

**COMMITTEE OF EXPERTS ON THE  
TRANSPORT OF DANGEROUS GOODS**  
(Twentieth session,  
Geneva, 7-16 December 1998,  
agenda item 5(b))

## **PROGRAMME OF WORK**

### **Programme of work for the 1999/2000 biennium and related proposals** **Provisions for Gas Cylinders**

#### **Transmitted by the Expert from Canada**

#### **Proposal**

It is the opinion of the expert from Canada that the development of the provisions for gas cylinders, for which paragraph 6.2.1 of Chapter 6.2 "Requirements for the Construction and Testing of Receptacles for Gases" is currently reserved, be included in the programme of work for the 1999/2000 biennium.

#### **Background**

1. As noted in ST/SG/AC.10/C.3/30, paragraph 15, the expert from the United States of America has proposed that the Committee's programme of work for the 1999/2000 biennium should include provisions for gas cylinders, in light of ISO's work on standardisation.
2. Under ISO Technical Committee 58, Gas Cylinders, (ISO/TC58), numerous International Standards have been published with respect to technical requirements for gas cylinders. These standards include requirements for the design, construction, testing, operation, and fittings of gas cylinders. (See Attachment A.)
3. Under ISO/TC58, numerous draft documents pertaining to technical requirements for gas cylinders are near publication as International Standards. These documents address requirements for the design, construction, testing, operation, and fittings of gas cylinders. (See Attachment B.) Three notable draft standards, 9809-1 and 9809-2 pertaining to the construction of seamless steel cylinders and 7866 pertaining to the construction of seamless aluminum cylinders, are approaching the final stages.
4. These technical International Standards should be considered for reference by the Recommendations on the Transport of Dangerous Goods Model Regulations.
5. Under ISO/TC58, a document entitled ISO/CD 14600, "Basic Rules for an International Quality Acceptance System for ISO Gas Cylinders", is being developed to accompany the technical construction standards. This document addresses the inspection, quality assurance, and certification requirements for the manufacture of gas cylinders.

Once published, this standard will provide a framework for the harmonisation of inspection and quality assurance requirements and a basis for the worldwide recognition of cylinders manufactured in accordance with these ISO Standards.

It is anticipated that this document will be published as an International Standard towards the end of the next biennium. At that time, it should also be considered for reference by the Recommendations on the Transport of Dangerous Goods Model Regulations.

## ATTACHMENT A

## STANDARDS AND TECHNICAL REPORTS PUBLISHED

**ISO/TC58 Gas cylinders**

|                  |   |
|------------------|---|
| ISO 32:1977      | Gas cylinders for medical use – Marking for identification  |
| ISO 3500:1990    | Seamless steel CO <sub>2</sub> cylinders for fixed fire-fighting installations on ships   |
| ISO 3807:1977    | Dissolved acetylene cylinders – Basic requirements  |
| ISO 7225:1994    | Precautionary labels for gas cylinders (corrected and reprinted 1995)   |
| ISO 10286:1996   | Gas cylinders – Terminology   |
| ISO 11114-1:1997 | Transportable gas cylinders – Compatibility of cylinder and valve materials with gas contents – Part 1: 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/TC58/SC2 Gas cylinders – Cylinder fittings**

|                  |   |
|------------------|---|
| ISO 407:1991     | Small medical gas cylinders – Pin-index yoke-type valve connections   |
| ISO 5145:1990    | Cylinder valve outlets for gases and gas mixtures – Selection and dimensioning  |
| 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 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 – Inspection gauges                                    |
| ISO 13338:1995   | Determination of tissue corrosiveness of a gas or gas mixture   |
| ISO 13341:1997   | Transportable gas cylinders – Fitting of valves to gas cylinders  |

**ISO/TC58/SC3 Gas cylinders – Cylinder design**

|                   |  |
|-------------------|--|
| ISO 4705:1983     | Refillable seamless steel gas cylinders                    |
| ISO 4706:1989     | Refillable welded steel gas cylinders                      |
| ISO/TR 13763:1994 | Safety and performance criteria for seamless gas cylinders |

**ISO/TC58/SC4 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 aluminum-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 liquefiable gases (excluding acetylene) – Inspection at time of filling |
| ISO 13770:1997 | Aluminum alloy gas cylinders – Operational requirements for avoidance of neck and shoulder cracks              |

