
Oprema in pribor za utekočinjeni naftni plin (UNP) - Izdelava in lastnosti opreme za UNP za bencinske servise - 3. del: Rezervoarji za zasebne in industrijske bencinske servise

LPG equipment and accessories - Construction and performance of LPG equipment for automotive filling stations - Part 3: Refuelling installations at commercial and industrial premises

Flüssiggas-Geräte und Ausrüstungsteile - Bau- und Arbeitsweise von Flüssiggas-Geräten für Autogas-Tankstellen - Teil 3: Tankanlagen für private und industrielle Tankstellen

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Équipements pour GPL et leurs accessoires - Construction et caractéristiques des équipements GPL dans les stations-service - Partie 3 : Installations de ravitaillement dans les locaux privés/commerciaux et industriels

Ta slovenski standard je istoveten z: EN 14678-3:2013

ICS:

75.200	Oprema za skladiščenje nafte, naftnih proizvodov in zemeljskega plina	Petroleum products and natural gas handling equipment
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SIST EN 14678-3:2013**en,fr,de**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 14678-3

January 2013

ICS 75.200

English Version

LPG equipment and accessories - Construction and performance of LPG equipment for automotive filling stations - Part 3: Refuelling installations at commercial and industrial premises

Équipements pour GPL et leurs accessoires - Construction et caractéristiques des équipements GPL dans les stations-service - Partie 3 : Installations de ravitaillement dans les locaux privés/commerciaux et industriels

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This European Standard was approved by CEN on 24 November 2012.

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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Foreword

This document (EN 14678-3:2013) 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 2013, and conflicting national standards shall be withdrawn at the latest by June 2013.

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.

EN 14678 consists of the following parts:

- EN 14678-1, *LPG equipment and accessories — Construction and performance of LPG equipment for automotive filling stations — Part 1: Dispensers*;
- EN 14678-2, *LPG equipment and accessories — Construction and performance of LPG equipment for automotive filling stations — Part 2: Components other than dispensers, and installation requirements*;
- EN 14678-3, *LPG equipment and accessories — Construction and performance of LPG equipment for automotive filling stations — Part 3: Refuelling installations at private and industrial premises*.

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, 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 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. Protection of the environment is taken in a very broad sense. What is meant is the total life cycle aspects of, e.g. a product on the environment, including expenditure of energy and during all phases from mining of raw materials, fabrication, packaging, distribution, use, scrapping, recycling of materials, etc.

NOTE Annex B indicates which clauses in this European Standard address environmental issues. Clauses addressing environmental issues are restricted to a general guidance. Limiting values can be specified in national laws.

It is recommended that companies using this European Standard develop an environmental management policy. For guidance see EN ISO 14021 [3], EN ISO 14024 [4] and EN ISO 14025 [5].

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1 Scope

This European Standard covers the equipment and installation requirements for LPG refuelling installations, which are required to safely dispense LPG at commercial and industrial premises.

This European Standard does not cover public LPG filling stations.

This European Standard does not cover nautical LPG refuelling installations.

This European Standard does not cover on-site and off-site safety distances.

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

EN 1762, *Rubber hoses and hose assemblies for liquefied petroleum gas, LPG (liquid or gaseous phase), and natural gas up to 25 bar (2,5 MPa) — Specification*

EN 12542, *LPG equipment and accessories - Static welded steel cylindrical tanks, serially produced for the storage of Liquefied Petroleum Gas (LPG) having a volume not greater than 13 m³ — Design and manufacture*

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EN 13445 (all parts), *Unfired pressure vessels*

EN 13463-1, *Non-electrical equipment for potentially explosive atmospheres — Part 1: Basic method and requirements*

EN 14570, *LPG equipment and accessories — Equipping of LPG tanks, overground and underground*

EN 14678-1, *LPG equipment and accessories — Construction and performance of LPG equipment for automotive filling stations — Part 1: Dispensers*

prEN 16125, *LPG equipment and accessories — Pipework systems and supports — LPG liquid phase and vapour pressure phase*

EN 50525-2-51, *Electric cables — Low voltage energy cables of rated voltages up to and including 450/750 V (U₀/U) — Part 2-51: Cables for general applications — Oil resistant control cables with thermoplastic PVC insulation*

EN 50525-2-21, *Electric cables — Low voltage energy cables of rated voltages up to and including 450/750 V (U₀/U) — Part 2-21: Cables for general applications — Flexible cables with crosslinked elastomeric insulation*

EN 60079-10-1, *Explosive atmospheres — Part 10-1: Classification of areas — Explosive gas atmospheres (IEC 60079-10-1)*

EN 60079-14, *Explosive atmospheres — Part 14: Electrical installations design, selection and erection (IEC 60079-14)*

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EN 60947-3 *Low-voltage switchgear and control-gear — Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units (IEC 60947-3)*

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**accessories**

devices connected to the system whose main function is not for the storage or conveyance of LPG

Note 1 to entry: Safety and pressure accessories are defined in the PED.

3.3**dead man type shut-off device**

manually operated non-latching device which immediately stops flow when released

3.4**excess flow valve**

valve designed to close automatically, with a small residual flow, when the fluid flow passing through it exceeds a predetermined value, and to re-open when the pressure differential across the valve has been restored below a certain value

3.5**pressure relief valve**

self-closing valve which automatically, without the assistance of any energy other than that of the vapour concerned, discharges vapour at a predetermined pressure, and operates with a pop action

3.6**hydrostatic relief valve**

self-closing valve which automatically, without the assistance of any energy other than that of the fluid concerned, discharges fluid at a predetermined pressure

3.7**shut-off valve**

valve to provide a leak-tight seal which is operated either manually, remotely or is self-closing

3.8**filling nozzle**

mechanical system, fitted to the hose of the dispensing system, consisting of a filling nozzle body, operating mechanism, including sealing elements and a service gasket if required

3.9**contents gauge**

device to indicate the liquid level or contents in a pressure vessel

3.10**pressure vessel**

assembly of the pressure-retaining envelope (including the openings and their closures) and non-pressure-retaining parts attached directly to it

3.11**mounded vessel**

pressure vessel above or partially underground of which the part above the ground is completely covered

3.12**underground vessel**

vessel below the surrounding ground level and completely covered

3.13**overground vessel**

pressure vessel above the surrounding ground level and not covered

3.14**submersible pump**

pump which is completely or partially immersed in the liquid LPG

3.15**external pump**

pump which is installed on the LPG delivery pipe-work

3.16**hazardous area**

area in which an explosive atmosphere is or may be present, in a quantity such as to require special precautions for the construction and installation of equipment and use of apparatus

3.17**breakaway coupling**

coupling which separates at a predetermined section when required and each separated section contains a self-closing shut-off valve, which seals automatically

Note 1 to entry: Also referred to as a safe break.

3.18**break point**

weakened section in a pipe or fitting intended to break when excessive force is applied

3.19**installer**

person or organisation who, by qualification, training, experience and resources assumes technical responsibility for the installation of an LPG filling station

4 Requirements**4.1 Environmental**

4.1.1 The manufacturer shall endeavour to acquire materials and components from suppliers who have a declared environmental policy, see EN ISO 14021, EN ISO 14024 and EN ISO 14025.

4.1.2 Materials should be selected to optimise product durability and lifetime and consideration should be made to avoiding the selection of rare or hazardous materials.

4.1.3 Consideration should be made to use recycled or reused materials, and to the selection of materials which can then be subsequently recycled.

4.1.4 The installer shall endeavour to minimise use and wastage of material during all the installation process, with particular attention to welding and allied processes. Unavoidable waste/scrap material shall be recycled.