

**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)****SUMMARY**

<b>Executive Summary:</b>	This proposal seeks to give close alignment between ADR/RID 4.1.6 Special packing provisions for goods of Class 2 with the equivalent text in the UN 13 <sup>th</sup> Revision.
<b>Action to be taken:</b>	Replace the existing text of 4.1.6 with the proposed text.
<b>Related documents:</b>	13 <sup>th</sup> revision of the UN Model Regulations ADR/RID 2003 TRANS-WP15-AC1-2003-GE-inf.30

**Introduction**

The Working Group of the Joint Meeting which considered that the Secretariat proposal in TRANS/WP.15/AC1/2003/56/Add.4 to adopt new text to align 4.1.6. of ADR/RID with the 13<sup>th</sup> Revision of the UN Model Regulations gave a text which was only partially aligned and did not satisfactorily resolve the different way standards are referenced in ADR/RID and in the UN. EIGA submits this proposal to attempt to resolve these issues. It includes EN standards for LPG valves recently adopted by the Joint Meeting, to meet the proposal of the AEGPL in Inf.27.

This proposal has been prepared using the text on the UN Model Regulations. Text that is additional to the UN to accommodate the existing requirements of the ADR/RID is shown in square brackets. Comments are shown in Italics. The superfluous fourth digit (1) in the UN numbering and the heading General Requirements have been omitted. All standards have been removed to the end of the section, following ADR/RID practice and reflecting the different way that standards are applied in ADR/RID and in the Model Regulations in relation to UN pressure receptacles. Also, open cryogenic receptacles have been included as appropriate since the UN Model Regulations do not cover them.

**Proposal**

Replace the existing 4.1.6 with the following.

#### 4.1.6 Special packing provisions for goods of Class 2

4.1.6.1 This section provides general requirements applicable to the use of pressure receptacles [and open cryogenic receptacles] for the transport of Class 2 gases and other dangerous goods 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, 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). ~~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, 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 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 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 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 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 to be transported and that the provisions of these ~~Model~~ Regulations have been met. Shut-off valves shall be closed after filling and remain closed during transport. The shipper shall verify that the closures and equipment are not leaking.

[**NOTE 1:** Receptacles ready for shipment shall be marked and labelled according to the provisions set out in chapter 5.2.]

**NOTE 2:** Shut-off valves fitted to cylinders in bundles may be open during transport, unless the substance carried is subject to special packing provision 'k' or 'q' in P200.]

- 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 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 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 or shall be protected from damage which could cause inadvertent release of the contents of the pressure receptacle, by one of the following methods:
- 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) Pressure receptacles are transported in frames, (e.g. bundles);
  - e) [Valves are placed in a protective frame; or] *from ADR/RID 4.1.6.4 (e)*
  - f) Pressure receptacles are transported 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 in an outer packaging, such as a box or crate, or in a 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  $LC_{50}$  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 after the expiry of the time limit.  
*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 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 receptacles [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; or
  - 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;
- 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; or
- d) unless the required certification, retest, and filling markings are legible.

[4.1.6.14 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 Transportable gas cylinders – Compatibility of cylinder and valve materials with gas contents – Part 2: Non-metallic Materials
	ISO 11114-2:2000	
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 (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
4.1.6.8 Valves with inherent protection	Annex B of ISO 10297:1999	Gas cylinder – Refillable gas cylinder valves – Specification and type testing
	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

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### **Safety implications**

The current level of safety will be maintained and enhanced by the inclusion of additional detail specified in the Model Regulations.

**Equivalence table**

The following table shows where the provisions appear in the ADR/RID 2003 and in this proposal.

This proposal	ADR/RID 2003	Comments
4.1.6.1	6.2.1.1.1	
4.1.6.2	6.2.1.2.2	
4.1.6.3	4.1.6.1	
4.1.6.4	4.1.6.2	
4.1.6.5	New	
Note 1	Note 2 (after 4.1.6.2)	
Note 2	New	Clarification of meaning of UN text and to reflect existing practice.
4.1.6.6	New	Partly covered by P200 of ADR 2003
4.1.6.7	4.1.6.3	
4.1.6.8	4.1.6.4	
4.1.6.9	4.1.6.6	
4.1.6.10	Note 1 and 4.1.6.5	
4.1.6.11	4.1.6.7	
4.1.6.12	4.1.6.8	
4.1.6.13	4.1.6.9	
4.1.6.14	4.1.6.10	

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