

LPG equipment and accessories - Transportable
refillable welded steel cylinders for LPG - Alternative
design and construction

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 14140:2014 sisaldab Euroopa standardi EN 14140:2014 ingliskeelset teksti.	This Estonian standard EVS-EN 14140:2014 consists of the English text of the European standard EN 14140:2014.
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English Version

LPG equipment and accessories - Transportable refillable
welded steel cylinders for LPG - Alternative design and
construction

Équipements pour GPL et leurs accessoires - Bouteilles en
acier soudé transportables et rechargeables pour gaz de
pétrole liquéfié (GPL) - Autres solutions en matière de
conception et construction

Flüssiggas-Geräte und Ausrüstungsteile - Ortsbewegliche,
wiederbefüllbare, geschweißte Flaschen aus Stahl für
Flüssiggas (LPG) - Alternative Gestaltung und Konstruktion

This European Standard was approved by CEN on 9 August 2014.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

Page

Foreword.....	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms, definitions and symbols.....	7
3.1 Terms and definitions	7
3.2 Symbols	9
4 Materials	9
5 Design	10
5.1 General requirements.....	10
5.2 Calculation of cylindrical shell wall thickness	11
5.3 Design of torispherical and semi-ellipsoidal ends concave to pressure.....	11
5.4 Ends of other shapes	15
5.5 Minimum wall thickness.....	15
5.6 Design of openings.....	15
5.7 Valve protection	16
5.8 Non-pressure containing attachments welded to the cylinder.....	16
5.9 Resistance against external corrosion.....	16
5.10 Over-moulded cylinders.....	16
5.11 Hot air balloon cylinders	17
6 Construction and workmanship.....	17
6.1 General.....	17
6.2 Environment.....	17
6.3 Welding qualification.....	17
6.4 Plates and pressed parts	18
6.5 Welded joints.....	18
6.6 Tolerances	19
6.6.1 Out-of-roundness.....	19
6.6.2 Straightness	19
6.6.3 Verticality	19
6.7 Closure of openings	20
6.8 Heat treatment.....	20
7 Tests and examinations	20
7.1 General.....	20
7.2 Types of test and evaluation of test results.....	21
7.3 Test specimens and related tests and examinations.....	22
7.3.1 All cylinders.....	22
7.3.2 Two-piece cylinders	22
7.3.3 Three-piece cylinders	23
7.3.4 Bung welds.....	24
7.3.5 Tensile test	24
7.3.6 Bend test.....	25
7.3.7 Resistance to external corrosion	28
7.4 NDT.....	31
7.4.1 Radiographic examination	31
7.4.2 Macro examination	33

7.4.3	Visual examination of the surface of the weld	33
7.5	Prototype and production batch testing	33
7.5.1	Burst test under pressure.....	33
7.5.2	Fatigue test	34
7.5.3	Cylinder body integrity impact tests (not required for hot air balloon cylinders)	35
7.5.4	Drop tests (all cylinders except hot air balloon cylinders)	39
7.5.5	Drop tests (hot air balloon cylinders only)	40
8	Technical requirements for type approval	41
8.1	General	41
8.2	Extent of testing	41
8.3	Design type variations	42
8.3.1	General	42
8.3.2	Two piece cylinders	42
8.3.3	Three piece cylinders	42
9	Initial inspection and tests	43
9.1	Tests and examinations applicable to all cylinders	43
9.2	Radiographic examination.....	43
9.3	Macro examination	44
9.4	Examination of bung welding	44
9.5	Examination of welding of non-pressure containing attachments	44
9.5.1	Macro examinations	44
9.5.2	Weld penetration requirement	44
9.6	Unacceptable imperfections in radiographic or macro examination	44
9.7	Production pressure test	44
9.7.1	Procedure	44
9.7.2	Requirements	45
9.8	Production batch testing (Mechanical / Burst tests)	45
9.8.1	Production batch	45
9.8.2	Inspection lots	45
9.8.3	Rate of sampling.....	45
9.8.4	Verification of conformance with type approval	47
9.9	Failure to meet mechanical and burst test requirements	48
9.9.1	General	48
9.9.2	Mechanical	48
9.9.3	Burst	48
9.9.4	Production batch retest	48
9.9.5	Resubmission of production batch	48
9.9.6	Additional checks	49
9.10	Production adhesion test for over-moulded cylinders.....	49
9.11	Production water absorption test for over-moulded cylinders	49
10	Marking	50
11	Documentation	51
12	Certification	51
Annex A (normative)	Additional manufacturers markings	52
Annex B (informative)	Over-moulded cylinder.....	53
Annex C (informative)	Hot Air Balloon Cylinders	55
C.1	Description	55
Annex D (informative)	Environmental checklist.....	57
Bibliography	59

Foreword

This document (EN 14140:2014) 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 June 2015 and conflicting national standards shall be withdrawn at the latest by June 2015.

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 supersedes EN 14140:2003+A1:2006.

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

This European Standard has been submitted for reference into:

- the RID [11]; and
- the technical annexes of the ADR [12].

NOTE These regulations take precedence over any clause of this European Standard. It is emphasised that RID/ADR/ADN are being revised regularly at intervals of two years which may lead to temporary non-compliances with the clauses of this European Standard.

The major changes to this revision include:

- restructure of standard;
- the addition of requirements for hot air balloon cylinders;
- an update on the terminology;
- the addition of requirements for over-moulded cylinders;
- the addition of the environmental checklist, Annex D.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This European Standard calls for the use of substances and procedures that may be injurious to health and/or the environment if adequate precautions are not taken. It refers only to technical suitability: it does not absolve the user from their legal obligations 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.

