UNITED NATIONS

ST

Secretariat

Distr.
GENERAL

ST/SG/AC.10/C.3/1999/50
21 April 1999

Original: ENGLISH

COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS

Sub-Committee of Experts on the Transport of Dangerous Goods
(Sixteenth session,
Geneva, 5-16 July l999,
agenda item 2 (a))

DEVELOPMENT OF PROVISIONS FOR THE TRANSPORT OF GASES

Gas cylinders and other gas receptacles

NOTE ON THE PROGRESS MADE ON THE WORK CARRIED OUT BY THE TECHNICAL COMMITTEE ISO/TC 58 *GAS CYLINDERS*

Transmitted by the International Organization for Standardization (ISO)

A progress report on the work of technical committee ISO/TC 58 was distributed to the UN Sub-Committee of Experts on the Transport of Dangerous Goods in **December 1998** (Re: doc.UN/CETDG/20/ INF **30**).
This note is a minor update of that document taking into account the progress made since that time. **Please note that three International Standards have reached the publication stage since then.**

1 Refillable seamless gas cylinders for world-wide use

1.1 Steel gas cylinders

The International Standard ISO 9809-1 *Transportable seamless steel gas cylinders -- Design, construction and testing -- Part 1: Quenched and tempered steel cylinders with tensile strength less than 1100 MPa* **was approved in the formal member body vote terminating on 1999-03-28. The publication will take place shortly.**

A Draft International Standard ISO/DIS 9809-2 *Transportable seamless steel gas cylinders -- Design, construction and testing -- Part2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1100 MPa* was approved in the member body enquiry terminating on 15 October 1997. Comments have been reviewed and the finalized document will be submitted to ISO/CS in December 1998. It is now expected that the two-month formal vote will be undertaken in the third quarter of 1999. If the FDIS is accepted, the final publication would take place shortly after.

Normalized steel cylinders are dealt with in ISO/DIS 9809-3 *Transportable seamless steel gas cylinders -- Design, construction and testing -- Part3: Normalized steel cylinders,* which is now being processed at the central secretariat with the goal to send it out for enquiry in the latter half of 1999. The intent is that ISO 9809, Parts 1, 2 and 3 should replace the old ISO 4705, which has become partly obsolete and now has a warning note regarding its use with steels with tensile strength above 1100 MPa.

The International Standard EN ISO 11120 *Gas cylinders -- Refillable seamless steel gas cylinders, capacity between 150 l and 3000 l -- Design and testing* **was accepted at the end of 1998 in a parallel formal vote, in accordance with the provision of the Vienna Agreement on technical coordination between ISO and CEN. EN ISO 11120 was published in March 1999.**

In addition, the work on ISO/CD 14600 on quality assurance is being processed as quickly as possible to complement the above projects (see section 3 of this note).

1.2 Aluminium alloy gas cylinders

The International Standard ISO 7866 *Refillable transportable seamless aluminium alloy gas cylinders for worldwide usage -- Design, construction and testing* **was approved in the formal member body vote terminating on 1999-04-04. The final publication will take place shortly.**

2 Standards for other types of gas cylinders

2.1 Non-refillable industrial gas cylinders

The Draft International Standard, ISO/DIS 11118 *Non-refillable metallic gas cylinders -- Specification and test methods* was approved in the member body enquiry during 1997. Comments have been reviewed and it is now expected that the two-month formal vote will be undertaken in April/May 1999. If the FDIS is accepted, the final publication of the International Standard would take place shortly after.

2.2 Gas cylinders of composite materials

The composite cylinder standardization project has been split into three parts as follows :

ISO/CD 11119-1 *Gas cylinders of composite material -- Specifications and test methods --Part 1: Hoop wrapped, metallic liners;*
ISO/CD 11119-2 *Gas cylinders of composite material -- Specifications and test methods --Part 2: Fully wrapped, metallic liners;*
ISO/CD 11119-3 *Gas cylinders of composite material -- Specifications and test methods --Part 3: Fully wrapped, non-metallic.*

An ad hoc meeting in SC 3 was held in March 1999 to further revise the documents with the aim to seek approval to proceed to ISO/DIS. A number of issues were addressed and resolved. The aim is to prepare new documents to reach ISO/CS before June 1999. The enquiry is expected to take place near the end of 1999.

