



# SLOVENSKI STANDARD

## SIST EN 12817:2010

01-oktober-2010

### Nadomešča:

SIST EN 12817:2002

SIST EN 12817:2002/A1:2006

SIST EN 12817:2002/A1:2006/AC:2007

SIST EN 12818:2002

SIST EN 12818:2002/A1:2006

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Oprema in pribor za utekočinjeni naftni plin (UNP) - Pregledi in periodični preskusi rezervoarjev za utekočinjeni naftni plin (UNP) z notranjo prostornino do vključno 13 m<sup>3</sup>

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LPG Equipment and accessories - Inspection and requalification of LPG tanks up to and including 13 m<sup>3</sup>

[SIST EN 12817:2010](#)

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Flüssiggas-Geräte und Ausrüstungsteile - Instandhaltung und wiederkehrende Prüfung von Flüssiggasbehältern bis einschließlich 13 m<sup>3</sup>

Equipements et accessoires GPL - Inspection et requalification des réservoirs de capacité inférieure ou égal à 13m<sup>3</sup> pour gaz de pétrole liquéfiés (GPL)

**Ta slovenski standard je istoveten z: EN 12817:2010**

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### **ICS:**

23.020.30

Tlačne posode, plinske  
jeklenke

Pressure vessels, gas  
cylinders

**SIST EN 12817:2010**

**en,fr,de**

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EUROPEAN STANDARD

**EN 12817**

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2010

ICS 23.020.30

Supersedes EN 12817:2002, EN 12818:2002

English Version

## LPG Equipment and accessories - Inspection and requalification of LPG tanks up to and including 13 m<sup>3</sup>

Équipements et accessoires GPL - Inspection et requalification des réservoirs de capacité inférieure ou égale à 13 m<sup>3</sup> pour gaz de pétrole liquéfiés (GPL)

Flüssiggas-Geräte und -Ausrüstungsteile - Überprüfung und erneute Qualifizierung von Behältern für Flüssiggas (LPG) mit einem Fassungsraum bis einschließlich 13 m<sup>3</sup>

This European Standard was approved by CEN on 4 December 2009.

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 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 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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

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## Contents

Page

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 Tank inspection and requalification .....	9
6.1 Routine inspection.....	9
6.2 Periodic inspection.....	10
6.3 Requalification .....	10
6.3.1 Requalification for overground LPG tanks .....	10
6.3.2 Requalification for underground LPG tanks.....	10
6.3.3 Commissioning.....	11
7 Inspection of tank and tank fittings .....	11
7.1 Tank.....	11
7.2 Tank fittings and immediate pipework.....	11
7.3 Valve cover.....	12
7.4 Bonding .....	12
7.5 Pressure relief valve.....	12
7.6 Pressure gauge.....	12
7.7 Contents gauges.....	12
7.8 Shut-off valves .....	12
7.9 Studs, bolts, nuts, and washers.....	13
7.10 Corrosion protection system.....	13
7.11 Piers and foundations for overground tanks.....	13
8 Competence .....	13
8.1 Routine inspection.....	13
8.2 Periodic inspection.....	13
8.3 Requalification .....	13
9 Records.....	13
9.1 Tank data .....	13
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.3 Records.....	15
A.4 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 .....	19
C.4.3	Sensor location.....	19
C.4.4	Pressurisation.....	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	Vessel grading .....	22
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 .....	24
Annex E	(informative) Assessment of tanks by sampling.....	25
E.1	General .....	25
E.2	Homogeneous batch .....	25
E.3	Selection of samples .....	25
E.4	Sample selection .....	26
E.5	Inspection period.....	26
E.6	Presentation of results and decisions.....	26
E.7	Pass criteria .....	26
E.8	Example calculation of a sample .....	26
Annex F	(informative) External monitoring by camera for underground tanks .....	28
F.1	General .....	28
F.2	Inspection procedure .....	28
F.3	Interpretation of results .....	28
F.4	Records .....	28
Annex G	(informative) Monitoring cathodic protection with sacrificial anodes for underground tanks .....	29
G.1	General .....	29
G.2	Records .....	29
G.3	Procedure .....	29
G.4	Measurement of the galvanic current.....	29
G.5	Measurement of the potential difference of the tank to the reference electrode.....	29
G.6	Results.....	30
Annex H	(informative) Monitoring cathodic protection by impressed current for underground tanks .....	31
H.1	General .....	31
H.2	Apparatus .....	31
H.3	Conditions .....	31
H.4	Isolation resistance of the coating .....	31
H.4.1	Procedure .....	31
H.4.2	Calculation .....	32
H.5	Results.....	32
H.6	Checking intervals.....	32

