



SLOVENSKI STANDARD SIST EN 12818:2002/A1:2006

01-maj-2006

CdfYa U]b'df]Vcf'nUI BD'Ë'DfY[`YX]]b'dYf]cX] b]dfYg_i g]'fYnYfj cUf'Yj `nU
i hY_c]b'Yb]'bUz]b]'d]'b'fl BD'ŁdcXnYa bY]'nj YXVY'n'bc]fUb'c'dfcg]c]fb]bc'Xc
j_`f bc'%`a'

LPG equipment and accessories - Inspection and re-qualification of LPG tanks up to and including 13 m³ underground

iTeh STANDARD PREVIEW

Flüssiggas-Geräte und Ausrüstungsteile - Instandhaltung und wiederkehrende Prüfung von Behältern für Flüssiggas (LPG) mit einem Fassungsraum bis einschließlich 13 m³ - Erdgedeckte Aufstellung

[SIST EN 12818:2002/A1:2006](#)

<https://standards.iteh.ai/catalog/standards/sist/11713087-6f85-433b-a8a4-20004cf61435/sist-en-12818-2002-a1-2006>

[20004cf61435/sist-en-12818-2002-a1-2006](#)

Équipements pour GPL et leurs accessoires - Inspection et requalification de réservoirs GPL enterrés de capacité inférieure ou égale a 13 m³

Ta slovenski standard je istoveten z: EN 12818:2002/A1:2006

ICS:

23.020.30 V|æ}^A|[•[å^E]ã|ã•\^
b\|^}\^ Pressure vessels, gas cylinders

SIST EN 12818:2002/A1:2006 en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 12818:2002/A1:2006](https://standards.iteh.ai/catalog/standards/sist/11713087-6f85-433b-a8a4-20004cf61435/sist-en-12818-2002-a1-2006)

<https://standards.iteh.ai/catalog/standards/sist/11713087-6f85-433b-a8a4-20004cf61435/sist-en-12818-2002-a1-2006>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12818:2002/A1

March 2006

ICS 23.020.30

English Version

LPG equipment and accessories - Inspection and re-qualification of LPG tanks up to and including 13 m³ underground

Équipements pour GPL et leurs accessoires - Inspection et requalification de réservoirs GPL enterrés de capacité inférieure ou égale à 13 m³

Flüssiggas-Geräte und Ausrüstungsteile - Instandhaltung und wiederkehrende Prüfung von Behältern für Flüssiggas (LPG) mit einem Fassungsraum bis einschließlich 13 m³ - Erdgedeckte Aufstellung

This amendment A1 modifies the European Standard EN 12818:2002; it was approved by CEN on 20 January 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This amendment 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, 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.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents		Page
1	General modifications	4
2	Modification to title	4
3	Modification to Foreword	4
4	Modification to definition 2.7	4
5	Modification to 5.3	4
6	Modification to Annex C	5
7	Modification to I.2	7
8	Modification to I.5	7
9	Modification to I.6	8
10	Modification to I.7	8

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 12818:2002/A1:2006](https://standards.iteh.ai/catalog/standards/sist/11713087-6f85-433b-a8a4-20004cf61435/sist-en-12818-2002-a1-2006)
<https://standards.iteh.ai/catalog/standards/sist/11713087-6f85-433b-a8a4-20004cf61435/sist-en-12818-2002-a1-2006>

Foreword

This European Standard (EN 12818:2002/A1:2006) has been prepared by Technical Committee CEN/TC 286 "Liquefied petroleum gas equipment and accessories", the secretariat of which is held by NSAI.

This Amendment to the European Standard EN 12818:2002 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2006, and conflicting national standards shall be withdrawn at the latest by September 2006.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 12818:2002/A1:2006](https://standards.iteh.ai/catalog/standards/sist/11713087-6f85-433b-a8a4-20004cf61435/sist-en-12818-2002-a1-2006)

<https://standards.iteh.ai/catalog/standards/sist/11713087-6f85-433b-a8a4-20004cf61435/sist-en-12818-2002-a1-2006>

EN 12818:2002/A1:2006 (E)**1 General modifications**

Change all appearances of “document” into “European Standard”, where the standard refers to itself. Start “Clause” and “Annex” with upper case letters, where a specific reference is made.

2 Modification to title

Delete title and replace with the following:

"LPG equipment and accessories – Inspection and re-qualification of LPG tanks up to and including 13 m³ underground"

3 Modification to Foreword

Delete the third paragraph: “In this the standard annexes A, B, C, D, E, F, G, H, I, J and ZA are informative.”.

Amend the last paragraph to read as follows:

“According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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.”