This European Standard permits the use of new and higher strength steels and has the potential for cylinders to have a wall thickness thinner than the minimum wall thickness related to diameter, when compared with cylinders in accordance with EN 1442. These changes in technology are justified by requiring a series of performance tests, including impact testing, to demonstrate the adequacy of the calculated pressure thickness for service and transport considerations

Reference should also be made to EN 1439 and EN 1440, which requires the cylinder manufacturer to perform additional tests to determine the rejection limits for in-service damage and to include these limits in the documentation for the cylinder.

Protection of the environment is a key political issue in Europe and elsewhere around the world. Protection of the environment in this document is understood in a very broad sense. The phrase is used, for example, in relation to the total life-cycle aspects of a product on the environment, including expenditure of energy, and during all phases of its existence, from mining of raw materials, to fabrication, packaging, distribution, use, scrapping, recycling of materials, etc. Annex D comprises an environmental checklist which highlights the clauses of this European Standard that address environmental aspects.

It is recommended that manufacturers develop an environmental management policy. For guidance see EN ISO 14000 series, [6], [7] and [8].

Provisions need to be restricted to a general guidance. Limit values are specified in national laws.

All pressures are gauged unless otherwise stated.

NOTE This European Standard requires measurement of material properties, dimensions and pressures. All such measurements are subject to a degree of uncertainty due to tolerances in measuring equipment etc. It may be beneficial to refer to the leaflet "measurement uncertainty leaflet" SP INFO 2000 27 [14].

1 Scope

This European Standard specifies the minimum requirements for the design, construction and testing during manufacture of transportable refillable welded steel Liquefied Petroleum Gas (LPG) cylinders, of water capacity from 0,5 l up to and including 150 l, exposed to temperatures of -20 °C to +65 °C. It allows alternative design and construction methods to those required in EN 1442, including coated cylinders, over-moulded cylinders and cylinders for hot air balloons.

This European Standard applies only to pressure receptacles with a circular cross-section.

This European Standard does not include the equipping of the cylinders with valves and other service equipment.

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 1439, *LPG equipment and accessories - Procedure for checking LPG cylinders before, during and after filling*

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

EN 10120, *Steel sheet and strip for welded gas cylinders*

EN 10204:2004, *Metallic products - Types of inspection documents*

EN 10272, *Stainless steel bars for pressure purposes*

EN 14717, *Welding and allied processes - Environmental check list*

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

EN ISO 643, *Steels - Micrographic determination of the apparent grain size (ISO 643)*

EN ISO 2409:2013, *Paints and varnishes - Cross-cut test (ISO 2409:2013)*

EN ISO 2812-2, *Paints and varnishes - Determination of resistance to liquids - Part 2: Water immersion method (ISO 2812-2)*

EN ISO 3231:1997, *Paints and varnishes - Determination of resistance to humid atmospheres containing sulfur dioxide (ISO 3231:1993)*

EN ISO 4136, *Destructive tests on welds in metallic materials - Transverse tensile test (ISO 4136)*

EN ISO 4624, *Paints and varnishes - Pull-off test for adhesion (ISO 4624)*

EN ISO 5173, *Destructive tests on welds in metallic materials - Bend tests (ISO 5173)*

EN ISO 6520-1, *Welding and allied processes - Classification of geometric imperfections in metallic materials - Part 1: Fusion welding (ISO 6520-1)*

EN ISO 6892-1, *Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1)*

EN ISO 9227, *Corrosion tests in artificial atmospheres - Salt spray tests (ISO 9227)*

EN ISO 9606-1, *Qualification testing of welders - Fusion welding - Part 1: Steels (ISO 9606-1)*

EN ISO 9712:2012, *Non-destructive testing - Qualification and certification of NDT personnel (ISO 9712:2012)*

EN ISO 11117:2008, *Gas cylinders - Valve protection caps and valve guards - Design, construction and tests (ISO 11117:2008)*

EN ISO 11997-2, *Paints and varnishes - Determination of resistance to cyclic corrosion conditions - Part 2: Wet (salt fog)/dry/humidity/UV light (ISO 11997-2)*

EN ISO 14732, *Welding personnel - Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials (ISO 14732)*

EN ISO 15609-1, *Specification and qualification of welding procedures for metallic materials - Welding procedure specification - Part 1: Arc welding (ISO 15609-1)*

EN ISO 15613, *Specification and qualification of welding procedures for metallic materials - Qualification based on pre-production welding test (ISO 15613)*

EN ISO 15614-1, *Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys (ISO 15614-1)*

EN ISO 17636-1:2013, *Non-destructive testing of welds - Radiographic testing - Part 1: X- and gamma-ray techniques with film (ISO 17636-1:2013)*

EN ISO 17636-2:2013, *Non-destructive testing of welds - Radiographic testing - Part 2: X- and gamma-ray techniques with digital detectors (ISO 17636-2:2013)*

EN ISO 17637, *Non-destructive testing of welds - Visual testing of fusion-welded joints (ISO 17637)*

EN ISO 17639, *Destructive tests on welds in metallic materials - Macroscopic and microscopic examination of welds (ISO 17639)*

EN ISO 19232-1, *Non-destructive testing - Image quality of radiographs - Part 1: Determination of the image quality value using wire-type image quality indicators (ISO 19232-1)*

EN ISO 19232-2, *Non-destructive testing - Image quality of radiographs - Part 2: Determination of the image quality value using step/hole-type image quality indicators (ISO 19232-2)*

3 Terms, definitions and symbols

3.1 Terms and definitions

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

3.1.1

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

3.1.2

cylinder

transportable, pressure receptacle with a water capacity not exceeding 150 l