



SLOVENSKI STANDARD

SIST EN 1439:2008

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BUXca Yý U.

SIST EN 1439:2006

SIST EN 14763:2005

SIST EN 14794:2006

SIST EN 14913:2006

CdfYa U]b'df]Vcf'nUi hY_c]b^yb]bUzb]d`]b'fl BDŁ!'DcgltdY_nUdfYj Yf^Ub^Y
^_`Yb_nUI BD'dfYX'dc`b^yb^Ya ža YX'b^ja]b'dc`b^Ya

LPG equipment and accessories - Procedure for checking LPG cylinders before, during
and after filling

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Flüssiggas-Geräte und Ausrüstungsteile - Kontrollverfahren für ortsbewegliche,
wiederbefüllbare Flaschen für Flüssiggas (LPG) vor, während und nach dem Füllen

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Equipements pour GPL et leurs accessoires - Procédure de vérification des bouteilles
transportables et rechargeables pour GPL avant, pendant et après le remplissage

Ta slovenski standard je istoveten z: EN 1439:2008

ICS:

23.020.30

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en,fr,de

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EUROPEAN STANDARD

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February 2008

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LPG equipment and accessories - Procedure for checking LPG cylinders before, during and after filling

Equipements pour GPL et leurs accessoires - Procédure de
vérification des bouteilles transportables et rechargeables
pour GPL avant, pendant et après le remplissage

Flüssiggas-Geräte und Ausrüstungsteile - Kontrollverfahren
für ortsbewegliche, wiederbefüllbare Flaschen für
Flüssiggas (LPG) vor, während und nach dem Füllen

This European Standard was approved by CEN on 6 January 2008.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 1439:2008) has been prepared by Technical Committee CEN/TC 286 “Liquefied petroleum gas equipment and accessories”, the secretariat of which is held by NSAI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2008, and conflicting national standards shall be withdrawn at the latest by August 2008.

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

This European Standard has been submitted for reference into the RID (Regulations concerning the International Carriage of Dangerous Goods by Rail) and/or in the technical annexes of the ADR (European Agreement concerning the international carriage of Dangerous goods by Road). Therefore the standards listed in the normative references and covering basic requirements of the RID/ADR not addressed within the present standard are normative only when the standards themselves are referred to in the RID and/or in the technical annexes of the ADR.

The main changes between this version of the standard and the 2005 version is that this version combines EN 1439:2005, EN 14763:2005, EN 14794:2005 and EN 14913:2005 into a single standard.

This European Standard supersedes EN 1439:2005, EN 14763:2005, EN 14794:2005 and EN 14913:2005.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This European 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 obligations relating to health and safety at any stage.

It has been assumed in the drafting of this European Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people. Where judgements are called for, it has been assumed that they are made by competent persons who have been trained specifically for the tasks.

This standard is a combination of EN 1439:2005, with EN 14763:2005, EN 14794:2005 and EN 14913:2005.

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1 Scope

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

This European Standard applies to transportable refillable LPG cylinders of water capacity from 0,5 l up to and including 150 l. This European Standard does not apply to cylinders permanently installed in vehicles, or to plant and filling equipment.

This standard is applicable to the following:

- welded and brazed steel LPG cylinders with a specified minimum wall thickness (see EN 1442 and EN 12807 or an equivalent standard);
- welded steel LPG cylinders without specified minimum wall thickness (see EN 14140 or an equivalent standard);
- welded aluminium LPG cylinders (see EN 13110 or an equivalent standard);
- composite LPG cylinders (see EN 14427 or an equivalent standard).

Specific requirements for different types of cylinders are detailed in Annex A, Annex B, Annex C and Annex D.

NOTE Rejection limits for a particular type of protected cylinder are given in Annex G.

This standard is intended to be applied to cylinders complying with RID/ADR (including pi marked cylinders) and also to existing non RID/ADR cylinder populations.

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2 Normative references

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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.

