

Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals

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Transport of gases: miscellaneous

Provisions for pressure receptacles and their closures

Transmitted by the European Industrial Gases Association (EIGA), the Compressed Gases Association (CGA) and the European Cylinder Makers Association (ECMA).

Introduction

1. This informal document provides a consolidated list of the amendments proposed by the working group led by EIGA. It lists the proposals in ST/SG/AC.10/C.3/2019/21 presented at the last session and shows the changes to those proposals given in ST/SG/AC.10/C.3/2019/52.

2. This paper contains one modification of the proposal for 6.2.1.7.2 given in document 2019/52. The original proposal could have been interpreted as meaning that proficiency testing of closures was to be carried out by the competent authority. It is hoped this revised text will clarify that the competent authority determines whether or not proficiency testing is required.

Consolidated list of proposed amendments

Chapter 1.2

(Ref. document: ST/SG/AC.10/C.3/2019/21)

Amend the definitions in 1.2.1 as indicated (*new text is shown underlined and deleted text is shown with a ~~strikethrough~~*):

“*Bundle of cylinders* means a pressure receptacle comprising an assembly of cylinders or cylinder shells that are fastened together and which are interconnected by a manifold and carried as a unit. The total water capacity shall not exceed 3 000 litres except that bundles intended for the transport of gases of Division 2.3 shall be limited to 1 000 litres water capacity;”.

“*Closure* means a device which closes an opening in a receptacle;

NOTE: For pressure receptacles, closures are e.g. valves, pressure relief devices, pressure gauges, level indicators.”.

“Closed cryogenic receptacle means a ~~transportable~~ thermally insulated pressure receptacle for refrigerated liquefied gases of a water capacity of not more than 1 000 litres;”.

“Cylinder means a ~~transportable~~ pressure receptacle of a water capacity not exceeding 150 litres;”.

“Inner vessel, for a closed cryogenic receptacle, means the pressure vessel intended to contain the refrigerated liquefied gas;”.

“Metal hydride storage system means a single complete hydrogen storage system, including a pressure receptacle shell, metal hydride, pressure relief device, shut-off valve, service equipment and internal components used for the carriage of hydrogen only;”.

“Pressure drum means a welded ~~transportable~~ pressure receptacle of a water capacity exceeding 150 litres and of not more than 1 000 litres, (e.g. cylindrical receptacles equipped with rolling hoops, spheres on skids);”.

“Pressure receptacle means a transportable receptacle intended for holding substances under pressure including its closure(s) and other service equipment and is a collective term that includes cylinders, tubes, pressure drums, closed cryogenic receptacles, metal hydride storage systems, bundles of cylinders and salvage pressure receptacles;”.

“Pressure receptacle shell means a cylinder, a tube a pressure drum or a salvage pressure receptacle without its closures or other service equipment, but including any permanently attached device(s) (e.g. neck ring, foot ring, etc.);”.

NOTE: The terms “cylinder shell”, “pressure drum shell” and “tube shell” are also used.”.

“Service equipment of a pressure receptacle means closure(s), manifold(s), piping, porous, absorbent or adsorbent material and any structural devices, e.g. for handling;”.

“Tube means a ~~transportable~~ pressure receptacle of seamless or composite construction having a water capacity exceeding 150 litres and of not more than 3 000 litres;”.

“Working pressure

- (a) For a compressed gas means the settled pressure of a compressed gas at a reference temperature of 15 °C in a full pressure receptacle;
- (b) For UN 1001 acetylene, dissolved means the calculated settled pressure at a uniform reference temperature of 15 °C in an acetylene cylinder containing the specified solvent content and the maximum acetylene content;
- (c) For UN 3374 acetylene, solvent free the working pressure corresponds to the working pressure which was calculated for the equivalent cylinder for UN 1001 acetylene, dissolved.”

Chapter 4.1

(Sentences shown in a box explain the amendment which precedes it).

