

STN	Zariadenie a príslušenstvo na LPG Prehliadky a skúšky tlakových nádob na LPG s objemom do 13 m³ vrátane	STN EN 12817 07 9525
------------	---	--

LPG Equipment and accessories - Inspection and requalification of LPG pressure vessels up to and including 13 m³

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 10/19

Obsahuje: EN 12817: 2019

Oznámením tejto normy sa ruší
STN EN 12817 (07 9525) z júla 2010

129717

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2019
Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii.

EUROPEAN STANDARD

EN 12817

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2019

ICS 23.020.35

Supersedes EN 12817:2010

English Version

LPG Equipment and accessories - Inspection and requalification of LPG pressure vessels up to and including 13 m³

Équipements et accessoires GPL - Inspection et
requalification des réservoirs de capacité inférieure ou
égale à 13 m³ pour gaz de pétrole liquéfiés (GPL)

Flüssiggas-Geräte und Ausrüstungsteile - Inspektion
und wiederkehrende Prüfung von Druckbehältern für
Flüssiggas (LPG) mit einem Fassungsraum bis
einschließlich 13 m³

This European Standard was approved by CEN on 9 December 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

EN 12817:2019 (E)

Contents	Page
European foreword.....	5
Introduction	6
1 Scope.....	7
2 Normative references.....	7
3 Terms and definitions	7
4 Safety	8
4.1 Safety precautions	8
4.2 Unsafe conditions.....	8
4.3 Leaks.....	8
5 Written scheme.....	9
6 Pressure vessel inspection, requalification and recommissioning	10
6.1 Routine inspection.....	10
6.2 Periodic inspection.....	10
6.3 Requalification	10
6.3.1 Requalification for aboveground pressure vessels	10
6.3.2 Requalification for underground pressure vessels	11
6.4 Recommissioning.....	12
7 Inspection of pressure vessel and pressure vessel fittings.....	12
7.1 Pressure vessel	12
7.2 Pressure vessel fittings and immediate pipework.....	12
7.3 Valve cover	12
7.4 Bonding.....	12
7.5 Pressure relief valve	12
7.6 Pressure gauge.....	13
7.7 Contents gauges	13
7.8 Shut-off valves	13
7.9 Studs, bolts, nuts, and washers	13
7.10 Corrosion protection system	13
7.11 Piers and foundations for aboveground pressure vessels.....	13
8 Competence.....	14
8.1 General.....	14
8.2 Routine inspection competence.....	14
8.3 Periodic inspection competence.....	14
8.4 Requalification competence.....	14
9 Records	14
9.1 Pressure vessel data.....	14
9.2 Reports.....	14
Annex A (informative) Visual inspection.....	15
A.1 Internal and external visual inspections.....	15
A.2 Inspection techniques	15

A.2.1	External visual inspection	15
A.2.2	Internal visual inspection.....	15
A.2.3	Records.....	15
A.3	Additional inspection	16
	Annex B (informative) Hydraulic pressure test.....	17
	Annex C (normative) Acoustic emission testing.....	18
C.1	Scope	18
C.2	Testing procedure	18
C.3	Instrumentation.....	18
C.3.1	Sensors	18
C.3.2	Acquisition and evaluation system	18
C.4	Testing.....	18
C.4.1	Test instruction	18
C.4.2	Safety precautions.....	18
C.4.3	Sensor location	19
C.4.3.1	Overground pressure vessels.....	19
C.4.3.2	Underground pressure vessels.....	19
C.4.4	Pressurization.....	20
C.5	Data evaluation and analysis.....	21
C.5.1	Evaluation criteria.....	21
C.5.2	Real time control and stop criteria	21
C.5.3	Post analysis	21
C.5.4	Pressure vessel grading	21
C.6	Data storage and reporting.....	22
	Annex D (informative) Ultrasonic thickness test.....	23
D.1	General	23
D.2	Apparatus setting	23
D.3	Control measurement	23
D.4	Shell thickness measurements	23
D.5	End thickness measurements	23
D.6	Interpretation	23
D.7	Rejection criteria	23
	Annex E (informative) Assessment of pressure vessels by sampling.....	24
E.1	General	24
E.2	Homogeneous batch	24
E.3	Selection of samples	24

