



**Committee of Experts on the Transport of Dangerous Goods
and on the Globally Harmonized System of Classification
and Labelling of Chemicals****Sub-Committee of Experts on the Transport of Dangerous Goods****Forty-first session**

Geneva, 25 June – 4 July 2012

Item 5 (a) of the provisional agenda

**Miscellaneous proposals of amendments to the Model Regulations
on the Transport of Dangerous Goods: packagings****Transition provisions for ISO Standards – Section 6.2.2****Submitted by the International Organization for Standardisation (ISO)¹****Introduction**

1. This paper follows on from the paper ST/SG/AC.10/C.3/2011/25 submitted to fortieth session of the Sub-Committee of Experts on the Transport of Dangerous Goods. The purpose of this paper is to:

- propose text for the Guiding Principles for the Model Regulations giving the rules for transition when standards already referenced in Section 6.2.2 are replaced by updated standards;
- introduce into the Regulations the 2010 versions of the three parts of the standards ISO 9809;
- provide as an Annex an edited text showing all the amendments including consequential editorial amendments as they would appear in section 6.2.2 of the Model Regulations if these proposals are adopted.

2. In the discussion at the fortieth session several experts were in favour of having a transition period to phase in replacement standards but asked for more time to examine the three new parts of ISO 9809. Text detailing the proposed system for transition for inclusion in the Guiding Principles was requested and it was also suggested that the paper should be submitted to the RID/ADR/ADN Joint Meeting.

¹ In accordance with the programme of work of the Sub-Committee for 2011-2012 approved by the Committee at its fifth session (refer to ST/SG/AC.10/C.3/76 para. 111 and ST/SG/AC.10/36, para. 16)

3. The Joint Meeting in March considered the paper 2011/25 and concluded "... that it was indeed desirable to harmonize, for all modes of transport and worldwide, the transitional periods for the application to the construction of new UN receptacles of the ISO standards referenced in the UN Model Regulations, and replaced by updated standards." It took no position on the issues of the duration of the transitional periods or how the transition should be presented in the Model Regulations.

4. The basic principle of the proposed transitional provisions is that on a specified date, which would be carried forward into all the modal regulations, manufacture according to the old standards shall cease. Until that date manufacture according to either the old or new version of the standard would be possible.

5. Successive editions of standards for design and manufacture do not generally make a significant impact on the public safety of the final product; in the particular field of gas cylinders, many in national use having had a service life exceeding fifty years. With proper care and periodic inspection, they continue to be safe. Revisions of standards usually implement more economical production, so there is normally no safety imperative to make the transition rapidly.

Therefore it is proposed that, unless a revised construction standard represents a significant step forward in safety, the old standard will have a transition (or phase-out) period of six years. Carrying a fixed date into the modal regulations will cut this down to four years due to time needed to adopt the new text from the Model Regulations.

6. Standards covering periodic inspection also take practices forward only incrementally and a short transition period is acceptable and necessary to allow inspection bodies and testers time to adapt their work practices and instructions. Therefore, a period of four years, reduced to two in the modal regulations, is proposed. This proposal means that a single issue of the modal regulations gives notice of the change of the standard.

7. Since pressure receptacles can only bear the UN mark when constructed in accordance with standards given in the tables in section 6.2.2, it is important that the superseded standards remain in the tables indefinitely as evidence that their construction was in accordance with the regulations. Also, the regulations shall state that pressure receptacles and their service equipment made in accordance with those superseded standards can remain in use.

Proposal 1

The following text is proposed for insertion into Part 6 of the Guiding Principles.

Chapter 6.2: System for providing a period of transition when new standards replace existing referenced standards for UN pressure receptacles, their service equipment and periodic inspection and test.

1. Principles

- (a) When an existing standard is replaced by either a revised version or another standard having the same scope, there shall be a period during which either the new or old standard may be used. This will allow for the issue of new type approvals, the adjustment of procedures and where necessary, the acquisition of new equipment.

- (b) The period shall be expressed by setting a limiting date after which the old standard can no longer be used. The new standard can be used from the date at which the regulations in which they are listed come into force.
- (c) For standards covering the design and manufacture of pressure receptacles and their closures, the limiting date shall normally be set at six years from the close of the biennium in which the new standard was agreed for referencing in the Model Regulations. For example, if a standard is adopted in the 2011/2012 biennium, the standard which it replaces shall have a limiting date of 31 December 2018.

Note: Given the time taken to transfer new provisions from the Model Regulations into the international provisions for the air, sea and land modes, it is expected that this will result in an actual transition period of four years.

- (d) For standards covering periodic inspection a limiting date of four years from the end of the biennium of adoption of the new standard shall be set. When the transition period is completed, the old standard shall be deleted.
- (e) If the Sub Committee of Experts on the Transport of Dangerous Goods believes that the new standard provides a significant improvement in public safety, it may set shorter transition periods.
- (f) A transition period is not envisaged for standards in sub section 6.2.2.2 concerning materials (ISO 11114, parts 1 and 2 concerning the compatibility of materials with gases) since these provide information and guidance only.
- (g) A transition period shall not be set when a new standard is introduced having a scope not previously covered in section 6.2.2.
- (h) The regulations shall include a statement that UN pressure receptacles constructed according to standards that are no longer applicable for manufacture may still be used.

2. Presentation of the transition periods in the Model Regulations

Each table of standards shall have a column at the right showing the date after which the standard shall not be used. In the case of standards for design and manufacture this column shall be headed "Applicable for manufacture". In the table in the sub section for Periodic inspection and test, the column shall be headed "Applicable".

Alongside each standard for which a limit date has been set shall appear "Until 31 December 2XYZ". If no date has been set the words "Until further notice" shall appear.

3. Examples of how the standards shall be listed

- (a) The table below gives an example for sub section 6.2.2.1 *Design, construction and initial inspection and test* showing a revised standard adopted in the biennium 2011/2012 (for the 18th Revised Edition).

Reference	Title	Applicable for manufacture
ISO 9809-2:2000	Gas cylinders – Refillable seamless steel gas cylinders – Design, construction and testing – Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa	<i>Until 31 December 2018</i>
ISO 9809-2:2010	Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa	<i>Until further notice</i>

- (b) The table gives an example for sub section 6.2.2.4 *Periodic inspection and test* showing a revised standard adopted in the biennium 2015/2016 (for the 20th Revised edition).

Reference	Title	Applicable
ISO 6406:2005	Periodic inspection and testing of seamless steel gas cylinders	<i>Until 31 December 2020</i>
ISO 6406:2015	Periodic inspection and testing of seamless steel gas cylinders	<i>Until further notice</i>

The 2005 version of the standard could be deleted in the 22nd Revised Edition.

Proposal 2

Proposal 2 (a)

6.2.2.1.1 Add the following standards

ISO 9809-1:2010	Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa
ISO 9809-2:2010	Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa
ISO 9809-3:2010	Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 3: Normalized steel cylinders

Proposal 2 (b)

6.2.2.1.3 Add the following standards

ISO 9809-1:2010	Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa
ISO 9809-3:2010	Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 3: Normalized steel cylinders

Proposal 2 (c)

Apply the transition provision of Proposal 1 to the superseded standards by the following amendments.

6.2.2 Add the following as a second sentence.

“Manufacture of new pressure receptacles or service equipment according to any particular standard in 6.2.2.1 and 6.2.2.3 is not permitted after the date shown (if any) in the right hand column of the tables.”

make the existing Note “Note 1”

Add the following new Note 2

“**NOTE 2:** *Pressure receptacles and service equipment conforming to standards for which manufacture is no longer permitted may continue to be used.*”

6.2.2.1.1 Amend the table in as shown (new text underlined).

<u>Reference</u>	<u>Title</u>	<u>Applicable for manufacture</u>
ISO 9809-1:1999	Gas cylinders – Refillable seamless steel gas cylinders – Design, construction and testing – Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa <i>NOTE: The note concerning the F factor in section 7.3 of this standard shall not be applied for UN cylinders.</i>	<u>Until 31 December 2018</u>
<u>ISO 9809-1:2010</u>	<u>Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa</u>	<u>Until further notice</u>
ISO 9809-2:2000	Gas cylinders – Refillable seamless steel gas cylinders – Design, construction and testing – Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa	<u>Until 31 December 2018</u>
<u>ISO 9809-2:2010</u>	<u>Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa</u>	<u>Until further notice</u>
ISO 9809-3:2000	Gas cylinders – Refillable seamless steel gas cylinders – Design, construction and testing – Part 3: Normalized steel cylinders	<u>Until 31 December 2018</u>
<u>ISO 9809-3:2010</u>	<u>Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 3: Normalized steel cylinders</u>	<u>Until further notice</u>

6.2.2.1.3 Amend the table as shown (new text underlined).

<u>Reference</u>	<u>Title</u>	<u>Applicable for manufacture</u>
ISO 9809-1:1999	Gas cylinders – Refillable seamless steel gas cylinders – Design, construction and testing – Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa <i>NOTE: The note concerning the F factor in section 7.3 of this standard shall not be applied for UN cylinders.</i>	<u>Until 31 December 2018</u>
<u>ISO 9809-1:2010</u>	<u>Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa</u>	<u>Until further notice</u>
ISO 9809-3:2000	Gas cylinders – Refillable seamless steel gas cylinders – Design, construction and testing – Part 3: Normalized steel cylinders	<u>Until 31 December 2018</u>
<u>ISO 9809-3:2010</u>	<u>Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 3: Normalized steel cylinders</u>	<u>Until further notice</u>

Justification for Proposal 2 (a) and 2 (b)

The three parts of the ISO standard ISO 9809 has been revised in the following respects.

- a) the reduction of maximum sulphur content of steels from 0.020 % to 0.010 %;
- b) the note in clause 7.3 regarding limitation of the F factor was deleted (as required by the United Nations Recommendations on the Transport of Dangerous Goods: Model Regulations);
- c) the modification of provisions for ultrasonic examination to include ultrasonic examination on the cylindrical area to be closed, prior to the process of forming the neck;
- d) the addition of the requirement for a base check during prototype testing for all cylinder types;
- e) the addition of the requirement for a base check during batch testing for cylinders made from continuously cast billet material.

As may be seen from the above, these revised standards make an incremental improvement in technology, but there no step change in safety. The 1999/2000 editions of these standards were the state of the art when published and there is no pressing need to implement the revised standards very quickly.

Proposal 3

The standards for service equipment are also used for manufacture so the provisions for transition are also applicable to sub section 6.2.2.3. Therefore, if the transition provisions described in Proposal 1 are applied it is possible to bring back the reference to ISO 10297:1999 which was superseded in the Model Regulations by ISO 10297:2006 in 2009, without any transition period. This restoration of a previous listing would remove doubt as to whether valves made to the older standard are still allowed for use.

The entries for these two editions of ISO 10297 would then appear in sub section 6.2.2.3 as follows (new text underlined).

Also, the transition period agreed for the 17th Revised edition of the Model Regulations for the old and new editions of the standard ISO 11117 can be presented in 6.2.2.3 in the same way as for the other standards. Deleted text is shown by strikethrough.

<u>Reference</u>	<u>Title</u>	<u>Applicable for manufacture</u>
<u>ISO 11117:1998</u>	<u>Gas cylinders – Valve protection caps and valve guards for industrial and medical gas cylinders – Design, construction and tests</u>	<u>Until 31 December 2014</u>
ISO 11117:2008 + Cor 1:2009	Gas cylinders – Valve protection caps and valve guards – Design, construction and tests NOTE: Construction according to ISO 11117:1998 may continue until 31 December 2014.	<u>Until further notice</u>
<u>ISO 10297:1999</u>	<u>Gas cylinders – Refillable gas cylinder valves – Specification and type testing</u>	<u>Until 31 December 2008</u>
ISO 10297:2006	Gas cylinders – Refillable gas cylinder valves – Specification and type testing	<u>Until further notice</u>

Annex

This annex shows the text of section 6.2.2 from the start to the end of 6.2.2.4 as it would appear if all the proposals in this paper were adopted. Consequential editorial amendments have been included, such as the addition of an extra column in all the tables of standards, even where no transition period is yet implemented. New text is shown underlined.

6.2.2 Requirements for UN pressure receptacles

In addition to the general requirements of section 6.2.1, UN pressure receptacles shall comply with the requirements of this section, including the standards as applicable. Manufacture of new pressure receptacles or service equipment according to any particular standard in 6.2.2.1 and 6.2.2.3 is not permitted after the date shown (if any) in the right hand column of the tables.

NOTE 1: *With the agreement of the competent authority, more recently published versions of the standards, if available, may be used.*

NOTE 2: *Pressure receptacles and service equipment conforming to standards for which manufacture is no longer permitted may continue to be used.*

6.2.2.1 Design, construction and initial inspection and test

6.2.2.1.1 The following standards apply for the design, construction, and initial inspection and test of UN cylinders, except that inspection requirements related to the conformity assessment system and approval shall be in accordance with 6.2.2.5:

<u>Reference</u>	<u>Title</u>	<u>Applicable for manufacture</u>
ISO 9809-1:1999	Gas cylinders – Refillable seamless steel gas cylinders – Design, construction and testing – Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa <i>NOTE: The note concerning the F factor in section 7.3 of this standard shall not be applied for UN cylinders.</i>	<u>Until 31 December 2018</u>
<u>ISO 9809-1:2010</u>	<u>Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa</u>	<u>Until further notice</u>
ISO 9809-2:2000	Gas cylinders – Refillable seamless steel gas cylinders – Design, construction and testing – Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa	<u>Until 31 December 2018</u>
<u>ISO 9809-2:2010</u>	<u>Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa</u>	<u>Until further notice</u>
ISO 9809-3:2000	Gas cylinders – Refillable seamless steel gas cylinders – Design, construction and testing – Part 3: Normalized steel cylinders	<u>Until 31 December 2018</u>
<u>ISO 9809-3:2010</u>	<u>Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 3: Normalized steel cylinders</u>	<u>Until further notice</u>
ISO 7866:1999	Gas cylinders – Refillable seamless aluminium alloy gas cylinders – Design, construction and testing <i>NOTE: The note concerning the F factor in section 7.2 of this standard shall not be applied for UN cylinders. Aluminium alloy 6351A – T6 or equivalent shall not be authorised.</i>	<u>Until further notice</u>

Reference	Title	Applicable for manufacture
ISO 4706:2008	Gas cylinders – Refillable welded steel cylinders – Test pressure 60 bar and below	<i>Until further notice</i>
ISO 18172-1:2007	Gas cylinders – Refillable welded stainless steel cylinders – Part 1: Test pressure 6 MPa and below	<i>Until further notice</i>
ISO 20703:2006	Gas cylinders – Refillable welded aluminium-alloy cylinders – Design, construction and testing	<i>Until further notice</i>
ISO 11118:1999	Gas cylinders – Non-refillable metallic gas cylinders – Specification and test methods	<i>Until further notice</i>
ISO 11119-1:2002	Gas cylinders of composite construction – Specification and test methods – Part 1: Hoop wrapped composite gas cylinders	<i>Until further notice</i>
ISO 11119-2:2002	Gas cylinders of composite construction – Specification and test methods – Part 2: Fully wrapped fibre reinforced composite gas cylinders with load-sharing metal liners	<i>Until further notice</i>
ISO 11119-3:2002	Gas cylinders of composite construction – Specification and test methods – Part 3: Fully wrapped fibre reinforced composite gas cylinders with non-load-sharing metallic or non-metallic liners	<i>Until further notice</i>

NOTE 1: *In the above referenced standards composite cylinders shall be designed for unlimited service life.*

NOTE 2: *After the first 15 years of service, composite cylinders manufactured according to these standards, may be approved for extended service by the competent authority which was responsible for the original approval of the cylinders and which will base its decision on the test information supplied by the manufacturer or owner or user.*

6.2.2.1.2 The following standard apply for the design, construction, and initial inspection and test of UN tubes, except that 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 11120:1999	Gas cylinders – Refillable seamless steel tubes for compressed gas transport, of water capacity between 150 l and 3 000 l – Design, construction and testing NOTE: <i>The note concerning the F factor in section 7.1 of this standard shall not be applied for UN tubes.</i>	<i>Until further notice</i>

6.2.2.1.3 The following standards apply for the design, construction and initial inspection and test of UN acetylene cylinders, except that inspection requirements related to the conformity assessment system and approval shall be in accordance with 6.2.2.5:

For the cylinder shell:

Reference	Title	Applicable for manufacture
ISO 9809-1:1999	Gas cylinders – Refillable seamless steel gas cylinders – Design, construction and testing – Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa NOTE: <i>The note concerning the F factor in section 7.3 of this standard shall not be applied for UN cylinders.</i>	<i>Until 31 December 2018</i>
ISO 9809-1:2010	Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa	<i>Until further notice</i>
ISO 9809-3:2000	Gas cylinders – Refillable seamless steel gas cylinders – Design, construction and testing – Part 3: Normalized steel cylinders	<i>Until 31 December 2018</i>

<u>Reference</u>	<u>Title</u>	<u>Applicable for manufacture</u>
ISO 9809-3:2010	Gas cylinders -- Refillable seamless steel gas cylinders -- Design, construction and testing -- Part 3: Normalized steel cylinders	<i>Until further notice</i>

For the porous material in the cylinder:

<u>Reference</u>	<u>Title</u>	<u>Applicable for manufacture</u>
ISO 3807-1:2000	Cylinders for acetylene – Basic requirements – Part 1: Cylinders without fusible plugs	<i>Until further notice</i>
ISO 3807-2:2000	Cylinders for acetylene – Basic requirements – Part 2: Cylinders with fusible plugs	<i>Until further notice</i>

6.2.2.1.4 The following standards apply for the design, construction, and initial inspection and test of UN cryogenic receptacles, except that inspection requirements related to the conformity assessment system and approval shall be in accordance with 6.2.2.5:

<u>Reference</u>	<u>Title</u>	<u>Applicable for manufacture</u>
ISO 21029-1:2004	Cryogenic vessels – Transportable vacuum insulated vessels of not more than 1 000 l volume – Part 1: Design, fabrication, inspection and tests	<i>Until further notice</i>

6.2.2.1.5 The following standards apply for the design, construction, and initial inspection and test of UN metal hydride storage systems, except that inspection requirements related to the conformity assessment system and approval shall be in accordance with 6.2.2.5:

<u>Reference</u>	<u>Title</u>	<u>Applicable for manufacture</u>
ISO 16111:2008	Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride	<i>Until further notice</i>

6.2.2.2 Materials

In addition to the material requirements specified in the pressure receptacle design and construction standards, and any restrictions specified in the applicable packing instruction for the gas(es) to be carried (e.g. packing instruction P200 or P205 of 4.1.4.1), the following standards apply to material compatibility:

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

NOTE: The limitations imposed in ISO 11114-1 on high strength steel alloys at ultimate tensile strength levels up to 1 100 MPa do not apply to UN No. 2203 silane.

6.2.2.3 Service equipment

The following standards apply to closures and their protection:

Reference	Title	Applicable for manufacture
ISO 11117:1998	Gas cylinders – Valve protection caps and valve guards for industrial and medical gas cylinders – Design, construction and tests	<i>Until 31 December 2014</i>
ISO 11117:2008 + Cor 1:2009	Gas cylinders – Valve protection caps and valve guards – Design, construction and tests <i>NOTE: Construction according to ISO 11117:1998 may continue until 31 December 2014.</i>	<i>Until further notice</i>
ISO 10297:1999	Gas cylinders – Refillable gas cylinder valves – Specification and type testing	<i>Until 31 December 2008</i>
ISO 10297:2006	Gas cylinders – Refillable gas cylinder valves – Specification and type testing	<i>Until further notice</i>
ISO 13340:2001	Transportable gas cylinders – Cylinders valves for non-refillable cylinders – Specification and prototype testing	<i>Until further notice</i>

6.2.2.4 Periodic inspection and test

The following standards apply to the periodic inspection and testing of UN cylinders and UN metal hydride storage systems:

Reference	Title	Applicable
ISO 6406:2005	Periodic inspection and testing of seamless steel gas cylinders	<i>Until further notice</i>
ISO 10461:2005 + A1:2006	Seamless aluminium-alloy gas cylinders – Periodic inspection and testing	<i>Until further notice</i>
ISO 10462:2005	Gas cylinders – Transportable cylinders for dissolved acetylene – Periodic inspection and maintenance	<i>Until further notice</i>
ISO 11623:2002	Transportable gas cylinders – Periodic inspection and testing of composite gas cylinders	<i>Until further notice</i>
ISO 16111:2008	Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride	<i>Until further notice</i>