4.1.6.1.6 Add to the end of the first sentence “and taking into account the lowest pressure rating of any component”.

Insert a new second sentence. “Service equipment having a pressure rating lower than other components shall nevertheless comply with 6.2.1.3.1.”

Delete the final sentence “Bundles of cylinders shall not be filled in excess of the lowest working pressure of any given cylinder in the bundle.”

Pressure receptacles are made of components and sometimes it is necessary to use a component with a lower rating. One possibility is that a bundle of cylinders contains a cylinder with a lower rating, but there are other examples such as a 300 bar cylinder shell fitted with a 200 bar valve. The additional text in the first sentence establishes this circumstance in general and the precaution of lowering the filling pressure. The second sentence limits the options on choice of component to preserve safety of the package. The final sentence on bundles of cylinders becomes redundant.

~~The addition to the first sentence establishes the principle of taking into account the lowest pressure rating of a cylinder in a bundle when filling. The final sentence on bundles then becomes redundant and is deleted. The proposed new second sentence gives a general requirement applicable to all components in all pressure receptacles, such as a 200 bar valve fitted to a 300 bar cylinder.~~

(Ref. doc: Explanatory text in ST/SG/AC.10/C.3/2019/21 as amended by ST/SG/AC.10/C.3/2019/52)

- 4.1.6.1.10 In the first sentence, insert “closed” before “cryogenic receptacle” and replace “P205 or P206” with “P205, P206 or P208”.

Chapter 5.2

- 5.2.1.7.1 At the third indent, replace “cryogenic receptacles” with “closed and open cryogenic receptacles”.

- 5.2.1.7.2 (a) Replace “cryogenic receptacles” with “closed and open cryogenic receptacles”.

These three amendments result from the change of the definition for cryogenic receptacles and take into account the periodic inspection of absorbed gases.

Chapter 6.2

- 6.2.1.1.1 After “Pressure receptacles” delete “and their closures”. At the end of the sentence replace “transport” with “transport and intended use”.

(Ref. doc: ST/SG/AC.10/C.3/2019/21 as amended by ST/SG/AC.10/C.3/2019/52, with the addition of the word “intended”).

It is important for safety that pressure receptacles shall withstand the normal conditions of use e.g. filling frequency as well as conditions of transport.

- 6.2.1.1.4 At the end of the sentence replace “used” with “welded”.

Service equipment may not need welding so non-weldable metals should not be forbidden.

- 6.2.1.1.5 In the first sentence replace “cylinders, tubes, pressure drums” with “pressure receptacle shells”.

In the final sentence after “The test pressure of a cylinder” insert “shell”.

- 6.2.1.1.6 At the beginning of the first and the second sentences replace “Pressure receptacles” with “Cylinders or cylinder shells”.

In the final sentence replace the first “pressure receptacle” with “cylinder shell”, the second and third “pressure receptacle” with “cylinder”.

Only cylinders and cylinder shells are allowed in bundles.

6.2.1.1.8.2 In the third and fourth sentences replace “pressure receptacle” with “inner vessel”.

At the end of the fourth sentence replace “fittings” with “service equipment”.

6.2.1.1.9 At the end of the heading replace “*pressure receptacles for acetylene*” with “*acetylene cylinders*”.

In the first sentence replace “Pressure receptacles” with “Cylinder shells”.

In (a) replace “pressure receptacle” with “cylinder shell”.

In the final sentence replace “compatible with the pressure receptacle” with “compatible with those parts of the cylinder that are in contact with it”.

Acetylene is always carried in cylinders or bundles of cylinders not in other pressure receptacles.

6.2.1.2.1 After “Construction materials of pressure receptacles” delete “and their closures”.

6.2.1.2.2 At the beginning of the first sentence, after “Pressure receptacles”, delete “and their closures”.

6.2.1.3.1 Replace “Valves, piping and other fittings” with “Service equipment” and replace “excluding pressure relief devices” with “excluding porous, absorbent or adsorbent material, pressure relief devices, pressure gauges or indicators”.

