

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

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 1440:2016+A1:2018 sisaldab Euroopa standardi EN 1440:2016+A1:2018 ingliskeelset teksti.	This Estonian standard EVS-EN 1440:2016+A1:2018 consists of the English text of the European standard EN 1440:2016+A1:2018.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 13.06.2018.	Date of Availability of the European standard is 13.06.2018.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 23.020.35

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:  
Koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

English Version

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

Equipements pour GPL et leurs accessoires - Bouteilles  
de gaz de pétrole liquéfié (GPL) en acier soudé et brasé  
transportables et rechargeables - Contrôle périodique

Flüssiggas-Geräte und Ausrüstungsteile -  
Ortsbewegliche, wiederbefüllbare, geschweißte und  
hartgelötete Flaschen aus Stahl für Flüssiggas (LPG) -  
Wiederkehrende Inspektion

This European Standard was approved by CEN on 13 December 2015 and includes Amendment 1 approved by CEN on 19 April 2018.

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.

CEN members are the national standards bodies of 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 United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

<b>Contents</b>	<b>Page</b>
<b>European foreword</b> .....	<b>4</b>
<b>Introduction</b> .....	<b>5</b>
<b>1 Scope</b> .....	<b>6</b>
<b>2 Normative references</b> .....	<b>6</b>
<b>3 Terms and definitions</b> .....	<b>6</b>
<b>4 Requirements for periodic inspection</b> .....	<b>7</b>
<b>5 Inspections and tests</b> .....	<b>9</b>
5.1 General.....	9
5.2 External visual inspection.....	9
5.2.1 Preparation for external visual inspection.....	9
5.2.2 Inspection procedure .....	10
5.2.3 Rejection criteria.....	10
5.3 Proof pressure test .....	10
5.3.1 General.....	10
5.3.2 Hydraulic proof pressure test.....	11
5.3.3 Pneumatic proof test and leak test.....	12
5.4 Check of the internal condition of the cylinder.....	13
5.4.1 Check of the internal condition of welded steel cylinders .....	13
5.5 Inspection of cylinder threads .....	14
5.5.1 General.....	14
5.5.2 Internal threads.....	14
5.5.3 External threads .....	14
5.5.4 Damaged threads .....	14
5.6 Inspection of valves.....	14
<b>6 Final operations</b> .....	<b>14</b>
6.1 General.....	14
6.2 Valving.....	14
6.3 Tare mass .....	15
6.4 Marking.....	15
6.5 Purging.....	15
<b>7 Repair of welded steel cylinders</b> .....	<b>15</b>
7.1 $\text{A}_1$ Reconditioning $\text{A}_1$ .....	15
7.2 Minor repairs.....	15
7.3 Requirements for repair.....	15
<b>8 Records</b> .....	<b>16</b>
<b>Annex A (normative) Specific requirements for external visual inspection</b> .....	<b>17</b>
<b>Annex B (informative) Requirements for 15 year periodic inspection interval for cylinders manufactured before January 1st 2015</b> .....	<b>20</b>
B.1 General.....	20
B.2 Concept of control.....	20
B.3 Conditions.....	20

<b>Annex C (normative) Periodic inspection procedure for cylinder populations not covered by the RID/ADR .....</b>	<b>22</b>
<b>Annex D (informative) Requirements to be fulfilled to extend period between two periodic inspections to 15 years for RID/ADR welded steel LPG cylinders .....</b>	<b>23</b>
<b>D.1 General .....</b>	<b>23</b>
<b>D.2 Design and manufacturing .....</b>	<b>23</b>
<b>D.3 Operational provisions .....</b>	<b>23</b>
<b>D.4 Periodic inspection .....</b>	<b>23</b>
<b>D.5 Marking .....</b>	<b>24</b>
<b>Annex E (informative) Alternative test applicable to commercial butane cylinders with less than 6,5 l water capacity .....</b>	<b>25</b>
<b>E.1 General .....</b>	<b>25</b>
<b>E.2 Preparation of cylinder .....</b>	<b>25</b>
<b>E.3 Procedure .....</b>	<b>25</b>
<b>Bibliography .....</b>	<b>27</b>

## European foreword

This document (EN 1440:2016+A1:2018) 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 2018, and conflicting national standards shall be withdrawn at the latest by December 2018.

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 document includes Amendment 1 approved by CEN on 19 April 2018.

**A1** This document supersedes EN 1440:2016. **A1**

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **A1**.

**A1** This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association. **A1**

This European Standard has been submitted for reference into the RID [1] and the technical annexes of the ADR [2].

**NOTE** These regulations take precedence over any clause of this standard. It is emphasized that RID/ADR are being revised regularly at intervals of two years which may lead to temporary non-compliance with the clauses of this standard.

This European Standard deals with the periodic inspection requirements for transportable refillable welded and brazed steel LPG cylinders.

For all other cylinder designs, EN 16728:2016<sup>1</sup> applies.

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, 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.

---

<sup>1</sup> To be published in 2016.

## Introduction

The primary objective of the periodic inspection of transportable refillable liquefied petroleum gas (LPG) cylinders is that, on completion of the tests, the cylinders can be re-introduced into service for a further period of time.

The very large populations of traditional steel LPG cylinders in use have led to the development of alternative methods of inspection.

This European Standard has been prepared to reflect the current methodology for periodic inspection of LPG cylinders and is based on extensive operating experience.

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.

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.

It has been assumed in the drafting of this European Standard that the execution of its provisions is entrusted to appropriately qualified and competent persons.

Where judgements are called for, it has been assumed that they are made by competent persons who have been specifically trained for the tasks.

## 1 Scope

This European Standard specifies procedures for the periodic inspection and testing, of transportable refillable LPG cylinders with a water capacity from 0,5 l up to and including 150 l.

This European Standard is applicable to welded and brazed steel LPG cylinders with a specified minimum wall thickness designed according to EN 1442, EN 12807, EN 13322-1, or equivalent standard (e.g. national codes).

This European 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.

**NOTE** The requirements of RID/ADR take precedence over those of this standard in the case of cylinders complying with that regulation, including pi marked cylinders.

This European Standard does not apply to cylinders permanently installed in vehicles.

## 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 837-1:1996, *Pressure gauges – Part 1: Bourdon tube pressure gauges - Dimensions, metrology, requirements and testing*

EN 837-3:1996, *Pressure gauges – Part 3: Diaphragm and capsule pressure gauges - Dimensions, metrology, requirements and testing*

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

EN 12807, *LPG equipment and accessories - Transportable refillable brazed steel cylinders for liquefied petroleum gas (LPG) - Design and construction*

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

EN 13322-1, *Transportable gas cylinders - Refillable welded steel gas cylinders - Design and construction – Part 1: Carbon steel*

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

EN 14912, *LPG equipment and accessories - Inspection and maintenance of LPG cylinder valves at time of periodic inspection of cylinders*

EN ISO 14245, *Gas cylinders - Specifications and testing of LPG cylinder valves - Self-closing (ISO 14245)*

EN ISO 15995, *Gas cylinders - Specifications and testing of LPG cylinder valves - Manually operated (ISO 15995)*

## 3 Terms and definitions

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