EN 1440, *LPG equipment and accessories – Periodic inspection of transportable refillable LPG cylinders*

EN 10028-7, *Flat products made of steels for pressure purposes — Part 7: Stainless steels*

EN 12816, *Transportable refillable steel and aluminium LPG cylinders – Disposal*

EN 13952, *LPG cylinders - Filling procedures*

EN 14140, *Transportable refillable welded steel cylinders for Liquefied Petroleum Gas (LPG) — Alternative design and construction*

EN 14427:2004, *Transportable refillable fully wrapped composite cylinders for Liquefied Petroleum Gases (LPG) - Design and Construction*

EN 14894, *LPG Equipment and accessories - Cylinder and drum marking*

3 Terms and definitions

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

**3.1
LPG (liquefied petroleum gas)**
mixture of predominantly butane or propane with traces of other hydrocarbon gases classified in accordance with UN number 1965, hydrocarbon gases mixture, liquefied, NOS or UN number 1075, petroleum gases, liquefied

NOTE In some countries, UN numbers 1011 and 1978 may also be designated LPG.

**3.2
competent person**
person who by a combination of training, experience and supervision, is able to make objective judgements on the subject

**3.3
competent body**
person or corporate body defined by the national authority, which by combination of appropriate qualification, training, experience and resources is able to make objective judgements on the subject

**3.4
cylinder**
transportable, refillable pressure receptacle with a water capacity from 0,5 l up to and including 150 l

**3.5
protected cylinder**
metallic cylinder fully covered with a protection against impact and external corrosion so that the cylinder wall cannot be seen

NOTE This is not a composite cylinder; see EN 14427 and Figure G.1

**3.6
casing**
permanently attached sleeve covering part of or the whole of the pressure containing envelope of a composite cylinder, usually incorporating a foot ring and a shroud

NOTE Permanently attached means that casing cannot be removed during service without destruction, or by using special tools.

**3.7
filling ratio**
ratio of the mass of gas introduced into a cylinder to the mass of water at 15 °C that would fill the same cylinder fitted ready for use

NOTE See Annex E for filling ratios.

**3.8
reference temperature**
temperature used for the calculation of safe filling quantity

NOTE See Annex E for reference temperatures.

**3.9
filled to a level**
filled to a fixed level using a fixed liquid level device

3.10**filled by volume**

filled with a fixed volume of LPG

3.11**filled by mass**

filled with LPG using a weighing machine

3.12**filling plant**

establishment where filling and checking of LPG cylinders takes place

3.13**reconditioning**

major repairs to cylinders, which can include hot work, welding or de-denting carried out by specialists away from potential sources of flammable air/gas mixture

3.14**periodic inspection**

activities carried out at defined intervals, such as examining, measuring, testing or gauging the characteristics of a cylinder, comparing these with specified requirements as defined in EN 1440 and marking to attest conformity

3.15**tare mass**

sum of the mass of the empty cylinder, the mass of the valve including a dip tube where fitted, and the mass of all other parts that are permanently attached to the cylinder when it is being filled, e.g. fixed valve guard

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4 Segregation of cylinders prior to filling

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4.1 General

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

A flow diagram of the checks before, during and after filling is given in Annex F.

4.2 Cylinders suitable for filling

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

- a) design code/specification is identifiable;
- b) tare indication and water capacity are known or marked;
- c) allowed quantity and identification of the product (butane, propane or mixtures thereof, the properties of which were considered for the design of the cylinder) are indicated;
- d) cylinder is within the test date as determined from the marked manufacture date or periodic inspection date;
- e) cylinder does not have defects as described in 4.4. For metallic cylinders, the inspection of the foot-ring for corrosion or damage shall determine the need for a more thorough external visual examination of the cylinder base;
- f) cylinder is fitted with a pressure relief valve, if required by the manufacturing standard.

4.3 Cylinders for periodic inspection

A cylinder shall be set aside for periodic inspection in accordance with EN 1440 when either of the following conditions apply:

- a) cylinder is out of test date;
- b) cylinder cannot be confirmed to be within test date.

4.4 Cylinders requiring further assessment

A cylinder shall be set aside for further assessment (see Clause 5), if:

- a) tare indication of a cylinder, filled by mass, is not known or illegible;
- b) cylinder is judged to have unacceptable physical damage, corrosion or other defects;

NOTE Defects and rejection limits are described in Annex A, Annex B, Annex C, Annex D and Annex G.

- c) valve or pressure relief valve (if fitted) is damaged or has been previously identified as leaking.

5 Reassessment of cylinders

Cylinders that have been set aside (see 4.4) shall be examined by a competent person who shall decide whether they are suitable for filling or shall be sent for reconditioning where permitted by the appropriate annex or disposal in accordance with EN 12816 (where applicable).

Cylinders that are intended to be filled by mass and where the indication of tare weight is missing or illegible shall be reassessed and have the indication of the tare weight applied in accordance with EN 14894.

Leaking cylinders and cylinders with damaged or leaking valves shall be safely vented. Cylinders leaking through the body shall be disposed of in accordance with EN 12816 (where applicable). Leaking or damaged valves shall be repaired or replaced.

Valves can be removed and refitted safely from and to a pressurized LPG cylinder, provided the facility includes dedicated equipment. This equipment shall be operated only by competent personnel working in accordance with a written procedure.

Rejection limits for physical, material and other defects on the cylinder shell are given in Annex A, Annex B, Annex C and Annex D.

NOTE Rejection limits for a particular type of protected cylinder are given in Annex G

6 Filling conditions

6.1 Safe filling quantity

Cylinders shall not be filled in excess of the safe filling quantity. The safe filling quantity is determined from the safe filling ratio agreed by the relevant national competent authorities in accordance with Annex E.

6.2 Safe filling mixture and quality

Cylinders shall be filled with the appropriate mixture and quality of LPG, as specified in EN 13952.

6.3 Accuracy of filling equipment

Filling equipment and check scales, shall be checked at least once per working day.

6.4 Filling methods

Organisation of the filling plant and filling procedure shall be in accordance with EN 13952. When cylinders are filled to a level, the fixed liquid level device shall be checked for operability.

7 Post filling checks

7.1 Check of filled amount

Each cylinder shall be checked to ensure that the maximum mass has not been exceeded, either by check weighing within the tolerances as determined by the relevant national competent authorities or by a determination of the ullage space remaining. Where accepted by the relevant national competent authorities, other systems of checking, such as sample weighing or statistical-data application, may be used when the filling mass is controlled automatically.

7.2 Action necessary for over / under-filled cylinders

If the cylinder is over-filled, the excess LPG shall be removed as soon as reasonably practical and the cylinder re-checked.

If the cylinder is under-filled, the appropriate amount of LPG shall be added and the cylinder re-checked.

7.3 Final checks

Cylinders, valves and valve seals shall be checked for leakage. Leaks shall be dealt with in accordance with the procedures in Clause 5.

Cylinders shall be checked prior to despatch or storage, for the correct fitting of valve caps or plugs, valve protection caps/guards and labelling if required.

Annex A
(normative)

Specific requirements for welded and brazed steel LPG cylinders

Rejection limits for physical, material and other defects on the cylinder shell are given in Table A.1, Table A.2 and Table A.3.

Table A.1 — Physical defects in the cylinder wall

Defect	Description	Rejection limit
Bulge	Visible swelling of the cylinder	All
Dent	A depression in the cylinder that has neither penetrated nor removed metal, when its width at any point is greater than 2 % of the external cylinder diameter.	When the depth of the dent exceeds 25 % of its width at any point ^a .
Cut or gouge	A sharp impression where metal has been removed or redistributed.	Where the original calculated wall thickness is known: depth of cut or gouge is such that the undamaged (remaining) wall is less than the minimum calculated wall thickness. Where the original calculated wall thickness is not known: all.
Dent containing cut or gouge	A depression in the cylinder within which there is a cut or gouge.	When the size of the dent or cut or gouge exceeds the dimensions for rejection as an individual defect.
Crack	A split or rift in the cylinder shell.	All
Lamination	Layering of the material within the cylinder wall appearing as a discontinuity, crack, lap or bulge at the surface.	All

^a Appearance (e.g. sharp dent) and location (e.g. on shoulder of the cylinder) also play a part in the evaluation of dent severity.