6.2.1.3.2 Replace the entire paragraph with the following:

“6.2.1.3.2 Service equipment shall be configured or designed to prevent damage and unintended opening that could result in the release of the pressure receptacle contents during normal conditions of handling and transport. All closures shall be protected in the same manner as is required for valves in 4.1.6.1.8. Manifold piping leading to shut-off valves shall be sufficiently flexible to protect the shut-off valves and the piping from shearing or releasing the pressure receptacle contents.”

The penultimate sentence requiring valves to be capable of being secured against unintended opening was unrealistic and is replaced in the first sentence by the more general requirement “configured or designed to prevent ... unintended opening”.

6.2.1.3.3 Replace “shall be fitted with devices” with “shall be fitted with handling devices”.

~~6.2.1.4.1 In the second sentence change “Pressure receptacle” to “Pressure receptacle shells and the inner vessels of closed cryogenic receptacles”.~~

~~6.2.1.4.1 Delete the second sentence beginning “Pressure receptacles...”.~~

~~(Ref. doc: ST/SG/AC.10/C.3/2019/21 as amended by ST/SG/AC.10/C.3/2019/52)~~

~~6.2.1.4.3 Insert a new paragraph 6.2.1.4.3 to read:~~

~~“6.2.1.4.3 Pressure receptacle shells and the inner vessels of closed cryogenic receptacles shall be inspected tested and approved by an inspection body.”~~

~~(Ref. doc: ST/SG/AC.10/C.3/2019/21 as amended by ST/SG/AC.10/C.3/2019/52)~~

6.2.1.4 is made more logical removing the requirement applicable only to pressure receptacle shells and the inner vessels of closed cryogenic receptacles to a separate paragraph numbered 6.2.1.4.3.

6.2.1.4.3~~4~~ Insert a new paragraph 6.2.1.4.3~~4~~ as follows:

"6.2.1.4.3~~4~~ For refillable cylinders, pressure drums and tubes the conformity assessment of the shell and the closure(s) may be carried out separately. In these cases, an additional assessment of the final assembly is not required.

For bundles of cylinders, the cylinder shells and the valve(s) may be assessed separately, but an additional assessment of the complete assembly is required.

For closed cryogenic receptacles, the inner vessels and the closures may be assessed separately, but an additional assessment of the complete assembly is required.

For acetylene cylinders, conformity assessment shall comprise either:

- (a) one assessment of conformity covering both the cylinder shell and the contained porous material; or
- (b) a separate assessment of conformity for the empty cylinder shell and an additional assessment of conformity covering the cylinder shell with the contained porous material."

The above provisions clarify separate assessments. The above paragraph does not define who is responsible for conformity assessment. This is covered in 6.2.2.5.1

(Ref. doc: ST/SG/AC.10/C.3/2019/21 as amended by ST/SG/AC.10/C.3/2019/52)

6.2.1.5.1 In the first sentence replace "closed cryogenic receptacles and metal hydride storage systems," with "closed cryogenic receptacles, metal hydride storage systems and bundles of cylinders," and after "the applicable design standards" insert "or recognised technical codes".

In the line before (a), replace "pressure receptacles" with "pressure receptacle shells".

In (d), at the end delete "of the pressure receptacles".

In (e) replace "neck threads" with "threads used to fit closures".

In the line before (g), replace "all pressure receptacles" with "all pressure receptacle shells".

In (g) replace "pressure receptacles" with "pressure receptacle shells".

In (h), both sentences, replace "pressure receptacles" with "pressure receptacle shells".

In (i) replace "pressure receptacles" with "pressure receptacle shells".

In (j) replace "pressure receptacles" with "cylinder shells".

After (j) insert the following new provisions:

" On an adequate sample of closures:

- (k) Verification of materials;
- (l) Verification of dimensions;
- (m) Verification of cleanliness;

- (n) Inspection of completed assembly;
- (o) Verification of the presence of marks.

For all closures:

- (p) Testing for leakproofness".