EN 12817:2019 (E)

E.4	Sample selection.....	25
E.5	Inspection period	25
E.6	Presentation of results and decisions.....	25
E.7	Pass criteria.....	25
E.8	Example calculation of a sample.....	25
Annex F (informative) External monitoring by camera for underground pressure vessels		27
F.1	General.....	27
F.2	Inspection procedure	27
F.3	Interpretation of results.....	27
F.4	Records	27
Annex G (informative) Monitoring cathodic protection with sacrificial anodes for underground pressure vessels.....		28
G.1	General.....	28
G.2	Records	28
G.3	Procedure.....	28
G.4	Measurement of the galvanic current.....	28
G.5	Measurement of the potential difference of the pressure vessel to the reference electrode.....	28
G.6	Results.....	29
Annex H (informative) Evaluation of coating condition of underground pressure vessels (cathodic protection by impressed current).....		30
H.1	General.....	30
H.2	Apparatus.....	30
H.3	Conditions.....	30
H.4	Isolation resistance of the coating	30
H.4.1	Procedure.....	30
H.4.2	Calculation.....	31
H.5	Results.....	31
H.6	Checking intervals	31
Annex I (informative) Corrosion monitoring by moisture and condensation detection for underground pressure vessels.....		32
I.1	General.....	32
I.2	Equipment characteristics.....	32
I.3	Monitoring.....	32
I.4	Interpretation.....	32
Annex J (informative) A-deviations		33
Bibliography		34

European foreword

This document (EN 12817:2019) 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 2019, and conflicting national standards shall be withdrawn at the latest by September 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12817:2010.

EN 12817:2010 was thereby technically revised.

In using this document, prepared in the field of application of Article 153 of the treaty on the functioning of the European Union, users are aware that standards have no formal legal relationship with Directives that may have been made under Article 153 of the treaty on the functioning of the European Union. In addition, national legislation in the Member states may contain more stringent requirements than the minimum requirements of a Directive based on Article 153. Information on the relationship between the national legislation implementing Directives based on Article 153 and this EN may be given in a national foreword of the national standard implementing this EN.

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

EN 12817:2019 (E)**Introduction**

Inspection and requalification regimes for pressure vessels up to and including 13 m³ have developed in various countries in different ways that range from defined to variable inspection periods with requalification regimes achieved by various methods. This document for inspection and requalification is based on European countries' legislation and codes of practice and industry codes of practice. In addition, use of LPG in different applications has encouraged the industry to approach the requirements for inspection and requalification in different ways for each application.

This document calls for the use of substances and procedures that can be injurious to health if adequate precautions are not taken. It refers 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 [1], and this Technical Specification should be read in conjunction with this standard.

It has been assumed in the drafting of this document that execution of its provisions is entrusted to appropriately qualified and experienced people.

1 Scope

This document specifies requirements for:

- a) routine inspection, periodic inspection and requalification of fixed LPG pressure vessels of sizes from 150 l up to and including 13 m³, and associated fittings;
- b) marking pressure vessels and/or keeping records, as appropriate, as a result of routine inspection, periodic inspection and requalification.

This document excludes refrigerated storage.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1330-9, *Non-destructive testing – Terminology – Part 9: Terms used in acoustic emission testing*

EN 13477-1, *Non-destructive testing - Acoustic emission - Equipment characterisation – Part 1: Equipment description*

EN 13477-2, *Non-destructive testing - Acoustic emission - Equipment characterisation – Part 2: Verification of operating characteristic*

EN 13554, *Non-destructive testing - Acoustic emission testing - General principles*

EN 14129, *LPG Equipment and accessories - Pressure relief valves for LPG pressure vessels*

EN 14584, *Non-destructive testing - Acoustic emission testing - Examination of metallic pressure equipment during proof testing - Planar location of AE sources*

EN 16631, *LPG equipment and accessories - Pressure relief valves for LPG pressure vessels - Reconditioning requirements*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN