



NSAI
Standards

Irish Standard
I.S. EN 14678-1:2013

LPG equipment and accessories - Construction and performance of LPG equipment for automotive filling stations - Part 1: Dispensers

I.S. EN 14678-1:2013

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWIFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces:
EN 14678-1:2006+A1:2009

<i>This document is based on:</i> EN 14678-1:2013	<i>Published:</i> 12 April, 2013
--	-------------------------------------

This document was published under the authority of the NSAI and comes into effect on:
12 April, 2013

ICS number:

75.200

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie

W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

English Version

LPG equipment and accessories - Construction and
performance of LPG equipment for automotive filling stations -
Part 1: Dispensers

Équipements pour GPL et leurs accessoires - Construction
et caractéristiques des équipements GPL dans les stations-
service - Partie 1: Distributeurs

Flüssiggas-Geräte und Ausrüstungsteile - Bau- und
Arbeitsweise von Flüssiggas-Geräten für Autogas-
Tankstellen - Teil 1: Zapfsäulen

This European Standard was approved by CEN on 5 February 2013.

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



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

	Page
Foreword.....	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	7
4 Requirements	9
4.1 Environmental	9
4.2 Electrical equipment.....	9
4.2.1 General.....	9
4.2.2 Cabling insulation resistance.....	9
4.2.3 Cables used in hazardous area	10
4.2.4 Dead man's push button	10
4.2.5 Insulation and isolation.....	10
4.2.6 Chemical cells in non-hazardous areas	10
4.3 Design	11
4.3.1 Maximum allowable pressure.....	11
4.3.2 Design temperature	11
4.3.3 Materials	11
4.3.4 Pressure gauges	12
4.3.5 Trapped liquid	12
4.3.6 Joints	12
4.3.7 Seals and gaskets.....	12
4.3.8 Sight glass	12
4.3.9 LPG system	12
4.4 Explosion protection measures	13
4.4.1 General.....	13
4.4.2 Avoidance or reduction of ignition sources	13
4.4.3 Construction measures to limit explosive atmospheres.....	13
4.5 Construction.....	14
4.5.1 Mechanical strength	14
4.5.2 Housing.....	15
4.5.3 Stability	15
4.5.4 Ventilation.....	15
4.5.5 Delivery hose assembly	15
4.5.6 Nozzle.....	15
4.5.7 Nozzle boot.....	15
4.5.8 Control provisions	16
5 Type tests	16
5.1 General.....	16
5.2 Sight glass tests	16
5.2.1 Impact test	16
5.2.2 Pressure test 1	16
5.2.3 Pressure test 2	17
5.3 Pressure tests for LPG system	17
5.3.1 Pressure test 1	17
5.3.2 Pressure test 2	17
5.3.3 Environmental provisions.....	17
5.4 Tests for electric cables used in hazardous areas.....	17
5.5 Stability test.....	18
5.5.1 Test procedure	18

5.5.2	Test interpretation	18
5.6	Electrical tests	18
5.6.1	Continuity of the protective bonding circuit.....	18
5.6.2	Insulation resistance test	18
5.6.3	Voltage test	18
5.6.4	Functional tests	19
5.7	Operational test for the breakaway coupling	19
5.7.1	Test procedure.....	19
5.7.2	Test interpretation	19
5.8	Operational test for the shear valve / break point.....	19
5.8.1	Test procedure.....	19
5.8.2	Test interpretation	19
6	Production tests	19
6.1	General	19
6.2	Electrical tests	20
6.3	LPG system tests for dispensers	20
6.3.1	General	20
6.3.2	Test procedures.....	20
6.3.3	Test interpretation	20
7	Documentation	21
8	Markings and signs	21
8.1	User signage	21
8.2	Minimum markings	21
9	Packaging.....	22
Annex A	(normative) Classification of hazardous areas in and adjacent to the dispenser.....	23
A.1	General	23
A.2	Nozzle area – vapour releases only	23
A.3	Nozzle boot area	26
Annex B	(normative) Vapour barriers	28
B.1	Classification	28
B.1.1	General	28
B.1.2	Vapour barrier - Type 1	28
B.1.3	Vapour barrier - Type 2	28
B.1.4	Air gaps	28
B.1.5	Screens.....	28
B.2	Typical vapour barrier arrangements.....	29
Annex C	(informative) Information on explosion protected equipment.....	33
Annex D	(informative) Environmental checklist	34
Annex E	(informative) Significant technical changes between this document and the previous edition of this European Standard.....	35
Annex ZA	(informative) Relationship between this European Standard and the Essential Requirements of EU Directive 94/9/EC.....	36
Bibliography	38