## EN 12817:2010 (E)

<b>Annex I (informative) Corrosion monitoring by moisture and condensation detection for underground tanks .....</b>	<b>33</b>
<b>I.1 General.....</b>	<b>33</b>
<b>I.2 Equipment characteristics .....</b>	<b>33</b>
<b>I.3 Monitoring .....</b>	<b>33</b>
<b>I.4 Interpretation .....</b>	<b>33</b>
<b>Annex J (informative) Example of an inspection and requalification report.....</b>	<b>34</b>
<b>Annex K (informative) A-deviations.....</b>	<b>35</b>
<b>Bibliography .....</b>	<b>36</b>

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SIST EN 12817:2010

<https://standards.iteh.ai/catalog/standards/sist/9aef7801-93cd-45da-bc6a-e7eab2faecc0/sist-en-12817-2010>

## Foreword

This document (EN 12817:2010) 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 July 2010, and conflicting national standards shall be withdrawn at the latest by July 2010.

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.

Users of this standard, prepared in the field of application of Article 118A of the EC Treaty, should be aware that standards have no formal legal relationship with Directives that may have been made under Article 118A of the Treaty. In addition, national legislation in the Member states may contain more stringent requirements than the minimum requirements of a Directive based on Article 118A. Information on the relationship between the national legislation implementing Directives based on Article 118A and this EN may be given in a national foreword of the national standard implementing this EN.

This document supersedes EN 12817:2002 and EN 12818:2002.

The main modifications concern the following:

- merging of two European Standards: EN 12817:2002 and EN 12818:2002;
- improvement of Annex C which becomes normative;
- a new clause: Clause 2, Normative references.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

## Introduction

Periodic inspection and requalification regimes for LPG tanks up to and including 13 m<sup>3</sup> have developed in various countries in different ways that range from defined to variable inspection periods with requalification regimes achieved by various methods. This European Standard for periodic 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 routine periodic inspection and requalification in different ways for each application.

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 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 execution of its provisions is entrusted to appropriately qualified and experienced people.

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## 1 Scope

This European Standard specifies requirements for:

- a) routine inspection, periodic inspection and requalification of fixed LPG storage tanks of sizes from 150 l up to and including 13 m<sup>3</sup>, and associated fittings;
- b) marking tanks and/or keeping records, as appropriate, as a result of routine inspection, periodic inspection and requalification.

This European Standard excludes refrigerated storage.

## 2 Normative references

The following referenced documents are indispensable for the application 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 — General principles*

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

## 3 Terms and definitions

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

### 3.1

#### **periodic inspection**

external inspection of the visible parts of a tank and its fittings

### 3.2

#### **routine inspection**

external inspection of the visible parts of a tank and its fittings, carried out more frequently than periodic inspections

### 3.3

#### **requalification**

inspection/test carried out at intervals, typically at the time of a periodic inspection, in order to confirm that a tank is fit for a further period of service

### 3.4

#### **competent body**

person or corporate body, defined by a national competent authority, that, by appropriate qualification, training, experience, and resources, is able to make objective judgements related to inspection and testing of pressure equipment in LPG service

**EN 12817:2010 (E)**

**3.5 competent person**  
person who, by qualification, training, experience, and resources, is able to make objective judgements related to inspection and testing of pressure equipment in LPG service

**3.6 national competent authority**  
organization, recognized or appointed by a member state, that oversees safe operation of LPG pressure equipment

**3.7 written scheme**  
document, prepared by a competent body, containing inspection information

**3.8 commissioning**  
preparation for safe service

**3.9 decommissioning**  
removing from service and safe preparation for inspection/test

**3.10 Liquefied Petroleum Gas  
LPG**

mixture of predominantly butane or propane with traces of other hydrocarbon gases classified in accordance with UN number 1965, hydrocarbon gases mixture, liquefied, NOS or UN number 1075, petroleum gases, Liquefied

NOTE In some countries, UN numbers 1011 and 1978 may also be designated LPG.

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## 4 Safety

### 4.1 Safety precautions

Appropriate safety precautions shall be taken during decommissioning, commissioning and inspection/requalification of a tank and its fittings.

### 4.2 Unsafe conditions

Any unsafe condition observed by a competent person on the site of an LPG storage tank shall be reported to the person responsible for safe operation of the tank/site, as appropriate, and action taken.

### 4.3 Leaks

Any leak discovered from the tank or its fittings shall be reported immediately to the person responsible for safe operation of the tank.

Action to make a tank or its fittings safe shall be taken by a competent person.

NOTE Methods for detecting leaks include:

- visual inspection;
- smell;

- listening;
- use of gas detectors.

## 5 Written scheme

**5.1** Each tank and its fittings shall be included in a written scheme taking into account the requirements of Clauses 6 to 8.

**5.2** If duties are shared between different parties, the written scheme shall clearly identify the respective areas of responsibility.

**5.3** Intervals between inspections shall be determined by consideration of the following:

- the design specification of the tank and its equipment;
- the corrosion protection system on the tank;
- the system used to ensure that the LPG quality conforms to its specifications/standards, and that it does not contain components damaging to the material of the tank or its fittings;
- the level of control over the filling and maintenance of the tank.

NOTE The maximum period between requalifications should not normally be greater than 20 years, and if conditions are not satisfactory the period should be reduced.

**5.4** The written scheme shall contain the following information:

- the maximum interval between inspections;
- the parts to be inspected;
- the nature of the inspection;
- the critical parts that, if modified or repaired, shall be inspected by a competent person/body before they can be put back into service;
- the requirements for pressure relief valves (see 7.5.1);
- the name of the competent body preparing the written scheme;
- the date of the preparation of the written scheme.

## 6 Tank inspection and requalification

### 6.1 Routine inspection

**6.1.1** Each tank and its fittings shall be routinely inspected at intervals defined in the written scheme.

**6.1.2** An inspection or exception report shall be produced if repairs are required.

**6.1.3** Routine inspections shall include visual inspections at the time of filling the tank.

**6.1.4** Routine inspections shall include 7.1, 7.2, 7.3, 7.4, 7.5.2, 7.5.4, 7.7 and 7.11.

**EN 12817:2010 (E)****6.2 Periodic inspection**

**6.2.1** Each tank and its fittings shall be periodically inspected at intervals defined in the written scheme.

**6.2.2** Periodic inspections shall include 6.1.4, 7.5.1, 7.5.3, 7.6, 7.8, 7.9 and 7.10.

**6.2.3** For overground LPG tanks, a visual inspection of external surfaces shall be carried out (see Annex A). If tanks are provided with fixed passive fire protection, techniques described in Annex A are unsuitable. The written scheme shall specify alternative techniques to those specified in Annex A to ensure that no corrosion occurs on the external surface of the tank.

**6.3 Requalification****6.3.1 Requalification for overground LPG tanks**

Requalification intervals shall be specified in the written scheme. Requalification shall include 7.5.1 and conform to either:

- a) individual requalification of each tank, including an external visual inspection and at least one of the following:
- 1) an internal visual inspection (see Annex A);
  - 2) a hydraulic pressure test (see Annex B);
  - 3) an acoustic emission test (see Annex C);
  - 4) thickness checks (see Annex D);
  - 5) other method equivalent to any of the above;
- b) requalification of a production batch by sampling, for serially produced tanks (see Annex E).

Sample tanks should be subjected to an external visual inspection (see Annex A), and to the following tests before any repair or refurbishment is carried out:

- c) an internal visual inspection (see Annex A); and
  - d) a hydraulic pressure test (see Annex B); and
  - e) an ultrasonic thickness test (see Annex D); and
  - f) an X-ray or ultrasonic check on welds, comparable to inspections carried out at the time of manufacture;
- or
- g) an acoustic emission test (see Annex C).

**6.3.2 Requalification for underground LPG tanks**

**6.3.2.1** Re-qualification intervals shall be specified in the written scheme. Re-qualification shall include 7.5.1 and conform to either 6.3.2.2 or 6.3.2.3.

**6.3.2.2** Individual requalification of each tank shall include at least one test from group 1 and one from group 2 of Table 1.