

# SVENSK STANDARD

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### **Utrustning och tillbehör för gasol LPG – Återfyllningsbara gasolflaskor (LPG) av kompositmaterial – Konstruktion och tillverkning**

**LPG equipment and accessories – Transportable refillable fully wrapped composite cylinders for LPG – Design and construction**

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The European Standard EN 14427:2014 has the status of a Swedish Standard. This document contains the official version of EN 14427:2014.

This standard supersedes the Swedish Standard SS-EN 14427:2004, edition 1 and SS-EN 14427:2004/A1:2005, edition 1.

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EUROPEAN STANDARD

**EN 14427**

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2014

ICS 23.020.30

Supersedes EN 14427:2004

English Version

## LPG equipment and accessories - Transportable refillable fully wrapped composite cylinders for LPG - Design and construction

Équipements pour gaz de pétrole liquéfiés et leurs accessoires - Bouteilles en matériau composite, transportables et rechargeables, pour gaz de pétrole liquéfiés (GPL) - Conception et fabrication

Flüssiggas-Geräte und Ausrüstungsteile - Ortsbewegliche wiederbefüllbare vollumwickelte Flaschen aus Verbundwerkstoff für Flüssiggas (LPG) - Auslegung und Bau

This European Standard was approved by CEN on 4 January 2014.

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.

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**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## Foreword

This document (EN 14427:2014) 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of an identical text or by endorsement, at the latest by December 2014 and conflicting national standards shall be withdrawn at the latest by December 2014.

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 14427:2004.

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

This standard has been submitted for reference into the RID and ADR (see [11] and [12]).

Environmental considerations recorded in Annex C.

The main technical changes to this revision include a full revision of the manufacturing processes in line with advances in manufacturing processes.

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 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.

It is recommended that manufacturers develop an environmental management policy. For guidance see ISO 14000 series.

All pressures are gauge unless otherwise stated.

**NOTE** This 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 minimum requirements for materials, design, construction, prototype testing and routine manufacturing inspections of fully wrapped composite cylinders with a water capacity from 0,5 litre up to and including 150 litres for liquefied petroleum gases (LPG) exposed to ambient temperatures, with a test pressure of at least 30 bar;
- is only applicable to cylinders which are fitted with a pressure relief valve (see 4.1.3);
- is applicable to cylinders with a liner of metallic material (welded or seamless) or non-metallic material (or a mixture thereof), reinforced by fibres of glass, carbon or aramid (or a mixture thereof);
- is also applicable to composite cylinders without liners.

Cylinders manufactured to this European Standard are suitable for temperatures down to  $-40\text{ }^{\circ}\text{C}$ .

This European Standard does not address the design, fitting and performance of removable protective sleeves. Where these are fitted, the choice of material and sleeve performance should be considered separately.

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

EN 1964-3, *Transportable gas cylinders - Specification for the design and construction of refillable transportable seamless steel gas cylinders of water capacities from 0,5 litre up to and including 150 litres - Part 3: Cylinders made of seamless stainless steel with an  $R_m$  value of less than 1100 MPa*

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

EN 13110, *LPG equipment and accessories - Transportable refillable welded aluminium cylinders for liquefied petroleum gas (LPG) - Design and construction*

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

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

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

EN ISO 75-1, *Plastics - Determination of temperature of deflection under load - Part 1: General test method (ISO 75-1)*

EN ISO 75-3, *Plastics - Determination of temperature of deflection under load - Part 3: High-strength thermosetting laminates (ISO 75-3)*

EN ISO 175, *Plastics - Methods of test for the determination of the effects of immersion in liquid chemicals (ISO 175)*

EN ISO 527-1, *Plastics - Determination of tensile properties - Part 1: General principles (ISO 527-1)*

EN ISO 527-2, *Plastics - Determination of tensile properties - Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2)*

EN ISO 1133 (all parts), *Plastics - Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics (ISO 1133)*

EN ISO 1183-1, *Plastics - Methods for determining the density of non-cellular plastics - Part 1: Immersion method, liquid pycnometer method and titration method (ISO 1183-1)*

EN ISO 1183-2, *Plastics - Methods for determining the density of non-cellular plastics - Part 2: Density gradient column method (ISO 1183-2)*

EN ISO 1183-3, *Plastics - Methods for determining the density of non-cellular plastics - Part 3: Gas pycnometer method (ISO 1183-3)*

EN ISO 1628-3, *Plastics - Determination of the viscosity of polymers in dilute solution using capillary viscometers - Part 3: Polyethylenes and polypropylenes (ISO 1628-3)*

EN ISO 2555, *Plastics - Resins in the liquid state or as emulsions or dispersions - Determination of apparent viscosity by the Brookfield Test method (ISO 2555)*

EN ISO 2884-1, *Paints and varnishes - Determination of viscosity using rotary viscometers - Part 1: Cone-and-plate viscometer operated at a high rate of shear (ISO 2884-1)*

EN ISO 3146, *Plastics - Determination of melting behaviour (melting temperature or melting range) of semi-crystalline polymers by capillary tube and polarizing-microscope methods (ISO 3146)*

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

EN ISO 7866, *Gas cylinders - Refillable seamless aluminium alloy gas cylinders - Design, construction and testing (ISO 7866)*

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

EN ISO 9809-1, *Gas cylinders - Refillable seamless steel gas cylinders - Design, construction and testing - Part 1: Quenched and tempered steel cylinders with tensile strength less than 1 100 MPa (ISO 9809-1)*

EN ISO 9809-2, *Gas cylinders - Refillable seamless steel gas cylinders - Design, construction and testing - Part 2: Quenched and tempered steel cylinders with tensile strength greater than or equal to 1 100 MPa (ISO 9809-2)*

EN ISO 9809-3, *Gas cylinders - Refillable seamless steel gas cylinders - Design, construction and testing - Part 3: Normalized steel cylinders (ISO 9809-3)*

EN ISO 10286, *Gas cylinders - Terminology (ISO 10286)*

EN ISO 11114-2, *Gas cylinders - Compatibility of cylinder and valve materials with gas contents - Part 2: Non-metallic materials (ISO 11114-2)*

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