2.3 High-pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles

A Draft International Standard (ISO/DIS 11439) dealing with high pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles has been established in a joint working group from technical committees ISO/TC 58 *Gas cylinders* and ISO/TC 22 *Road vehicles.* This working group is ISO/TC 58/SC 3/WG 17 *Compressed natural gas cylinders for road vehicles*. This Draft International Standard was accepted in a parallel enquiry within ISO and CEN **and the final text should be completed and sent to ISO/CS in May 1999. The formal vote is expected to take place in the beginning of 2000.** The work is carried out in liaison with the meeting of Experts on Pollution and Energy and with the Subcommittee of Experts on the Transport of Dangerous Goods.

2.4 Cylinders for acetylene

The following Draft International Standards have been edited and **the two-month formal vote will be undertaken in the third quarter of 1999. If the FDISes are accepted, the final publication of the International Standards would take place shortly after.**

ISO/DIS 3807-1 *Cylinders for acetylene -- Basic requirements -- Part 1: Cylinders without fusible plugs (Partial revision of ISO 3807:1977);*
ISO/DIS 3807-2 *Cylinders for acetylene -- Basic requirements -- Part 2: Cylinders with fusible plugs (Partial revision of ISO 3807:1977).*

3 Quality assurance programme

The TC 58 working group on an international quality assurance system for gas cylinders met on 28 Sept. 1998 in Ottawa. The work is now well under way (ISO/DIS 14600 *Basic rules for an international quality acceptance system for ISO gas cylinders*). Contacts have been taken with CASCO**(1)** and ISO/TC 176**(2)** for harmonizing with general ISO requirements on conformity assessment standards**. Important viewpoints have been received from these bodies and are presently worked into the document. The aim is to have an enquiry circulated by the end of 1999.** The convenor of the working group can be reached by the following address:

Mr. J.G. Marsh
Convener of ISO/TC 58/WG 9
7229 Walker Road
AMHERSTBURG, ONTARIO
Canada N9V 2Y7
TP + 1 519 682 1313 (office) / + 1 519 726 6784 (home)
TF + 1 519 682 3630; e-mail: jgmarsh@mail.wthg.com

_____

1) The ISO Committee on Quality Assessment
2) The technical committee ISO/TC 176 *Quality management and quality assurance*

4 Oxidizing gases and gas mixtures, including toxic and corrosive gases

The following Working Draft is being prepared by WG 7 of subcommittee ISO/TC 58/SC 2:

ISO/WD 13339 *Procedure for the determination of the oxipotential of oxidizing gases and gas mixtures including toxic and corrosive gases.*

5 Additional work in progress

5.1 Compatibility between gases and materials

5.1.1 Metallic and non-metallic materials

The following International Standard was published in Nov 1998.

EN ISO 11114-2 ***Transportable gas cylinders -- Compatibility of cylinder and valve materials with gas contents -- Part 2: Non-metallic materials.***

5.1.2 Testing methods

A corrigendum is under preparation for the following International Standard:

ISO 11114-3:1997 *Transportable gas cylinders -- Compatibility of cylinder and valve materials with gas contents -- Part 3: Autogenous ignition test in oxygen atmosphere.*

5.1.3 Hydrogen

ISO/AWI 11114-4 deals with testing for the compatibility of metallic materials with hydrogen.

