

**ECONOMIC COMMISSION FOR EUROPE****INLAND TRANSPORT COMMITTEE****Working Party on the Transport of Dangerous Goods****Joint Meeting of the RID Safety Committee and the  
Working Party on the Transport of Dangerous Goods  
(Bonn, 13-17 October 2003, agenda item 2)****Proposal to amend 4.1.6****Transmitted by the European Industrial Gas Association (EIGA)****Report of the Working Group considering Inf.35**

1. After discussion on the scope of 4.1.6, it was agreed to change the title to clarify that substances listed in table 3 of the P200 were also included. A note was also added to refer the reader to 4.1.4.4 for substances of other classes which are carried in pressure receptacles.
2. Standard terminology was adopted changing transport to carriage and provisions to requirements as necessary.
3. It was noted that UN and ISO had adopted the terminology 'porous mass' whereas ADR/RID had used 'porous material' for the porous substance inside acetylene cylinders. The Working Group requested that the Secretariats align the terminology to the UN and use 'porous mass' instead of 'porous material' throughout the regulations.
4. The words '(see also table at the end of this section)' were inserted at the place where the standard reference had been deleted instead of at the end of the paragraph.
5. The requirements of the first sentence of 4.1.6.4 in the UN text are expressed more clearly and generally in the current ADR/RID 4.1.6.2 and the Working Group agreed to adopt the ADR/RID text.
6. In 4.1.6.5 the word 'filler' was replaced by 'packer' and 'shipper' was replaced by 'consignor' to align with the definitions in ADR/RID. The order of the two notes was reversed to bring the former Note 2 adjacent to the text which the note explains.
7. The UN text of 4.1.6.5 uses both 'ensure' and 'verify' which creates difficulty in translation. The text was unchanged, but EIGA will request clarification of the meaning and standardisation of the wording at the UN.
8. The meaning of 4.1.6.7 was clarified by changing 'an outer packaging' to 'one outer packaging'.
9. Detail corrections were made to 4.1.6.8 to correct an error in the transcription of the UN text; make the order of the forms of protection more logical and to clarify meaning by changing 'e.g. bundles' to 'e.g. cylinders in bundles'.
10. Switzerland objected to the text concerning periodic inspection which allowed carriage after the expiry of the time limit for periodic inspection. Switzerland did not accept the text agreed at the UN

and wanted to insert 'for the purpose of undergoing the inspection' to be added to the end of 4.1.6.10. The working group could not agree and the plenary is asked to make a decision on this issue.

11. The restriction on repairs on UN pressure receptacles which permits them only as indicated in the relevant periodic inspection standards was extended to all pressure receptacles.
12. EIGA's proposal to simplify 4.1.6.12 and 4.1.6.13 by replacing references to 'pressure receptacles' with 'receptacles' and thereby removing the need to mention open cryogenic receptacles, was accepted.
13. The Secretariat had provided text to address its concern that reference to standards did not make sufficiently clear that the ISO standards were mandatory for UN pressure receptacles. This text was adopted.

### **Proposal**

Replace the existing 4.1.6 with the following.

#### **4.1.6 Special packing provisions for goods of Class 2 and goods of other classes assigned to packing instruction P200**

*NOTE: For goods of other classes carried in pressure receptacles and assigned to packing instructions PR1 to PR7 see 4.1.4.4.*

4.1.6.1 This section provides general requirements applicable to the use of pressure receptacles and open cryogenic receptacles for the ~~transport carriage~~ of Class 2 gases and ~~other dangerous goods of other classes assigned to packing instruction P 200 that are transported in pressure receptacles~~ (e.g. UN 1051 hydrogen cyanide, stabilized). Pressure receptacles shall be constructed and closed so as to prevent any loss of contents which might be caused under normal conditions of ~~transport carriage~~, including by vibration, or by changes in temperature, humidity or pressure (resulting from change in altitude, for example).

4.1.6.2 Parts of pressure receptacles and open cryogenic receptacles which are in direct contact with dangerous goods shall not be affected or weakened by those dangerous goods and shall not cause a dangerous effect (e.g. catalysing a reaction or reacting with the dangerous goods) (see also table of standards at the end of this section). ~~The provisions of ISO 11114-1:1997 and ISO 11114-2:2000 shall be met as applicable.~~ Pressure receptacles for UN 1001 acetylene, dissolved, and UN 3374 acetylene, solvent free, shall be filled with a porous mass, uniformly distributed, of a type that conforms to the requirements and testing specified by the competent authority and which:

- (a) is compatible with the pressure receptacle and does not form harmful or dangerous compounds either with the acetylene or with the solvent in the case of UN 1001; and
- (b) is capable of preventing the spread of decomposition of the acetylene in the mass.