Foreword

This document (EN 14678-1:2013) 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 September 2013, and conflicting national standards shall be withdrawn at the latest by September 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.

This document supersedes EN 14678-1:2006+A1:2009.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For relationship with EU Directive, see informative Annex ZA, which is an integral part of this document.

Differences between this document and EN 14678-1:2006+A1:2009 include:

- The addition of test requirements to 5.7.1 and 5.8.1;
- The definition of unattended filling stations; and
- The addition of an environmental checklist.

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 document is a type C standard as stated in EN ISO 12100:2010. When provisions of this type C standard differ from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards.

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 D 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 ISO 14000 series [15], [16] and [17].

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.

All pressures are gauge unless otherwise specified.

The PED, Directive 97/23/EC [20], applies to any assembly with a component defined as category II or higher in this Directive:

- Article 1, 3.6 of the PED excludes equipment classified as no higher than category I under article 9 if it is covered by Directive 94/9/EC (ATEX).
- The category I limit is defined in Annex II Table 6 of the PED. It applies to piping for liquids whose vapour pressure at the maximum allowable temperature is greater than 0,5 bar (50 kPa) above DN 100 or, in the case of maximum allowable pressures greater than 10 bar (1 kPa), is above the product of DN and PS of 1 000.
- Because the maximum allowable pressure (PS) in this document is 25 bar (2 500 kPa) and the DN of the intended piping is less than 40, the product of DN and PS of 1 000 in Table 6 of the PED is not reached.
- The category I limit for vessels is defined in Annex II Table 1 of the PED. It also applies to vessels for liquids whose vapour pressure at the maximum allowable temperature is greater than 0,5 bar (50 kPa) above volumes (V) of 1 l up to a pressure of 200 bar or, in the case of the product of V and PS of 50.
- Because the maximum allowable pressure (PS) in this document is 25 bar (2 500 kPa) and if the V of the intended vessel is less than 2 l, the product of V and PS of 50 in Table 1 of the PED is not reached.

1 Scope

This European Standard covers the requirements for the design, manufacture, testing and marking of LPG dispensers for automotive LPG filling stations with a maximum allowable pressure of 25 bar (2 500 kPa), where the piping has a maximum DN 40 and any vessel fitted has a volume less than 2 l.

This European Standard covers the requirements for the LPG parts in multi-fuel dispensers.

This European Standard does not cover dispensers with integral pumps.

This European Standard may also be used for piping greater than DN 40 and/or vessels greater than 2 l, but then the PED [20] should also be consulted.

This European Standard does not include any requirement for metering performance.

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 1127-1, *Explosive atmospheres — Explosion prevention and protection — Part 1: Basic concepts and methodology*

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 1775, *Gas supply — Gas pipework for buildings — Maximum operating pressure less than or equal to 5 bar — Functional recommendations*

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

EN 13480-1, *Metallic industrial piping — Part 1: General*

EN 13480-2, *Metallic industrial piping — Part 2: Materials*

EN 13480-3, *Metallic industrial piping — Part 3: Design and calculation*

EN 13480-4, *Metallic industrial piping — Part 4: Fabrication and installation*

EN 13480-5, *Metallic industrial piping — Part 5: Inspection and testing*

EN 13617-1, *Petrol filling stations — Part 1: Safety requirements for construction and performance of metering pumps, dispensers and remote pumping units*

EN 13760, *Automotive LPG filling system for light and heavy duty vehicles — Nozzle, test requirements and dimensions*

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-