SLOVENSKI STANDARD
SIST EN 1439:2018

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Nadomešča:

SIST EN 1439:2008

Oprema in pribor za utekočinjeni naftni plin (UNP) - Postopek za preverjanje premičnih, ponovno polnjivih jeklenk za UNP pred polnjenjem, med njim in po njem

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

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

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

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23.020.35 Plinske jeklenke Gas cylinders

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EUROPEAN STANDARD
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English Version

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

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

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This European Standard was approved by CEN on 10 April 2017.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

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European foreword

This document (EN 1439:2017) 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of an identical text or by endorsement, at the latest by December 2017, and conflicting national standards shall be withdrawn at the latest by December 2017.

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

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association

This document supersedes EN 1439:2008.

The changes to this document include:

— definitions have been updated and modified;

— changes in requirement to Clause 6;

— the addition of requirements to 7.3;

— the addition of requirements for composite cylinders with a metallic liner in Annex D.

This European Standard has been submitted for reference into the RID and/or in the technical annexes of the ADR.

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

Introduction

This document 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 document 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.

Protection of the environment is a key political issue in Europe and elsewhere, for CEN/TC 286 this is covered in CEN/TS 16765 [3] and this Technical Specification should be read in conjunction with this standard. This Technical Specification provides guidance on the environmental aspects to be considered regarding equipment and accessories produced for the LPG industry and the following is addressed:

a) design;

b) manufacture;

c) packaging;

d) use and operation; and

e) disposal.

1 Scope

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

This document applies to transportable refillable LPG cylinders of water capacity not exceeding 150 l and deemed to be fitted with valves designed according to EN ISO 14245 [4] and EN ISO 15995 [5].

This document does not cover the requirements for filling LPG cylinders that are designed and equipped for filling by the user.

This document does not cover the requirements for filling LPG containers on vehicles.

This document is applicable to the following:

— welded and brazed steel LPG cylinders with a specified minimum wall thickness (see EN 1442 and EN 12807 [1] 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 [2] or an equivalent standard);

— composite LPG cylinders (see EN 14427 or an equivalent standard); and

— over-moulded cylinders (OMC).

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

This draft standard is intended to be applied to cylinders complying with RID/ADR [6] [7] (including pi marked cylinders) and also to existing non RID/ADR cylinder populations.

2 Normative references

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

EN 549, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*

EN 1440, *LPG equipment and accessories - Transportable refillable traditional welded and brazed steel Liquefied Petroleum Gas (LPG) cylinders - Periodic inspection*

EN 1442, *LPG equipment and accessories — Transportable refillable welded steel cylinders for LPG — Design and construction*

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

EN 12816, *LPG equipment and accessories - Transportable refillable LPG cylinders - Disposal*

EN 13952, *LPG cylinders - Filling procedures*

EN 14140, *LPG equipment and accessories - Transportable refillable welded steel cylinders for LPG - Alternative design and construction*

EN 14427, *LPG equipment and accessories - Transportable refillable fully wrapped composite cylinders for LPG - Design and construction*

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

EN 15202, *LPG equipment and accessories - Essential operational dimensions for LPG cylinder valve outlet and associated equipment connections*

EN 16728, *LPG equipment and accessories - Transportable refillable LPG cylinders other than traditional welded and brazed steel cylinders - Periodic inspection*

3 Terms and definitions

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

3.1
liquefied petroleum gas
LPG
low pressure liquefied gas composed of one or more light hydrocarbons which are assigned to UN 1011, UN 1075, UN 1965, UN 1969 or UN 1978 only and which consists mainly of propane, propene, butane, butane isomers, butene with traces of other hydrocarbon gases

3.2
competent person
person which by combination of appropriate qualification, training, experience, and resources, is able to make objective judgments on the subject

3.3
over-moulded cylinder
OMC
a pressure receptacle intended for the carriage of LPG of a water capacity not exceeding 13 litres made of a coated steel inner cylinder with an over-moulded protective case made from cellular plastic, which is non removable and bonded to the outer surface of the steel cylinder wall

3.4
periodic inspection
activities carried out at defined intervals, such as examining, measuring, testing or gauging the characteristics of a pressure vessel or a pressure receptacle and comparing these with specified requirements

3.5
filled to a level
filled to a fixed level using a fixed liquid level device

3.6
filled by mass
filled with LPG using a weighing machine

3.7
filled by volume
filled with a fixed volume of LPG

3.8
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

3.9
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

3.10
filling plant
facility where filling and checking of LPG cylinders takes place

3.11
protective casing
layer of protective material which gives mechanical protection which, either cannot be removed without destroying it or is only removable with special tools or is bonded to the cylinder wall

Note 1 to entry: This definition can be applied to cylinders with over-moulded layers or with separate casings.

3.12
filling ratio
ratio of the mass of gas introduced into a cylinder or pressure drum to the mass of water at 15 °C that would fill the same cylinder or pressure drum fitted ready for use

3.13
competent authority
authority or authorities or any other body or bodies designated as such in each State and in each specific case in accordance with domestic law

3.14
reference temperature
temperature used for the calculation of the safe filling quantity

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 by a competent person.

The flow diagram of the checks before, during and after filling given in Annex F shall be followed.

4.2 Cylinders suitable for filling

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

a) tare indication and water capacity are marked;

b) 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;

c) cylinder is within the test date as determined from the marked manufacture date or periodic inspection date;

d) cylinder and valve do not have unacceptable physical damage, corrosion or other defects. 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;

e) cylinder is fitted with a pressure relief valve, if required by the manufacturing standard; and

f) when cylinders are filled to a level, the fixed liquid level device shall be checked for operability.

4.3 Cylinders for periodic inspection

A cylinder shall be set aside for periodic inspection in accordance with EN 1440 or EN 16728 when either of the following conditions apply:

a) cylinder is out of test date; or

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) the tare indication of a cylinder, filled by mass, is missing or illegible;

b) the water capacity of a cylinder, filled by volume, is missing or illegible;

c) the cylinder is judged to have unacceptable physical damage, corrosion or other defects;

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

Cylinders identified as leaking shall be made safe prior to their reassessment.

5 Reassessment of cylinders

Cylinders that have been set aside (see 4.4) shall be examined by a competent person who shall determine if they are suitable for filling or if they shall be sent for reconditioning, where permitted by the appropriate annex of this European Standard, 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 mass applied in accordance with EN 14894.

Cylinders that are intended to be filled by volume, and where the indication of water capacity is missing or illegible, shall be reassessed and have the indication of the water capacity 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. Replacement valve seals shall comply with the requirements of EN 549 and EN 15202.

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

The filling plant shall have means to ensure that, when a valve is fitted, its thread is of the same type as the cylinder bung thread and its torque is compliant with both the cylinder and valve manufacturer's recommendations. The equipment used to fit valves shall be regularly checked, serviced and calibrated.

Rejection limits for physical, material and other defects on the cylinder shell or protective casing shall be applied in accordance with Annex A, Annex B, Annex C, Annex D and Annex G.

6 Filling conditions

The filling plant operation and filling checks shall be in accordance with EN 13952.

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.

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 for correct fill quantity.

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

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. The admissible leakage rate shall be either indicated in the national regulation or defined by the national competent authority, but in any case, not higher than 5 g per hour (g/h).

Equipment used to check for leakage shall be checked, serviced and calibrated regularly. Checks to ensure the correct functioning of the leak detectors on the filling line shall be made, as a minimum, at the beginning of every shift.

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