5.1.4 Terminology

The International Standard ISO 10286 *Terminology,* is presently under revision with regard to definitions of various states of gases (compressed, liquefied, dissolved, etc.) in order to harmonise with other regulations such as the UN Orange Book, ADR etc. Some other inconsistencies will also be corrected. **The aim is to have a CD circulated in the second quarter of 1999.**

5.2 On-going work within subcommittee ISO/TC 58/SC 2 *Gas cylinders - Cylinder fittings*

The following International Standards have been published since the last report:

ISO 11116-1 ***Gas cylinders -- 17.4 mm taper thread for connection of valves to gas cylinders -- Specifications;***

ISO 11116-2 ***Gas cylinders -- 17.4 mm taper thread for connection of valves to gas cylinders -- Gauge requirements.***

The following International Standard is at the final publication stage:

ISO 10297 *Gas cylinders -- Refillable gas cylinder valves -- Specification and type* testing (NB All gases except LPG).

The following documents are at Draft International Standard (DIS) stage:

ISO/DIS 10692-2 *Gas cylinders -- Gas cylinder valve connections for use in microelectronic industry -- Part 2: Specification and type testing for valve to cylinder connections*;
ISO/DIS 12209-1 *Gas cylinders --Outlet connections for gas cylinder valves for compressed breathable air-- Part 1: Yoke type connection*;
ISO/DIS 12209-2 *Gas cylinders --Outlet connections for gas cylinder valves for compressed breathable air-- Part 2: Threaded connections*;
ISO/DIS 12209-3 *Gas cylinders --Outlet connections for gas cylinder valves for compressed breathable air-- Part 3: Adaptor for 230 bar valves*;
ISO/DIS 13340 Transportable gas cylinders -- Cylinders valves for non-refillable cylinders -- Specification and type testing;
ISO/DIS 14246 *Transportable gas cylinders -- Gas cylinder valves -- Manufacturing tests and inspections.*

The following document are at Committee Draft (CD) stage:

ISO/CD 15245-1 *Gas cylinders -- Parallel threads -- Specifications*;
ISO/CD 15245-2 *Gas cylinders -- Parallel threads -- Inspection gauges*;
ISO/CD 10692-1 *Gas cylinders -- Gas cylinder valve connections for use in microelectronic industry -- Part 1: Outlet connections for single gases.*
The last work item was overdue at the beginning of the year and subsequently cancelled. It has to be revoted to be activated.

The following documents are at Working Draft (WD) stage:

ISO/WD 407 *Small medical gas cylinders -- Pin-index yoke-type valve connections (Revision of ISO 407:1991);*
ISO 5145/DAM 1 *Cylinder valve outlets for gases and gas mixtures -- Selection and dimensioning -- Amendment 1* Updating of Annex A of ISO 5145: 1990;
ISO/WD 13339 *Procedure for the determination of the oxipotential of oxidizing gases and gas mixtures including toxic and corrosive gases*;
ISO/AWI 14245 Specifications and testing for liquefied petroleum gas valves;
ISO/AWI 15995 *Manually operated liquefied petroleum gas valves -- Specifications and testing;*
ISO/AWI 15996 *Residual pressure valves and their filling adaptors -- Performance and type testing.*

5.3 On-going work within subcommittee ISO/TC 58/SC 3 *Gas cylinders - Cylinder design*

The following draft ISO Technical Report **has been** circulated for publication approval during 1998 and the **comments will be reviewed in the beginning of 1999:**

ISO/CD 12391 *Seamless steel gas cylinders -- Toughness and acceptance levels of steels of strength levels above 1100 MPa.*

This work item was overdue at the beginning of the year and subsequently cancelled. It has to be revoted to be activated.

