working pressure not exceeding 0.5 bar – Design and construction". If the risk of corrosion cannot be eliminated by structural

measures, it shall be made possible to undertake an inspection of the external wall of the tank end, e.g. by providing a removable cover.

d) (Deleted)

Note: Former TE 25 d) is superseded by WE 3 defined in 7.1.2.2.

e) (Deleted)

Note: Former TE 25 e) is superseded by WE 3 defined in 7.1.2.2.

NOTE: If the wagon is protected with equipment preventing or limiting the effects of overriding which conforms to wagon equipment code WE 3 as defined in 7.1.2.2, then TE 25 b) and TE 25 c) are not mandatory.

In Chapter 7.1, add a new second paragraph to 7.1.1, as follows:

Wagons shall be built taking into account the following high-level safety objectives for the protection of the substance carried.

And amend the current second paragraph as follows:

Columns **(14)**, (16), (17) and (18) of Table A of Chapter 3.2 show the particular provisions of this Part that apply to specific dangerous goods.

~~NOTE: Wagons are allowed to be equipped with detection devices which indicate or react to the occurrence of a derailment, provided that the requirements for the authorisation for placing into service of such wagons are met. The requirements for placing into service of wagons cannot prohibit or impose the use of such detection devices. The circulation of wagons shall not be restricted on the grounds of the presence or lack of such devices.~~

Add a new 7.1.2, as follows:

7.1.2 High-level safety objectives

Wagons shall fulfil the high-level safety objectives and the associated applicable requirements of this section.

The requirements below are met if

- **the assessing entity in charge of verifying compliance with UTP WAG;**
or
- **the notified body in charge of verifying compliance with the applicable version of the technical specification for interoperability (TSI) relating to the subsystem "rolling stock – freight wagons" of the rail system in the European Union;**

has successfully evaluated compliance with the applicable version of the UTP or TSI mentioned above, as applicable, and has confirmed this compliance by the required certificates.

7.1.2.1 Construction requirements for wagons

7.1.2.1.1 Tank-wagons and battery-wagons shall withstand the normal rail operational stresses.

These wagons shall be constructed taking into account the maximum stresses which occur during normal carriage operation by rail, under the maximum permissible load, so as to ensure the structural integrity of the fastenings between the wagon and the tank, or elements of a battery-wagon, mounted or fixed on it.

This provision is met if UTP WAG Appendix I, section A is complied with.

7.1.2.1.2 (reserved).

7.1.2.1.3 Wagons shall be compatible with the characteristics of the areas in which they are intended to be operated in order to prevent risks related with the substances carried (for example, in the case of operation within explosive atmospheres).

This provision is met if UTP WAG, Appendix I, section C is complied with.

7.1.2.1.4 Tank-wagons shall be built and equipped in such a way that the impact of collisions that produce stresses exceeding those that occur during normal operating conditions is limited.

This provision is met if UTP WAG, Appendix I, section D is complied with.

7.1.2.1.5 Tank-wagons for the carriage of specific dangerous goods shall be equipped with devices preventing or limiting the effects of overriding.

This provision is met if RID 6.8.4 or UTP WAG, Appendix I, section E, or both, is/are complied with.

7.1.2.1.6 Wagons may be equipped with optional devices

- a) **limiting the consequences of a derailment;**

NOTE: If applied, such a system shall conform to the requirements of UTP WAG, Appendix I, section – F.1

- b) **preventing the occurrence of a derailment;**

NOTE: If applied, such a system shall conform to the requirements of UTP WAG, Appendix I, section – F.2

7.1.2.2 Special provisions for wagon equipment

Wagons equipped with special provisions for wagon equipment conforming to a WE code shall comply with the specification of those equipments as defined in uniform technical prescription (UTP wagon) within the COTIF or equivalent technical specification applicable in accordance with the Union legislation.

NOTE: Wagons equipped with additional wagon equipments conforming to a WE code in accordance with 7.1.2.2 but which are not required in Column (14) of Table A in Chapter 3.2 may also be used

When an alphanumeric code beginning with the letter “WE” is shown in column (14) of Table A of Chapter 3.2, the following special provisions apply:

WE 1 The tank-wagon and battery-wagon shall be equipped with energy absorption system(s) which conform to the requirements of UTP WAG, Appendix I, section D.1.
This provision does not apply to wagons fitted with absorption elements in accordance with WE 2.

WE 2 The tank-wagon and battery-wagon shall be equipped with energy absorption system(s) which conform to the requirements of UTP WAG, Appendix I, section D.2.

WE 3 The tank-wagon shall be equipped with a system preventing it from overriding onto other wagons, which conform to the requirements of UTP WAG, Appendix I, section E.1

OR

The tank-wagon shall be equipped with a system limiting the impacts from another wagon overriding on it. This system shall conform to the requirements of UTP WAG, Appendix I, section E.2

If the tank of the tank-wagon is protected by TE25 b) or TE25 c) or by both measures, WE 3 is not mandatory.

WE 4 **The wagon may be equipped with a system limiting the consequences of its derailment, when it occurs. If used, this equipment shall conform to the requirements of UTP WAG, Appendix I, section F.1**

WE 5 **The wagon may be equipped with a system preventing its derailment. If used, this equipment shall conform to the requirements of UTP WAG, Appendix I, section F.2**

7.1.2.3 Wagon Marking

[When a wagon complies with WE 1, WE 2, WE 3, WE 4 or WE 5, the corresponding alphanumeric codes shall be marked on both sides of the wagon.

Note: For tank-wagons, see also 6.8.2.5.2]

Annex II: Proposed amendments to TSI WAG (to be transposed in UTP)

Amendments to core TSI part

The following row shall be added at the end of row 1 of Table 1:

4.2.7	Specific requirements for wagons in the scope of Chapter 7.1 of RID	1.1.1 1.1.3 1.1.4				
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The following clause shall be added after clause 4.2.6:

‘4.2.7 Specific requirements for wagons in the scope of Chapter 7.1 of RID

Wagons in the scope of Chapter 7.1 of RID shall fulfil the requirements set out in Appendix I.’

The following text shall be added at the end of clause 4.8 ‘Parameters to be recorded in the technical file and European register of authorised types of vehicles’:

- *‘The compliance with wagon equipment requirement WE as defined in 7.1.2.2 of RID*
- *The compliance with 7.1.2.1.1 to 7.1.2.1.6 of RID’*

New Appendix I

The following appendix shall be added after Appendix H:

‘Appendix I – Specific requirements for wagons intended for transport of dangerous goods

This Appendix applies to units in the scope of Chapter 7.1 of RID and is intended to be considered in conjunction with RID.

Dangerous goods are defined in 1.2.1 of RID.

Wagon in the context of this appendix should be understood as ‘wagon’ as defined in 1.2.1 of RID, which is the equivalent for ‘unit’ of this TSI.

Tank, tank-wagon and battery-wagon are specific wagons defined in 1.2.1 of RID.

Requirements D, E and F include the additional requirements to comply with Wagon Equipment (WE) set out in 7.1.2.2. of RID.

Requirements to comply with relevant provisions of RID

A) Requirements to comply with 7.1.2.1.1. of RID

In addition to the requirements set out in point 4.2.2.2 of this TSI, the load cases to be considered in the assessment of the strength of the tank and its fixing to the wagon shall consider the following:

- *Whether the maximum working pressure of the tank has been superimposed on the load cases*
- *The operating temperature range of the shell, and*
- *The minimum wall thickness of the shell in accordance with RID 6.8.2.1 and 6.8.3.1.*

'Text to be added in the Application Guide:

The operating temperature of the shell is defined in RID 6.8.2.1.8 as the temperature of the substance carried. Therefore, it is a different temperature range to the one defined in point 4.2.5 of this TSI.

Usually, the tanks are assessed to carry substances between – 20 °C to + 50 °C (see point 6.8.2.5.1 of RID). For this range, fixing of the tank to the wagon may not be impacted.'

B) Requirements to comply with 7.1.2.1.2 of RID (to be deleted from RID and TSI after standing working group in November)

The wagon must not be composed of uncoated wooden parts that may be in direct contact with the transported substance. (to be replaced by 'Not used')

C) Requirements to comply with 7.1.2.1.3 of RID

Any wagon intended to be used in potentially explosive atmospheres shall comply with a suitable level of protection which depends on the zones where such wagon is intended to be used.

The level of protection corresponding to the selected equipment group and equipment category set out in Table 5 of Directive 2014/34/EU for which the wagon is assessed shall be reported in the wagon technical file.

For the TSI Wagon Application Guide:

The Directive 2014/34/EU requires a level of protection which has to comply with the zone in which the equipment is intended to be used.

The definition of the zones is set out in Directive 1999/92/EC.

Further information on the application of these Directives is available in the following link:

<https://ec.europa.eu/docsroom/documents/52840>

D) Requirements to comply with 7.1.2.1.4 of RID

Tank-wagons intended for the carriage of dangerous goods shall be built and equipped in such a way that the impact of collisions that produce stresses exceeding those that occur during normal operating conditions as defined in the specification referenced in Appendix D Index [1].

INF. 1

Construction requirement

The minimum distance between the headstock plane and the most protruding point at the shell extremity on tank-wagons shall be at least 300 mm.

This requirement does not apply to tank-wagons equipped with a central end automatic coupler in accordance with point E.1.2 of this appendix.

Wagon Equipment

This section covers the requirements for WE 1 (D.1) and WE 2 (D.2) in accordance with the provisions of RID.

D.1

Wagons for which code WE 1 is required¹ shall be fitted with devices limiting the impact of collision. These devices shall be capable of absorbing energy by means of elastic deformation of defined components of the subframe

The minimum elastic deformation for which the wagon has been assessed shall be recorded in the technical file.

The dynamic energy capacity and assessment procedure depend on the coupler type as specified below:

D.1.1. - Wagons fitted with manual UIC end coupling system

Minimum dynamic energy capacity: 70 kJ per buffer.

The requirements of this special provision are deemed to be met by fitting Category C buffers as defined in the specification referenced in Appendix D Index [32].

This provision does not apply to wagons fitted with absorption elements in accordance with D.2.1.

D.1.2 - Wagons fitted with a central end automatic coupler

Minimum dynamic energy capacity: 140 kJ per coupler.

This provision does not apply to wagons fitted with absorption elements in accordance with D.2.2.

D.2

Wagons for which code WE 2 is required shall be fitted with devices limiting the impact of collision. These devices shall be capable of absorbing energy by means of elastic or plastic deformation of defined components of the subframe or by means of a similar procedure (e.g. crash elements).

Both the minimum elastic and plastic deformation capacity for which the wagon has been assessed shall be recorded in the technical file.

The total energy absorption capacity and assessment procedure depend on the coupler type as specified below:

¹ These are tank-wagons intended to carry gases

D.2.1. - Wagons fitted with manual UIC end coupling system

Minimum dynamic energy capacity: 30 kJ per buffer.

Minimum total energy absorption capacity (reversible and irreversible): 400 kJ per buffer.

The requirements of this special provision are deemed to be met by fitting Category AX buffers as defined in the specification referenced in Appendix D Index [32].

D.2.2 - Wagons fitted with a central end automatic coupler

Minimum dynamic energy capacity: 75 kJ per coupler.

Minimum total energy absorption capacity (reversible and irreversible): 675 kJ per coupler.

E) Requirements to comply with 7.1.2.1.5 of RIDWagon equipment

This section covers requirements for WE 3 in accordance with the provisions of RID.

E.1 - Prevention of wagon overridingE.1.1 - Wagons fitted with manual UIC coupling system

The wagon shall be protected against the overriding of buffers by equipment that:

- withstands a vertical force (upwards or downwards) of 150 kN.
- is designed and assessed in such a way that it can prevent the overriding even if the wagon equipment is fitted on only one of the colliding wagons.
- does not increase the overhang for fixing the wagon equipment by more than 20 mm.
- has a width that is at least as big as the width of the buffer head (except for the wagon equipment to protect against the overriding of buffers located above the left-hand footboard, which shall be tangent to the free space for the shunter, although the maximum width of the buffer must be covered).
- is located above every buffer.
- is built in such a way that the risk of penetration of the tank end is not increased in the event of a shock.