In the case of UN 1001, the solvent shall be compatible with the pressure receptacles.

~~[See also table of standards at the end of this section.]~~

- 4.1.6.3 Pressure receptacles ~~[and open cryogenic receptacles]~~, including their closures and open cryogenic receptacles, shall be selected to contain a gas or a mixture of gases according to the requirements of 6.2.1.2 and the requirements of the specific-relevant packing instructions of ~~section~~ 4.1.4.1. This section also applies to pressure receptacles which are elements of MEGCs and battery vehicles/battery wagons.
- 4.1.6.4 A change of use of a refillable receptacle shall include emptying, purging and evacuation operations to the extent necessary for safe operation (see also table of standards at the end of this section.) Refillable pressure receptacles [and open cryogenic receptacles] shall not be filled with a gas or gas mixture different from that previously contained unless the necessary operations for change of gas service have been performed. ~~The change of service for compressed and liquefied gases shall be in accordance with ISO 11621:1997, as applicable.~~ In addition, a pressure receptacle that previously contained a Class 8 corrosive substance or a substance of another class with a corrosive subsidiary risk shall not be authorized for the transport-carriage of a Class 2 substance unless the necessary inspection and testing as specified in 6.2.1.5 have been performed.
- ~~[See also table of standards at the end of this section.]~~
- 4.1.6.5 Prior to filling, the filler-packer shall perform an inspection of the pressure receptacle or open cryogenic receptacle and ensure that the pressure receptacle or open cryogenic receptacle is authorized for the gas-substance to be transported-carried and that the requirements provisions of these Model Regulations have been met. Shut-off valves shall be closed after filling and remain closed during transport-carriage. The shipper-consignor shall verify that the closures and equipment are not leaking.
- NOTE 1: Shut-off valves fitted to individual cylinders in bundles may be open during carriage, unless the substance carried is subject to special packing provision 'k' or 'q' in P200.*
- NOTE 2: Receptacles ready for shipment-consignment shall be marked and labelled according to the provisions set out in chapter 5.2.*
- 4.1.6.6 Pressure receptacles and open cryogenic receptacles shall be filled according to the working pressures, filling ratios and provisions specified in the appropriate packing instruction for the specific substance being filled. Reactive gases and gas mixtures shall be filled to a pressure such that if complete decomposition of the gas occurs, the working pressure of the pressure receptacle shall not be exceeded. Bundles of cylinders shall not be filled in excess of the lowest working pressure of any given cylinder in the bundle.
- 4.1.6.7 Pressure receptacles, including their closures, shall conform to the design, construction, inspection and testing requirements detailed in section-chapter 6.2. When outer packagings are prescribed, the pressure receptacles and open cryogenic receptacles shall be firmly secured therein. Unless otherwise specified in the detailed packing instructions, one or more inner packagings may be enclosed in an-one outer packaging.
- 4.1.6.8 Valves shall be designed and constructed in such a way that they are inherently able to withstand damage without leakage-of-product-release of the contents or shall be protected from damage which could cause inadvertent release of the contents of the pressure

receptacle, by one of the following methods ([see also table of standards at the end of this section](#)):

- (a) Valves are placed inside the neck of the pressure receptacle and protected by a threaded plug or cap;
- (b) Valves are protected by caps. Caps shall possess vent-holes of sufficient cross-sectional area to evacuate the gas if leakage occurs at the valves;
- (c) Valves are protected by shrouds or guards;
- (d) Valves are placed in a protective frame;
- (e) Pressure receptacles are carried in frames, (e.g. [cylinders in bundles](#)); or
- (f) Pressure receptacles are ~~transported~~ [carried](#) in protective boxes ~~an outer packaging. The packaging as prepared for transport shall be capable of meeting the drop tests specified in 6.1.5.3 at the packing group I performance level. UN requirement for packing group I is unnecessarily stringent for transport by road or rail. Protective boxes are an existing solution in ADR/RID 4.1.6.4(f)~~

~~For pressure receptacles with valves as described in (b) and (c), the requirements of ISO 11117:1998 shall be met; for valves with inherent protection, the requirements of annex B of ISO 10297:1999 shall be met.~~

~~[\[See also table of standards at the end of this section.\]](#)~~

4.1.6.9 Non-refillable pressure receptacles shall:

- (a) be ~~transported~~ [carried](#) in an outer packaging, such as a box or crate, or in shrink-wrapped or stretch-wrapped trays;
- (b) be of a water capacity less than or equal to 1.25 litres when filled with flammable or toxic gas;
- (c) not be used for toxic gases with an LC<sub>50</sub> less than or equal to 200 ml/m<sup>3</sup>; and
- (d) not be repaired after being put into service.