6.2.1.5.2 Amend to read as follows:

“6.2.1.5.2 Closed cryogenic receptacles shall be subjected to testing and inspection during and after manufacture in accordance with the applicable design standards or recognized technical codes including the following:

On an adequate sample of inner vessels:

- (a) Testing of the mechanical characteristics of the material of construction;
- (b) Verification of the minimum wall thickness;
- (c) Inspection of the external and internal conditions;
- (d) Verification of the conformance with the design standard or code;
- (e) Inspection of welds by radiographic, ultrasonic or other suitable non-destructive test method according to the applicable design and construction standard or code.

For all inner vessels:

- (f) A hydraulic pressure test. The inner vessel shall meet the acceptance criteria specified in the design and construction technical standard or technical code;

NOTE: With the agreement of the competent authority, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.

- (g) Inspection and assessment of manufacturing defects and either repairing them or rendering the inner vessel unserviceable;
- (h) An inspection of the marks.

On an adequate sample of closures:

- (i) Verification of materials;
- (j) Verification of dimensions;
- (k) Verification of cleanliness;
- (l) Inspection of completed assembly;
- (m) Verification of the presence of marks.

For all closures:

- (n) Testing for leakproofness.

On an adequate sample of completed closed cryogenic receptacles:

- (o) Testing the satisfactory operation of service equipment;
- (p) Verification of the conformance with the design standard or code.

For all completed closed cryogenic pressure receptacles:(q) Testing for leakproofness.”

~~6.2.1.5.2~~ Replace the first sentence with “For closed cryogenic receptacles, the inspections and tests specified in 6.2.1.5.1 (a), (b), (d), (f), (k), (l), (m), (n) and (o) shall be performed on an adequate number of samples.”

~~At the end of the second paragraph insert the sentence “All closures shall undergo testing for leakproofness.”.~~

(Ref. doc: ST/SG/AC.10/C.3/2019/21 as amended by ST/SG/AC.10/C.3/2019/52)

6.2.1.5.3 In the first sentence replace “receptacles” with “pressure receptacle shells”.

6.2.1.5.4 Insert the following new paragraph:

“6.2.1.5.4 For bundles of cylinders the cylinder shells and closures shall be subjected to initial inspection and tests specified in 6.2.1.5.1. An adequate sample of frames shall be proof load tested to two times the maximum gross weight of the bundles of cylinders.

Additionally, all manifolds of bundle of cylinders shall undergo a hydraulic pressure test and all the completed bundles of cylinders shall undergo a leakproofness test.

NOTE: *With the agreement of the competent authority, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.”*

6.2.1.6.1 Replace (c) and (d) with the following.

“(c) Checking of the threads either:

(i) if there is evidence of corrosion; or

(ii) if the closures or other service equipment are removed;

(d) A hydraulic pressure test of the pressure receptacle shell and, if necessary, verification of the characteristics of the material by suitable tests;”

In **NOTE 2:** Replace “*pressure test of cylinders or tubes*” with “*pressure test of cylinder shells or tube shells*”

In **NOTE 3:** Replace “*aluminium alloy gas cylinders*” with “*aluminium alloy cylinder shells*” and replace “*steel gas cylinders*” with “*steel cylinder shells*”.

Insert the following new **NOTE 4:**

NOTE 4: *For bundles of cylinders the hydraulic test specified in (d) above shall be carried out on the cylinder shells and on the manifold.”.*

Replace current (e) and add a new (f) as follows:

“(e) Check of service equipment, if to be reintroduced into service. This check may be carried out separately from the inspection of the pressure receptacle shell;

(f) A leakproofness test of bundles of cylinders after reassembly.”

6.2.1.6.2 Replace “Pressure receptacles” with “Cylinders”.

6.2.1.7.2 Amend as follows:

“6.2.1.7.2 ~~“The proficiency test of the manufacturer~~ A proficiency test of the manufacturers of pressure receptacle shells and the inner vessels of closed cryogenic receptacle shall in all instances be carried out by an inspection body approved by the competent authority of the country of approval. Proficiency testing of manufacturers of closures shall be carried out if the competent authority requires it. This test shall be carried out either during design type approval or during production inspection and certification. ...”. ~~At the end add the following sentence. “This test shall be carried out during either design type approval or during production inspection and certification.”~~”

It was not clear when to carry out the proficiency test. Manufacturers of closures, completed bundles of cylinders and completed closed cryogenic receptacles are not subject to proficiency testing.