5.4 On-going work within subcommittee ISO/TC 58/SC 4 *Gas cylinders - Operational requirements for gas cylinders*

The following documents are at Draft International Standard (DIS) stage:

ISO/DIS 10464 *Liquefied petroleum gas cylinders -- Periodic inspection and testing*;
ISO/DIS 10691 *Transportable welded steel cylinders for Liquefied Petroleum Gas (LPG) -- Procedures for checking at the time of filling;*
ISO/DIS 11623 *Transportable gas cylinders -- Periodic inspection and testing of composite gas cylinders;*
ISO/DIS 13769 *Gas cylinders -- Stamp marking.*

The following draft is at Committee Draft (CD) stage:

ISO/DIS 11622 *Filling ratios, filling pressures and provisions for safety devices for gas cylinders.*

This work item was overdue at the beginning of the year and subsequently cancelled. It has to be revoted to be activated.

The following documents are at Working Draft (WD) stage:

ISO/AWI 6406 *Periodic inspection and testing of seamless steel gas cylinders (under revision and will be coordinated with 10460, 10461, 10463 and 1113)*;
ISO/AWI 10460 *Welded carbon steel gas cylinders -- Periodic inspection and testing (under revision revision and will be coordinated with 6406, 10461, 10463 and 1113);*
ISO/AWI 10461 *Seamless aluminium alloy gas cylinders -- Periodic inspection and testing (under revision revision and will be coordinated with 6406, 10460, 10463 and 1113);*
ISO/AWI 10462 *Cylinders for dissolved acetylene -- Periodic inspection and maintenance (under revision);*
ISO/AWI 10463 *Cylinders for permanent gases -- Inspection at time of filling (under revision and will be coordinated with 6406, 10460, 10461 and 1113);*

ISO/AWI 11624 *High strength seamless steel cylinders -- Periodic inspection and testing*; **(1)**
ISO/AWI 13771 *Gas cylinders -- Filling conditions for liquefied petroleum gas*. **(2)**

6 Meetings held and planned

ISO/TC 58	9 and 10 Oct. 1997, Ottawa; **23 and 24 Sept. 1999, Venice.**
ISO/TC 58/WG 7*	18 September 1998, Tokyo.
ISO/TC 58/WG 8*	21 to 22 Oct. 1998, Vienna.
ISO/TC 58/WG 9*	28 Sept. 1998, Ottawa.
ISO/TC 58/SC 2	31 March and 1 April 1999, Washington D.C.; **15 and 16 March, Berlin (?).**
ISO/TC 58/SC 2/WG 6*	9 and 10 December 1997, Berlin; 1 and 2 Dec. 1998, Berlin.
ISO/TC 58/SC 2/WG 7*	2 October 1997, Paris; 26 January 1998, Luxembourg.
ISO/TC 58/SC 3	Ad hoc meeting 18 and 19 March 1999, London; **20 to 22 Sept. 1999, Venice**.
ISO/TC 58/SC 4	6 to 8 May 1998, Clearwater; **7 to 9 July 1999, Stockholm**.

*** Titles of Working Groups**

ISO/TC 58/WG 7	Compatibility between gases and materials (Convener: Dr. H. Barthélémy)
ISO/TC 58/WG 8	Acetylene cylinders (Convener: Mr. G. König)
ISO/TC 58/WG 9	Quality assurance requirements for approval and certification of gas cylinders (Convener: Mr. J.G. Marsh)
ISO/TC 58/SC 2/WG 4	Valve system and cylinder neck threads (Convener: Mr. P. Bates)
ISO/TC 58/SC 2/WG 6	Gas cylinder valves -- Specifications and testing (Convener: Mr. E. Behrend)
ISO/TC 58/SC 2/WG 7	Determination of toxicity of gas mixtures (Convener: Dr. H. Barthélémy)

Notes

(1) This work item has been cancelled and the requirements will be inserted into ISO 6406 on next revision.

(2) This work item has been cancelled.