4.1.6.10 Refillable pressure receptacles shall be periodically inspected according to the provisions of 6.2.1.5 and packing instruction P200 or P203 as applicable. Pressure receptacles shall not be ~~charged or~~ filled after they become due for periodic inspection but may be ~~transported~~ [carried](#) after the expiry of the time-limit [\[for the purpose of undergoing the inspection\]](#).  
*The renumbering causes a consequential amendment in 5.4.1.2.2 (b), where 4.1.6.10 replaces 4.1.6.5 (twice).*

4.1.6.11 Repairs shall be consistent with the fabrication and testing requirements of the applicable design and construction standards and ~~[in the case of pressure receptacles bearing the UN mark]~~ are only permitted as indicated in the relevant periodic inspection standards specified in [chapter 6.2.5.5](#). Pressure receptacles, other than the jacket of closed ~~[or open]~~ cryogenic receptacles, shall not be subjected to repairs of any of the following;

- (a) weld cracks or other weld defects;
  - (b) cracks in walls;
  - (c) leaks or defects in the material of the wall, head or bottom.
- 4.1.6.12 ~~Pressure r~~ceptacles ~~[and open cryogenic receptacles]~~ shall not be offered for filling:
- (a) when damaged to such an extent that the integrity of the ~~pressure~~-receptacle or its service equipment may be affected;
  - (b) unless the ~~pressure~~-receptacle and its service equipment has been examined and found to be in good working order; and
  - (c) unless the required certification, retest, and filling markings are legible.
- 4.1.6.13 Filled ~~pressure~~-receptacles ~~[and open cryogenic receptacles]~~ shall not be offered for ~~transport~~carriage;
- (a) when leaking;
  - (b) when damaged to such an extent that the integrity of the ~~pressure~~-receptacle ~~[or open cryogenic receptacle]~~ or its service equipment may be affected;
  - (c) unless the ~~pressure~~-receptacle ~~[or open cryogenic receptacle]~~ and its service equipment has been examined and found to be in good working order; and
  - (d) unless the required certification, retest, and filling markings are legible.
- 4.1.6.14 For pressure receptacles bearing the UN mark, the ISO standards listed below shall be applied. For other receptacles, the requirements of section 4.1.6 are considered to have been complied with if the following standards, as relevant, are applied:  
~~Requirements of the following packing provisions are considered to have been complied with if the following standards, as relevant, are applied. Pressure receptacles bearing the UN mark shall conform to the ISO standards as applicable:~~

Applicable paragraphs	Reference	Title of document
4.1.6.2	ISO 11114-1:1997	Transportable gas cylinders – Compatibility of cylinder and valve materials with gas contents – Part 1: Metallic Materials
	ISO 11114-2:2000	Transportable gas cylinders – Compatibility of cylinder and valve materials with gas contents – Part 2: Non-metallic Materials
4.1.6.4	ISO 11621:1997	Gas cylinders – Procedures for change of gas service
	EN 1795:1997	Gas cylinders (excluding LPG) – Procedures for change of gas service.
4.1.6.8 Valves with	Annex B of ISO 10297:1999	Gas cylinder – Refillable gas cylinder valves – Specification and type testing

Valves with inherent protection	Annex A of EN 849:1996/A2:2001	Transportable gas cylinders – Cylinder valves: specification and type testing – Amendment 2
	EN 13152:2001	Testing and specifications of LPG cylinder valves – self closing
	EN 13153:2001	Testing and specifications of LPG cylinder valves – manually operated
4.1.6.8 (b) and (c)	ISO 11117:1998	Gas Cylinders – Valve Protection caps and valve guards for industrial and medical gas cylinders – Design construction and tests
	EN 962:1996/A2:2000	Valve protection caps and valve guards for industrial and medical gas cylinders – Design, construction and tests

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