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# DRAFT RECOMMENDATION ERA 1175-2 OF THE EUROPEAN UNION AGENCY FOR RAILWAYS

on

*The transfer of requirements from RID to TSI WAG*

## Annex 1 – TSI WAG

1. The following text shall be added at the end of point 2.2:

‘(d) ‘RID’: Regulations concerning the International Carriage of Dangerous Goods by Rail, as defined in Article 2 (2) of Directive 2008/68/EC.’

2. The following row shall be added at the end 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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3. The following point shall be added after point 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.’

4. The following text shall be added at the end of point 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’

5. The following row shall be added in the Table A.2 of Appendix A:

TSI point(s)	TSI points(s) in previous TSI	Explanation on TSI change	Transition regime		
			Design phase started	Production phase	units in operation
4.2.7	Not applicable new point	Transfer of wagon requirements from RID to TSI	1st Jan 2025 (or date of e.i.f. of RID 2025)	Not applicable	Not applicable

6. 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.

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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.

#### **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 zones referred to above are defined in Directive 1999/92/EC<sup>1</sup>.

The level of protection corresponding to the selected equipment group and equipment category is set out in Directive 2014/34/EU<sup>2</sup>. The level of protection for which the wagon is assessed shall be reported in the wagon's technical file.

#### **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

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<sup>1</sup> Directive 1999/92/EC of the European Parliament and of the Council of 16 December 1999 on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres (15th individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) - Official Journal L 023 , 28/01/2000 P. 0057 - 0064

<sup>2</sup> Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres (recast) - OJ L 96, 29.3.2014, p. 309–356

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conditions as defined in the specification referenced in Appendix D Index [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 point 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 required<sup>3</sup> 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

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<sup>3</sup> These are tank-wagons intended to carry gases

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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:

#### 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 RID**

#### Wagon equipment

The fulfilment of section E.1 or E.2 below covers requirements for WE 3 in accordance with the provisions of RID.<sup>4</sup>

#### **E.1 - Prevention of wagon overriding**

##### E.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;

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<sup>4</sup> If the tank of the tank-wagon fulfils TE25 b) or TE25 c) of RID, WE.3 is not mandatory. The provisions of the tank are covered by RID and therefore they are outside of the scope of this TSI.

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- 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.

### **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.

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Reference steel means a steel with a tensile strength of 370 N/mm<sup>2</sup> and an elongation at fracture of 27%.

Mild steel means a steel with a tensile strength between 360 N/mm<sup>2</sup> and 490 N/mm<sup>2</sup> 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

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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.'

7. 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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8. 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, Annex E.4 and Annex I)
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[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
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9. The following row shall be added at the end of the Table F.1. of Appendix F:

Specific requirements for wagons in the scope of Chapter 7.1 of RID	4.2.7				
Appendix I	A to F	X	X	n.a.	