



# Economic and Social Council

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## 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

Berne, 25-28 March 2024

Item 5 (b) of the provisional agenda

#### Proposals for amendments to RID/ADR/ADN: new proposals

## Pressure receptacles that are constructed in accordance with EN 17339

Transmitted by the European Cylinder Makers Association (ECMA)\*,\*\*

### Introduction

1. Pressure receptacles particularly for high pressures have evolved from a single one-piece metallic pressure receptacle into pressure receptacles that can have a non-metallic liner either plastic or welded metal with a composite material overwrap. These cylinders are referred to as type 4 pressure receptacles. They are a fully wrapped pressure receptacle with a non-load sharing liner and composite reinforcement on both the cylindrical portion and the dome ends.
2. Standards for type 4 pressure receptacles have been developed and these are incorporated into Chapter 6.2 of the RID/ADR.
3. Type 4 pressure receptacles can be elements for both battery-wagons/battery-vehicles and multiple element gas containers. Due to the nature of the construction of these pressure receptacles there are additional requirements that need to be applied when the pressure receptacles are carried for assembly, maintenance, or disposal. Some manufacturers require a minimum pressure be maintained during carriage which could be at least five bar and possibly up to 20 bar. The reason for this is to ensure that the liner of the pressure receptacle does not separate from the wrapping during carriage.
4. Whilst transporting most pressure receptacles for assembly or maintenance can be accommodated within the RID/ADR there is a specific issue that needs to be addressed for type 4 pressure receptacles constructed in accordance with EN 17339, *Transportable gas cylinders. Fully wrapped carbon composite cylinders and tubes for hydrogen*.

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\* A/78/6 (Sect.20), table 20.5.

\*\* Circulated by the Intergovernmental Organisation for International Carriage by Rail (OTIF) under the symbol OTIF/RID/RC/2024/19.



5. Pressure receptacles constructed in accordance with EN 17339 are specifically approved for the carriage of UN 1049 HYDROGEN COMPRESSED. Following construction, the pressure receptacle is usually moved to a third party for incorporation into a battery-wagon/battery-vehicle or a multiple-element gas container (MEGC).

6. Whilst pressure receptacles constructed in accordance with EN 17339 are intended for the carriage of UN 1049 Hydrogen compressed, the pressure receptacle is filled with UN 1002 Air compressed or UN 1066 Nitrogen compressed or UN 1956 Compressed gas, n.o.s. during transport for assembly, maintenance, or disposal. The reason UN 1956 is included as it is possible that a pressure vessel has been tested using hydrogen and whilst the pressure vessel will have been evacuated and filled with a nitrogen there could be small traces of hydrogen remaining hence the request to include UN 1956. This is to ensure for reasons of safety that during these activities a non-flammable atmosphere is maintained.

7. The situation identified in paragraph 6. means that the pressure receptacles whilst approved for the carriage of UN 1049 Hydrogen compressed, could be carrying UN 1002 Air compressed or UN 1066 Nitrogen compressed or UN 1956 Compressed Gas, n.o.s. Whilst this is not considered unsafe there is a need to ensure the carriage is carried out in accordance with the regulations.

8. The exemptions related to the carriage of gases (see 1.1.3.2 (c)) have a limit of 200 kPa (2 bar) and it is considered that to increase this would not be practical as it could exempt the carriage of many gases from the regulations.

## Proposal

9. To be able to move pressure receptacles that are constructed in accordance with EN 17339 either as individual pressure receptacles or as elements of a battery-wagon/battery-vehicle or an MEGC when filled with UN 1002 Air compressed or UN 1066 Nitrogen compressed or UN 1956 Compressed gas, n.o.s. a new special provision is proposed:

"xxx Pressure receptacles made to EN 17339, *Transportable gas cylinders. Fully wrapped carbon composite cylinders and tubes for hydrogen* intended for the carriage of UN 1049, HYDROGEN COMPRESSED may be carried for the purpose of assembly, maintenance, or disposal with up to 20 bar of UN 1002 AIR COMPRESSED or UN 1066 NITROGEN COMPRESSED or UN 1956 COMPRESSED GAS, N.O.S. provided each pressure receptacle is marked in accordance with 5.2.1 and labelled in accordance with 5.2.2.

Closures of pressure receptacles shall be protected during carriage.

Where battery-wagons/battery-vehicles and multiple-element gas containers constructed with pressure receptacles made to EN 17339 for the carriage of UN 1049 HYDROGEN COMPRESSED they may be carried for the purpose of assembly, maintenance or disposal with UN 1002 AIR COMPRESSED or UN 1066 NITROGEN COMPRESSED or UN 1956 COMPRESSED GAS, N.O.S. provided that the battery-wagon/battery-vehicle or MEGC is placarded in accordance with 5.3.1.

The transport document shall include the following statement: "Carriage in accordance with special provision xxx".

In Chapter 3.2, Table A for UN Nos. 1002, 1066 and 1956, insert "xxx" in column (6).

## Justification

10. This special provision will permit the carriage of pressure receptacles constructed in accordance with EN 17339 and battery-wagons/battery-vehicles and MEGC incorporating elements constructed to EN 17339 to be carried for the purpose of assembly, maintenance or disposal whilst containing either UN 1002 AIR COMPRESSED or UN 1066 NITROGEN COMPRESSED or UN 1956 COMPRESSED GAS, N.O.S.

## **Safety Implications**

11. None foreseen.
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