

Economic Commission for Europe

Inland Transport Committee

Working Party on the Transport of Dangerous Goods

Joint Meeting of the RID Committee of Experts and the
Working Party on the Transport of Dangerous Goods
Bern, 18–22 March 2013
Item 2 of the provisional agenda
Tanks

18 February 2013

Carriage of refrigerated liquefied gases in portable tanks

Transmitted by the Government of Norway

Introduction

1. Some Norwegian carriers of liquefied natural gas (LNG) have expressed their intention to use portable tanks in combined transport where the major part of the journey is by rail and any initial and/or final transportation is carried out by road. For **UN 1972 METHANE, REFRIGERATED LIQUID or NATURAL GAS, COMPRESSED**, carriage in portable tanks (T75) and ADR/RID tanks (RxBN) is permitted according to Table A of Chapter 3.2.

2. Furthermore, the carriers intend to mount hydraulic pumps to the container chassis. The pumps are supposed to stay disconnected from the tank during transportation. They also intend to equip the tanks with surge plates to make distribution possible on the route. From existing regulations it is not entirely clear if this modification and use of the tank are permitted according to ADR/RID.

Design and type approval of portable tank

3. Portable tanks for refrigerated liquefied gases are assigned to portable tank instruction T75. Design, construction and testing requirements are detailed in 6.7.4 and general provisions for use are given in ADR/RID chapter 4.2.3. Special provisions for each substance are given in Column (11) of Table A of Chapter 3.2 and described in 4.2.5.3. In addition to the requirements in chapter 6.7, unless otherwise specified, the applicable requirements of the International Convention for Safe Containers (CSC) 1972, as amended, shall be fulfilled by any multimodal portable tank which meets the definition of a container within the terms of that convention (6.7.1.1).

4. For refrigerated liquefied gases carried in portable tanks there are no general provisions related to division of the shell by partitions or surge plates. For substances of class 1 and 3 to 9 carried in portable tanks there is a general provision that portable tanks shall not be offered for carriage with a degree of filling of more than 20% but less than 80% unless the shells are divided, by partitions or surge plates, into sections of not more than 7500 litres capacity (4.2.1.9.6). This provision is also applicable to all classes for shells intended for carriage of substances (liquid state or liquefied gases or refrigerated liquefied gases) when carried in ADR/RID tanks (4.3.2.2.4). However, for refrigerated liquefied gases carried in portable tanks the restriction only states following: "Portable tanks shall not

be offered for carriage in an ullage condition liable to produce an unacceptable hydraulic force due to surge within the shell” (4.2.3.8 a).

5. Further, partitions or surge plates are not mentioned in chapter 6.7.4 where design, construction and testing requirements are detailed for portable tanks intended for the carriage of refrigerated liquefied gases. However, for portable tanks carrying substances class 1 and 3 to 9 there are requirements for marking the capacity of each compartment followed by the symbol “S” when the compartment is divided by surge plates into sections of not more than 7500 litres capacity (6.7.2.20.1).

6. Any new design of portable tanks requires a design approval certificate. However, according to the Manual of Test and Criteria, Part IV, Section 41, valid for portable tanks and MEGC meeting the definition of “container” in the International Convention for Safe Containers (CSC), some variations in container design from an already tested prototype are permitted without additional testing. There is no reference to surge plates for portable tanks. For ADR/RID tanks, a type approval may serve for the approval of tanks with limited variations of the design (6.8.2.3). Variations that either reduce the loads and stresses on the tanks or increase the safety of the structure (e.g. more surge-plates) are permitted (6.8.2.3.2).

7. Norway would like to invite other delegates for comments. Can surge plates be added to portable tanks T75? And in that case, how will that influence the type approval?

(Portable tank instruction T75 is missing in ADR 2013. Corrigendum made in ECE/TRANS/225, Vol. I and II)

Use of portable tanks

8. In the definition of a “portable tank” in 6.7.4.1 it is stated that a portable tank shall be designed primarily to be loaded onto a vehicle, wagon, or sea-going or inland navigation vessel.

9. In the definition of a “container” in the International Convention for Safe Containers (CSC) 1972 as amended, it is included, as parts of the definition, that a “container” means an article of transport equipment:

of a permanent character and accordingly strong enough to be suitable for repeated use;

specially designed to facilitate the transport of goods, by one or more modes of transport, without intermediate reloading;

Almost the same formulation as in CSC is found in ADR/RID chapter 1.2 under the definition of a “container”:

“Container” means an article of transport equipment (lift van or other similar structure):

of a permanent character and accordingly strong enough to be suitable for repeated use;

specially designed to facilitate the carriage of goods, by one or more means of transport, without breakage of load;

(The complete definition of a “container” given in ADR/RID and CSC is in Annex 1.)

Is a portable tank an article of transport equipment meeting the definition of a “container” given in ADR/RID and CSC? In that case, should this have been included in the definition of a portable tank in Chapter 6.7.2.1, 6.7.3.1 and 6.7.4.1?

What are the correct interpretations of “transport of goods without intermediate reloading” and “transport without breakage of load”? Does this mean that portable tanks have to be

unloaded to a single consignee? Or does ADR/RID allow unloading from the same tank to multiple consignees?

10. As mentioned in the introduction LNG distributors intend to mount hydraulic pumps on the container chassis (no connections to this unit during the transport) and add surge-plates to the portable tanks. Hence, it will be possible to apply portable tanks in the same manner as tank-vehicles for delivery sale provided the provisions in subsection 4.2.3 are met (acceptable ullage conditions, actual holding time for each journey etc). Does ADR/RID allow this use of a portable tank?

We hope Joint Meeting can help us clarify this issue.

Annex 1

International Convention for Safe Containers (CSC) 1972 as amended	ADR/RID Chapter 1.2
<p>"Container" means an article of transport equipment:</p> <ul style="list-style-type: none"> (a) of a permanent character and accordingly strong enough to be suitable for repeated use; (b) specially designed to facilitate the transport of goods, by one or more modes of transport, without intermediate reloading; (c) designed to be secured and/or readily handled, having corner fittings for these purposes; (d) of a size such that the area enclosed by the four outer bottom corners is either: <ul style="list-style-type: none"> (i) at least 14 sq. m. (150 sq. ft.) or (ii) at least 7 sq. m. (75 sq. ft.) if it is fitted with top corner fittings; <p>The term "container" includes neither vehicles nor packaging; however, containers when carried on chassis are included.</p>	<p><i>"Container"</i> means an article of transport equipment (lift van or other similar structure):</p> <ul style="list-style-type: none"> – of a permanent character and accordingly strong enough to be suitable for repeated use; – specially designed to facilitate the carriage of goods, by one or more means of transport, without breakage of load; – fitted with devices permitting its ready stowage and handling, particularly when being transloaded from one means of transport to another; – so designed as to be easy to fill and empty; – having an internal volume of not less than 1 m³, except for containers for the carriage of radioactive material. <p>In addition:</p> <p><i>"Large container"</i> means</p> <ul style="list-style-type: none"> (a) A container which does not meet the definition of a small container (b) In the meaning of the CSC, a container of a size such that the area enclosed by the four outer bottom corners is either <ul style="list-style-type: none"> (i) at least 14 m² (150 square feet); or (ii) at least 7 m² (75 square feet) if fitted with top corner fittings;