The second sentence differs from that shown in document 2019/52 since the original proposal could be interpreted as meaning that proficiency testing was to be carried out by the competent authority.

(Ref. doc: ST/SG/AC.10/C.3/2019/21 as amended by ST/SG/AC.10/C.3/2019/52, with additional amendments to the last two sentences).

6.2.2 In **NOTE 2** delete “and service equipment” after “UN pressure receptacles”

6.2.2.1.1 In the first sentence replace “UN cylinders” with “refillable UN cylinder shells”.

In the table delete the entire rows beginning ISO 11118:1999 and ISO 11118:2015.

These standards are proposed to be listed in a new paragraph 6.2.2.1.9 along with the relevant valve standard ISO 13340:2001.

In **NOTE 1** Replace “*composite cylinders*” with “*composite cylinder shells*”.

In **NOTE 2** Replace “*composite cylinders*” with “*composite cylinder shells*” in the first and second sentence. In the last sentence replace “*cylinder*” with “*cylinder shell*”.

6.2.2.1.2 In the first sentence replace “UN tubes” with “UN tube shells”.

In **NOTE 1** Replace “*composite tubes*” with “*composite tube shells*”.

In **NOTE 2** Replace “*composite tubes*” with “*composite tube shells*” in the first and second sentence. In the last sentence replace “*tube*” with “*tube shell*”.

6.2.2.1.3 In the line before the second table of standards replace “For the porous material in the cylinder:” with “For the acetylene cylinder including the porous material:”

6.2.2.1.4 Replace “UN cryogenic receptacles” with “UN closed cryogenic receptacles”.

6.2.2.1.6 In the first sentence, replace “The standard shown below” with “The following standard”.

In the second sentence replace “UN cylinder” with “UN cylinder or UN cylinder shell”.

Replace the current **NOTE** with the following:

NOTE: *Changing one or more cylinders or cylinder shells of the same design type, including the same test pressure, in an existing UN bundle of cylinders does not require a new conformity assessment of the existing bundle. Service equipment of the bundle of cylinders can also be replaced without requiring a new conformity assessment if it complies with the design type approval.*

6.2.2.1.9 Insert a new paragraph and table as follows:

“6.2.2.1.9 The following standards apply to the design, construction and initial inspection and test of non-refillable UN cylinders except that the inspection requirements related to the conformity assessment system and approval shall be in accordance with 6.2.2.5.

Reference	Title	Applicable for manufacture
ISO 11118:1999	Gas cylinders – Non-refillable metallic gas cylinders – Specification and test methods	Until 31 December 2020
ISO 13340:2001	Transportable gas cylinders – Cylinder valves for non-refillable cylinders – Specification and prototype testing	Until 31 December 2020
ISO 11118:2015	Gas cylinders – Non-refillable metallic gas cylinders – Specification and test methods	Until further notice”

6.2.2.2 In the first line delete “pressure receptacle”.

6.2.2.3 Replace the title “*Service equipment*” with “*Closures and their protection*”

The new definition of service equipment does not include valve protection caps and valve guards

6.2.2.3 Replace the first sentence with “The following standards apply to the design, construction, and initial inspection and test of UN-closures and their protection:”

In the table, delete the row for ISO 13340:2001.

~~Delete the entire row of the first table starting “ISO 13340:2001”.~~

~~Delete the complete sentence starting “For UN metal hydride storage ...” and the table containing the reference to “ISO 16111:2008”.~~

(The proposal to delete the text and standard reference table concerning UN metal hydride storage systems is withdrawn.

Ref. doc: ST/SG/AC.10/C.3/2019/21 as amended by ST/SG/AC.10/C.3/2019/52 with the additional amendment to the first sentence and the deletion of the reference to ISO 13340:2001)

6.2.2.4 Amend the first sentence to read “The following standards apply to periodic inspection and testing of UN pressure receptacles:”

At the beginning of 6.2.2.5 renumber 6.2.2.5.1 as 6.2.2.5.0 and insert the following new Note at the end (after the definition of “Verify”).

NOTE: *In this subsection when separate assessment is used the term pressure receptacle shall refer to pressure receptacle, pressure receptacle shell, inner vessel of the closed cryogenic receptacle or closure, as appropriate.*

6.2.2.5.1 Insert a new paragraph 6.2.2.5.1 to read as follows:

"6.2.2.5.1 The requirements of 6.2.2.5 shall be used for the conformity assessments of pressure receptacles. Paragraph 6.2.1.4.3 gives details of which parts of pressure receptacles may be conformity assessed separately. However, the requirements of 6.2.2.5 may be replaced by requirements specified by the competent authority in the following cases:

- (a) conformity assessment of closures;
- (b) conformity assessment of the complete assembly of bundles of cylinders provided the cylinder shells have been conformity assessed in accordance with the requirements of 6.2.2.5; and
- (c) conformity assessment of the complete assembly of closed cryogenic receptacles provided the inner vessel has been conformity assessed in accordance with the requirements of 6.2.2.5."

The alternative conformity assessment system differing from the requirements of 6.2.2.5 is only applicable to establishing conformity to the standards listed in 6.2.2.3 for closures, in 6.2.2.1.4 for closed cryogenic receptacles and 6.2.2.1.6 for bundles. A manufacturer's declaration of conformity could be acceptable.

6.2.2.5.4.9 (c) Replace the existing text with: "As required by the pressure receptacle standard or technical code, carry out or supervise the tests of pressure receptacles as required for design type approval."

6.2.2.5.4.9 ~~After Amend~~ the penultimate sentence ~~starting as follows:~~

_____ "After prototype testing has been carried out with satisfactory results and all applicable requirements of 6.2.2.5.4 have been satisfied, a design type approval certificate shall be issued, which shall include the name and address of the manufacturer, results and conclusions of the examination, and the necessary data for identification of the design type. ~~"A reservation shall be included in the design type approval certificate i~~ If it was not possible to evaluate exhaustively the compatibility of the materials of construction with the contents of the pressure receptacle when the certificate was issued, a statement that compatibility assessment was not completed shall be included in the design type approval certificate."

_____ The current last sentence ("If the manufacturer is denied...for such denial.") remains unchanged.

Very often the customer for a pressure receptacle does not specify what gases are to be transported. In such cases it not possible for the check on compatibility as required by 6.2.1.2.1 to be carried out at time of manufacture. The proposed reservation in the certificate will ensure that the customer is aware that a compatibility check is required.

Ref. doc: ST/SG/AC.10/C.3/2019/21 as amended by ST/SG/AC.10/C.3/2019/52)

6.2.2.7 Amend the Note by replacing "6.2.2.9 and marking" with "6.2.2.9, marking" and inserting at the end "*and marking requirements for closures are given in 6.2.2.11*".

6.2.2.7.1 In the first sentence replace "pressure receptacles" with "pressure receptacle shells and closed cryogenic receptacles".

At the end of the second sentence, delete "on the pressure receptacle".

In the third sentence, after "neck of the pressure receptacle" insert "shell".

6.2.2.7.2 At the end of (b) insert the following new Note:

“NOTE: For acetylene cylinders the standard ISO 3807 shall also be marked.”.

At the end of 6.2.2.7.2 (after (e)), insert the following new **NOTE**.

“NOTE: When an acetylene cylinder is conformity assessed in accordance with 6.2.1.4.3 (b) and the inspection bodies for the cylinder shell and the acetylene cylinder are different, their respective marks (d) are required. Only the initial inspection date (e) of the completed acetylene cylinder is required. If the country of approval of the inspection body responsible for the initial inspection and test is different a second mark (c) shall be applied.”.

6.2.2.7.3(g) In the second sentence, replace “mass of valve, valve cap” with “mass of closure(s), valve protection cap”.

6.2.2.7.3 (i) At the end insert the following note:

“NOTE: When a cylinder shell is intended for use as an acetylene cylinder (including the porous material), the working pressure mark is not required until the acetylene cylinder is completed.”.

6.2.2.7.3 (j) In the first sentence replace “liquefied gases and refrigerated liquefied gases” with “liquefied gases, refrigerated liquefied gases and dissolved gases”.

6.2.2.7.3 (k) and (l) Replace paragraphs (k) and (l) with the following.

"(k) In the case of cylinders for UN 1001 acetylene, dissolved:

- (i) the tare in kilograms consisting of the total of the mass of the empty cylinder shell, the service equipment (including porous material) not removed during filling, any coating, the solvent and the saturation gas expressed to three significant figures rounded down to the last digit followed by the letters "KG". At least one decimal shall be shown after the decimal point. For pressure receptacles of less than 1 kg, the mass shall be expressed to two significant figures rounded down to the last digit;
- (ii) the identity of the porous material (e.g.: name and trademark); and
- (iii) the total mass of the filled acetylene cylinder in kilograms followed by the letters “KG”;

(Ref. doc: ST/SG/AC.10/C.3/2019/21 as amended by ST/SG/AC.10/C.3/2019/52)

(l) In the case of cylinders for UN 3374 acetylene, solvent free:

- (i) the tare in kg consisting of the total of the mass of the empty cylinder shell, service equipment (including porous material) not removed during filling and any coating expressed to three significant figures rounded down to the last digit followed by the letters "KG". At least one decimal shall be shown after the decimal point. For pressure receptacles of less than 1 kg, the mass shall be expressed to two significant figures rounded down to the last digit;
- (ii) the identity of the porous material; and

- (iii) the total mass of the filled acetylene cylinder in kilograms followed by the letters “KG”;

The amendments to (j), (k) and (l) introduce marks necessary for the filling and periodic inspection of acetylene cylinders.

6.2.2.7.4 (n) After the existing text insert a new **NOTE**

“NOTE: If the manufacturer of the acetylene cylinder and the manufacturer of the cylinder shell are different, only the mark of the manufacturer of the completed acetylene cylinder is required.”

6.2.2.8 In the title replace “**pressure receptacles**” with “**cylinders**”.

6.2.2.8.1 In the first sentence replace “pressure receptacles” with “cylinders”.

In the second sentence replace “pressure receptacle” with “cylinder”.

In the third sentence replace “pressure receptacle” at the first occurrence with “cylinder shell” and at the second occurrence with “cylinder”.

In the fifth (penultimate) sentence replace “pressure receptacles” with “cylinders” twice.

6.2.2.8.3 In the **NOTE** replace “pressure receptacles” with “cylinders”.

Cylinders are the only non-refillable UN pressure receptacle allowed by the Regulations and other types of non-refillable pressure receptacle are very unlikely to be required.

6.2.2.10.1 Replace “cylinders” with “cylinder shells”.

Insert a new second sentence as follows. “Individual closures in a bundle of cylinders shall be marked in accordance with 6.2.2.11.”

6.2.2.10.3 (b) In the first sentence replace the phrase in brackets with “cylinder shells and service equipment”.

In the second sentence after “tare” delete “mass”.

6.2.2.11 Insert a new paragraph 6.2.2.11 as follows:

“6.2.2.11 Marking of closures for refillable UN pressure receptacles

For closures the following permanent marks shall be applied clearly and legibly, (e.g. stamped, engraved or etched):

- (a) Manufacturer’s identification mark;
- (b) Design standard or design standard designation;
- (c) Date of manufacture (year and month or year and week) and
- (d) The identity mark of the inspection body responsible for the initial inspection and test, if applicable.

The valve test pressure shall be marked when it is less than the test pressure which is indicated by the rating of the valve filling connection.”