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**Gas cylinders — Refillable welded steel  
cylinders for liquified petroleum gas  
(LPG) — Procedures for checking before,  
during and after filling**

*Bouteilles à gaz — Bouteilles rechargeables soudées en acier pour gaz  
de pétrole liquéfié (GPL) — Modes opératoires de contrôle avant,  
pendant et après le remplissage*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 10691 was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 4, *Operational requirements for gas cylinders*.

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# Gas cylinders — Refillable welded steel cylinders for liquified petroleum gas (LPG) — Procedures for checking before, during and after filling

**WARNING** — This International Standard calls for the use of substances and procedures that can be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligation relating to health and safety at any stage. It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people. Where judgments are called for it has been assumed that they will be made by competent persons who have been trained specifically for the task.

## 1 Scope

This International Standard specifies the procedures to be adopted when checking transportable refillable welded steel LPG cylinders before, during and after filling.

It applies to transportable refillable welded steel LPG cylinders of water capacity from 0,5 l up to and including 150 l.

It does not apply to cylinders permanently installed in vehicles, or to plant and filling equipment.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 10464, *Gas cylinders — Refillable welded steel cylinders for liquefied petroleum gas (LPG) — Periodic inspection and testing*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **competent authority**

any national body or authority designated or otherwise recognized as such for any purpose in connection with this International Standard

### 3.2

#### **competent body**

person or corporate body, defined by the national or relevant authority, which by combination of appropriate qualification, training, experience and resources is able to make objective judgments on a subject

### 3.3

#### **competent person**

person who by a combination of training, experience and supervision is able to make objective judgments on a subject

**3.4  
cylinder**  
transportable, refillable container manufactured and marked to a national or international standard and with a water capacity not exceeding 150 l

**3.5  
filling ratio**  
ratio of the mass of gas introduced into a container to the mass of water at 15 °C that would fill the same container fitted ready for use

**3.6  
filling by volume**  
filling the cylinder with a fixed volume of LPG

**3.7  
filling to a level**  
filling the cylinder to a fixed level using an ullage gauge

**3.8  
filling by mass**  
filling the cylinder with LPG using a weighing machine

**3.9  
liquefied petroleum gas  
LPG**  
mixture of predominantly butane or propane with traces of other hydrocarbon gases classified in accordance with UN number 1965, hydrocarbon gas mixture, liquefied, or NOS or UN number 1075, petroleum gases, liquefied

NOTE In some countries, UN number 1011 and UN number 1978 may also be used to designate LPG.

**3.10  
reconditioning**  
major repairs to cylinders, including hot work, welding or de-denting (as permitted by the competent authority), carried out by specialists away from the filling line

**3.11  
rejection**  
putting out of service until final disposition is determined

**3.12  
periodic inspection test station**  
place where cylinders are tested and periodically inspected

## 4 Segregation of cylinders prior to filling

### 4.1 General

Cylinders shall be checked and segregated into the categories specified in 4.2 to 4.4.

### 4.2 Cylinders suitable for filling

Cylinders shall be deemed suitable for filling if the following conditions apply:

- a) the design code/specification is identifiable;
- b) the tare mass or tare indication and water capacity are marked;
- c) the product mass and product identification (LPG) are indicated when required;