ANNEX
Bibliography

List of International Standards from technical committee ISO/TC 58

ISO/TC 58 *Gas cylinders*

ISO 32:1977	Gas cylinders for medical use -- Marking for identification of contents
ISO 3500:1990	Seamless steel CO2 cylinders for fixed fire-fighting installations on ships
ISO 3807:1977	Dissolved acetylene cylinders -- Basic requirements **(under revision)**
ISO 7225:1994	Gas cylinders precautionary labels (corrected and reprinted 1995)
ISO 10286:1996	Gas cylinders -- Terminology **(under revision)**
ISO 11114-1:1997	Transportable gas cylinders -- Compatibility of cylinder and valve materials with gas contents -- Part 1: Metallic materials
EN ISO 11114-2:1998	Transportable gas cylinders -- Compatibility of cylinder and valve materials with gas contents -- Part 2: Non-metallic materials.
ISO 11114-3:1997	Transportable gas cylinders -- Compatibility of cylinder and valve materials with gas contents -- Part 3: Autogenous ignition test in oxygen atmosphere

ISO/TC 58/SC 2 *Gas cylinders - Cylinder fittings*

ISO 407:1991	Small medical gas cylinders -- Pin-index yoke-type valve connections **(under revision)**
ISO 5145:1990	Cylinder valve outlets for gases and gas mixtures -- Selection and dimensioning **(under revision)**
ISO/TR 7470:1988	Valve outlets for gas cylinders -- List of provisions, which are either standardized or in use
ISO 10156:1996	Gases and gas mixtures -- Determination of fire potential and oxidizing ability for the selection of cylinder valve outlets
ISO 10298:1995	Determination of toxicity of a gas or gas mixture
ISO 10920:1997	Transportable gas cylinders -- 25E taper thread for connection of valves -- Specification
ISO 11116-1:1999	**Gas cylinders -- 17E taper thread for connection of valves to gas cylinders -- Part 1: Specifications**
ISO 11116-2:1999	**Gas cylinders -- 17E taper thread for connection of valves to gas cylinders -- Part 2: Inspection gauges**
ISO 11117:1998	Gas cylinders -- Valve protection caps and valve guards for industrial and medical gas cylinders -- Design, construction and tests
ISO 11191:1997	Gas cylinders 25E taper thread for connection of valves to gas cylinders -- In-spection gauges
ISO 13338:1995	Determination of tissue corrosiveness of a gas or gas mixture
ISO 13341:1997/Cor.1:1998	Transportable gas cylinders -- Fitting of valves to gas cylinders (a technical corrigendum has been published in 1998)

ISO/TC 58/SC 3 ***Gas cylinders - Cylinder design***

ISO 4705:1983/Cor.1:1998	Refillable seamless steel gas cylinders (a technical corrigendum has been published in 1998)
ISO 4706:1989	Refillable welded steel gas cylinders
EN ISO 11120:1999	**Gas cylinders -- Refillable seamless steel gas cylinders, capacity between 150 l and 3000 l -- Design and testing**
ISO/TR 13763:1994	Safety and performance criteria for seamless gas cylinders

ISO/TC 58/SC 4 ***Gas cylinders - Operational requirements for gas cylinders***

ISO 6406:1992	Periodic inspection and testing of seamless steel gas cylinders
ISO 10460:1993	Welded carbon steel gas cylinders -- Periodic inspection and testing
ISO 10461:1993	Seamless aluminium alloy gas cylinders -- Periodic inspection and testing
ISO 10462:1994	Cylinders for dissolved acetylene -- Periodic inspection and maintenance (corrected and reprinted 1995)
ISO 10463:1993	Cylinders for permanent gases -- Inspection at time of filling
ISO 11113:1995	Cylinders for liquefied gases (excluding acetylene and LPG) -- Inspection at time of filling
ISO 11372:1995	Cylinders for dissolved acetylene -- Inspection at time of filling
ISO 11621:1997	Gas cylinders -- Procedures for change of gas service
ISO 11625:1998	Gas cylinders -- Safe handling
ISO 11755:1996	Cylinders in bundles for permanent and liquefied gases (excluding acetylene) -- Inspection at time of filling
ISO 13770:1997	Aluminium alloy gas cylinders -- Operational requirements for avoidance of neck and shoulder cracks

---