E.1.2 - Wagons using a central end automatic coupler

It shall be demonstrated that the central end automatic coupler prevents overriding by remaining in a coupled position and by remaining fixed to the coupled wagons when one side of the coupler is subject to a vertical force of 150 kN transmitted by the wagon upward and downward while the other part of the coupler is maintained in a fixed position.

If this requirement cannot be met, then the consequences of overriding shall be limited by fitting a protective shield at each end of the wagon in accordance with the specification set out in point E.2.2.

For inclusion in TSI Application Guide:

CEN WG 33 is working on a specification for the assessment of the requirement above.

For inclusion in TSI Final accompanying report:

Additional information on 'domino effect' is foreseen by Autumn 2023.

E.2 - Wagon equipment limiting the impact from an overriding wagon on the substances being carried when overriding occurs

E.2.1 - Wagons using manual UIC end coupling system

The wagon shall be equipped with a protective shield at each end of the wagon to limit the consequence of overriding buffers.

The width of the protective shield shall:

- *be at least as wide as the distance defined by the outside edge of the buffer heads and*
- *cover the width of the tank.*

The height of the protective shield, measured from the top edge of the headstock, shall cover

- *either two thirds of the tank diameter or*
- *at least 900 mm and shall in addition be equipped at the top edge with an arresting device for climbing buffers.*

A protective shield made of mild steel or reference steel with a minimum wall thickness of 6 mm provides presumption of conformity.

Reference steel means a steel with a tensile strength of 370 N/mm² and an elongation at fracture of 27%.

Mild steel means a steel with a tensile strength between 360 N/mm² and 490 N/mm² and an elongation at fracture in % not less than:

$$\frac{10000}{(\text{tensile strength in N/mm}^2)}$$

If other materials are used, the equivalent thickness shall be calculated in accordance with the following formula:

$$\text{equivalent thickness} = 6 \frac{464}{\sqrt[3]{(Rm1 A1)^2}}$$

Where Rm1 is the tensile strength of the intended material and A1 is the elongation at fracture of the intended material.

The values of Rm1 and A1 to be used shall be the specified minimum values in the standards defining the material properties.

The protective shield shall be shaped and attached in such a way that the possibility of the tank ends being penetrated by the protective shield itself is minimized.

E.2.2 - Wagons using central coupling other than central end automatic coupler not fulfilling the point E.1.2.

The wagon shall be equipped with a protective shield at each end of the wagon.

In this case, the protective shield shall cover the tank end to a height of at least 1100 mm, measured from the top edge of the headstock, the couplers shall be fitted with anticreep devices to prevent unintentional uncoupling and the protective shield shall be at least 1200 mm wide over the entire height of the shield.

A protective shield made of mild steel or reference steel as defined in E.2.1 with a wall thickness of 12 mm provides presumption of conformity.

If other materials are used, the equivalent thickness shall be calculated in accordance with the following formula:

$$\text{equivalent thickness} = 12 \frac{464}{\sqrt[3]{(Rm1 A1)^2}}$$

Where Rm1 is the tensile strength of the intended material and A1 is the elongation fracture of the intended material.

The values of Rm1 and A1 to be used shall be the specified minimum values in the standards defining the material properties.

The protective shield shall be shaped and attached in such a way that the possibility of the tank ends being penetrated by the protective shield itself is minimized.

F) Requirements to comply with 7.1.2.1.6 of RID

Wagon equipment

This section covers requirements for WE 4 and WE 5 in accordance with RID provisions.

F.1

Compliance with point 4.2.3.5.3.3 or 4.2.3.5.3.4 of this TSI is deemed sufficient to meet WE 4 requirements.

F.2

Compliance with point 4.2.3.5.3.2 of this TSI is deemed sufficient to meet WE 5 requirements.'

Amendments in TSI Appendix D

The Following row shall be added in the Table of Appendix D below index [1.5]:

[1.6]	Normal operating conditions	Appendix I, point D	Clause 8
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The following row shall be added in the Table of Appendix D below index [1.6]:

[32.2]	Category C buffers	Appendix I, point D.1.2	4 (except 4.3), 5, 6 (except 6.2.2.3, An- nex E.4 and Annex I)
[32.3]	Category AX buffers	Appendix I, point D.2.1	4 (except 4.3), 5, 6 (except 6.2.2.3 and E.4) and 7