## ATTACHMENT B

## DRAFT DOCUMENTS

**ISO/TC58 Gas cylinders**

|                 |   |
|-----------------|---|
| ISO/DIS 3807-1  | Dissolved acetylene cylinders – Basic requirements – Part 1: Cylinders without fusible plugs  |
| ISO/DIS 3807-2  | Dissolved acetylene cylinders – Basic requirements – Part 2: Cylinders with fusible plugs   |
| ISO/DIS 11114-2 | Transportable gas cylinders – Compatibility of cylinder and valve materials with gas contents – Part 2: Non-metallic materials  |
| ISO/NP 11114-4  | Transportable gas cylinders – Compatibility of cylinder and valve materials with gas contents – Part 4: Test methods for selecting metallic materials resistant to hydrogen embrittlement |
| ISO/CD 14600    | Transportable gas cylinders – International quality assurance system  |

**ISO/TC58/SC2 Gas cylinders – Cylinder fittings**

|                 |   |
|-----------------|---|
| ISO/FDIS 10297  | Gas cylinder valves – Specifications and type testing (all gases except LPG)  |
| ISO/CD 10692-1  | Connections for gas cylinder valves for ultra-high integrity service – Part 1: Outlet connections                           |
| ISO/WD 10692-2  | Connections for gas cylinder valves for ultra-high integrity service – Part 2: Inlet connections                            |
| ISO/DIS 11116-1 | Gas cylinders – 17E taper thread for connection of valves to gas cylinders – Part 1: Specifications                         |
| ISO/DIS 11116-2 | Gas cylinders – 17E taper thread for connection of valves to gas cylinders – Part 2: Inspection gauges                      |
| ISO/DIS 12209-1 | Outlet connections for gas cylinder valves for compressed breathable air – Part 1: Yoke type connections                    |
| ISO/DIS 12209-2 | Outlet connections for gas cylinder valves for compressed breathable air – Part 2: Threaded connections                     |
| ISO/DIS 12209-3 | Outlet connections for gas cylinder valves for compressed breathable air – Part 3: Adaptor for 232 bar valves               |
| ISO/WD 13339    | Procedure for the determination of the oxipotential of oxidizing gases and gas mixtures including toxic and corrosive gases |
| ISO/DIS 13340   | Valves for non-refillable gas cylinders   |
| ISO/NP 14245    | Specification and testing for liquefied petroleum as (LPG) valves   |
| ISO/DIS 14246   | Transportable gas cylinders – Gas cylinder valves – Manufacturing tests and inspections                                     |
| ISO/NP 15245    | Gas cylinders – Parallel threads – Specifications   |
| ISO/NP 15246    | Gas cylinders – Parallel threads – Gauging  |
| ISO/NP XXXXX    | Specifications and testing for manually operated liquefied petroleum gas valves   |
| ISO/NP YYYYY    | Performance and type testing of residual pressure valves and their filling adaptors   |

**ISO/TC58/SC3 Gas cylinders – Cylinder design**

|                |  |
|----------------|--|
| ISO/DIS 7866   | Refillable transportable seamless aluminum alloy gas cylinders for world-wide usage – Design, manufacture, and acceptance  |
| ISO/DIS 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                |
| ISO/DIS 9809-2 | Transportable seamless steel gas cylinders – Design, construction, and testing – Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1100 MPa |

|                |  |
|----------------|--|
| ISO/NP 9809-3  | Transportable seamless steel gas cylinders – Design, construction, and testing – Part 3: Normalized steel cylinders      |
| ISO/DIS 11118  | Non-refillable gas cylinders – Specifications and test methods   |
| ISO/CD 11119-1 | Gas cylinders of composite material – Specifications and test methods – Part 1: Hoop wrapped, metallic liner             |
| ISO/CD 11119-2 | Gas cylinders of composite material – Specifications and test methods – Part 2: Fully wrapped, metallic liner            |
| ISO/CD 11119-3 | Gas cylinders of composite material – Specifications and test methods – Part 3: Fully wrapped, nonmetallic liner         |
| ISO/DIS 11120  | Gas cylinders- Refillable seamless steel gas cylinders, capacity between 150 L and 3000 L – Design and testing           |
| ISO/DIS 11439  | High pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles                        |
| ISO/WD 12391   | Seamless steel gas cylinders – Toughness and acceptance levels of steels of strength levels above 1100 N/mm <sup>2</sup> |

**ISO/TC58/SC4 *Gas cylinders – Operational requirements for gas cylinders***

|               |  |
|---------------|--|
| ISO/DIS 10464 | Liquefied petroleum gas cylinders – Periodic inspection and testing                    |
| ISO/DIS 10691 | Cylinders for liquefied petroleum gas – Inspection at the time of filling              |
| ISO/CD 11622  | Filling ratios, filling pressures, and provisions for safety devices for gas cylinders |
| ISO/DIS 11623 | Composite gas cylinders – Periodic inspection and testing                              |
| ISO/CD 13769  | Gas cylinders – Stamp marking  |