



**INF. 13**

23 August 2017

(English and German only)

## **RID/ADR/ADN**

Joint Meeting of the RID Committee of Experts and the Working Party on the Transport of Dangerous Goods (Geneva, 19 - 29 September 2017)

### **Agenda item 2: Tanks**

#### **Use of austenitic-ferritic stainless steels (DUPLEX steels) in accordance with EN 10028-7:2008-02 for the construction of tanks in accordance with 6.8.5 of RID/ADR**

#### **Submitted by Germany**

### **SUMMARY**

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| <b><i>Executive Summary:</i></b>    | Use of austenitic-ferritic stainless steels for tanks in accordance with Chapter 6.8 of RID/ADR for which a test pressure of not less than 10 bar is required. |
| <b><i>Decision to be taken:</i></b> | Amendment of 6.8.5.1.2 and 6.8.5.2.1 of RID/ADR.   |
| <b><i>Related documents:</i></b>    | None.  |

## **Introduction**

1. The general requirements for materials for the construction of tanks are defined in 6.8.2.1.8 to 6.8.2.1.16 and are mandatory.

In accordance with the "Special provisions applicable to Class 2" in 6.8.3, tanks for the transport of compressed, liquefied or dissolved gases have to be made of steel. In addition, reference is made to the additional requirements for welded tanks in 6.8.5.

2. 6.8.5 contains special requirements concerning the material of welded tanks for which a test pressure of not less than 10 bar (1.0 MPa) is required as well as concerning the material of fixed welded tanks, demountable welded tanks and welded shells of tank-containers (ADR) as well as of shells of tank-wagons and tank-containers (RID) intended for the carriage of refrigerated liquefied gases of Class 2.

The steel materials to be used are defined in 6.8.5.1.2 (a) first to fourth indent. Further requirements can be found in 6.8.5.2 of RID/ADR. This is an exhaustive list of possible tank materials, although austenitic-ferritic stainless steels are not explicitly mentioned.

3. Therefore, in accordance with the applicable requirements of 6.8.2 of RID/ADR, tanks with a test pressure of less than 10 bar may be constructed of austenitic-ferritic stainless steels, but not tanks with a test pressure of more than 10 bar.

Thus, the only criterion for application for austenitic-ferritic stainless steels is the test pressure. Material parameters and product compatibility are no criteria for application.

### Proposal

4. Add the following indent to 6.8.5.1.2 (a) of RID/ADR:

"– **Austenitic-ferritic stainless steels, up to a temperature of -40 °C**".

5. As austenitic-ferritic stainless steels are included in 6.8.5.1.2 (a), they also have to be added to the second indent of 6.8.5.2.1:

"– The minimum impact strength (see 6.8.5.3.1 to 6.8.5.3.3) for test-pieces with the longitudinal axis at right angles to the direction of rolling and a V-shaped notch (conforming to ISO R 148) perpendicular to the plate surface, shall be 34 J/cm<sup>2</sup> for mild steel (which, because of existing ISO standards, may be tested with test-pieces having the longitudinal axis in the direction of rolling); fine-grained steel; ferritic alloy steel Ni < 5 %, ferritic alloy steel 5 % ≤ Ni ≤ 9%; **or** austenitic Cr - Ni steel, **or austenitic-ferritic stainless steel.**"

### Justification

6. By adhering to the material requirements in accordance with 6.8.2, 6.8.3 and 6.8.5 of RID/ADR, with regard to safety, there is no objection to using austenitic-ferritic stainless steels also for shells for which a test pressure of not less than 10 bar is required.

### Note:

Additional material requirements for austenitic-ferritic stainless steels are not necessary since the general requirements regarding

- elongation at fracture of at least 20%,
- good weldability and
- material resistance

apply to them as well.

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