(standards.iteh.ai)

4 Modification to definition 2.7

[SIST EN 12818:2002/A1:2006](https://standards.iteh.ai/catalog/standards/sist/11713087-6f85-433b-a8a4-0004cf61435/sist-en-12818-2002-a1-2006)

[https://standards.iteh.ai/catalog/standards/sist/11713087-6f85-433b-a8a4-](https://standards.iteh.ai/catalog/standards/sist/11713087-6f85-433b-a8a4-0004cf61435/sist-en-12818-2002-a1-2006)

Delete 2.7 and replace with the following: [0004cf61435/sist-en-12818-2002-a1-2006](https://standards.iteh.ai/catalog/standards/sist/11713087-6f85-433b-a8a4-0004cf61435/sist-en-12818-2002-a1-2006)

"2.7**written scheme**

document, prepared by a competent body, containing inspection information

NOTE In some countries, the written scheme (in whole or in part) may have to be approved by a national competent authority."

5 Modification to 5.3

Delete 5.3 and replace with the following:

"5.3 Re-qualification

5.3.1 Re-qualification intervals shall be specified in the written scheme. Re-qualification shall conform to either a) or b).

a) Individual re-qualification of each tank

Individual re-qualification shall include at least one test from group 1 and one from group 2 of Table 1.

Table 1 — Re-qualification tests

Group 1	Group 2
Internal visual inspection (see Annex A)	External visual inspection (i.e. excavation)
Hydraulic pressure test (see Annex B)	External monitoring by camera etc. (see Annex E)
Acoustic emission test (see Annex C)	Cathodic protection monitoring (see Annex F or Annex G)
Ultrasonic thickness test (see Annex D)	Moisture detection (see Annex H)
Other equivalent method	

b) Re-qualification of a production batch by sampling

Tanks shall be sampled according to a sampling method agreed by a competent body (an example of a sampling method is given in Annex I).

Tanks from the sample which are returned by customers, if any, shall be submitted, before any repair or refurbishment to the following tests:

— an external visual inspection;

— an internal inspection (see Annex A);

Plus one or more of the following tests as required by the written scheme:

— a hydraulic pressure test (see Annex B);

— an ultrasonic thickness test (see Annex D);

— an X-ray or ultrasonic check on welds, comparable to inspections carried out at the time of manufacture.

The other tanks from the sample, selected at random in the production batch, shall be submitted to:

— an acoustic emission test on site (see Annex C).

5.3.2 At commissioning, leak checks shall be carried out at connections. Gaskets that have been removed when breaking connections shall not be reused.

6 Modification to Annex C

Delete Annex C and replace with the following:

"Annex C (informative)

Acoustic emission examination during proof testing

C.1 General

Acoustic emission testing is used to detect evolutionary defects in a tank shell.

Acoustic emission testing procedures should be established according to recognize standards or codes and have the agreement of a competent body.

It should be adapted to the design type of the tanks, including coating and installation conditions.

Testing can be carried out on a tank without removing it from service. The optimum conditions exist when the tank is above 70 % of the maximum allowed fill level.

Acoustic emission testing procedures, when used, will be part of the written scheme.

General information and guidance on acoustic emission testing may be obtained from the following documents:

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

EN 13445-5, *Unfired pressure vessels – Part 5: Inspection and 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*

C.2 Safety precautions

When pressurising a tank containing LPG, the following precautions should be observed:

- if the acoustic signals indicate a leak, it should be fixed before proceeding;
- acoustic signals should be continually monitored so that the pressure can be immediately reduced to protect the tank;
- the test pressure should be at least 10 % above the highest pressure reached in the tank in service since the previous test, and should not exceed 110 % of the maximum allowable pressure PS;
- if the test pressure exceeds the maximum allowable pressure PS of the tank, due consideration should be given to the possibility - and hazards associated with - the release of LPG through the pressure relief valve;
- the test should not be carried out at a temperature below 7 °C.
- the testing procedure should include real time test stop criteria allowing the termination of the pressure loading of the tank in case of:
 - perturbations in the data collection;

- exceeding of pre-determined parameters (pressure, signal...).

C.3 Acceptance criteria

The acceptance criteria should be defined in the acoustic emission testing procedures.

With serially produced tanks, acceptance criteria are usually established from tests carried out on representative samples of similar LPG tanks.

NOTE For reasons related to the size or location of the tank, it is not always possible to identify or locate the acoustic emission sources without further examination.

For non-serially produced tanks, techniques allowing the identification and location of the faults should be employed.

All results should be kept on a database to assist in establishing the acceptance criteria."

7 Modification to I.2

Delete I.2 and replace with the following:

"I.2 Homogeneous batch

A batch should be considered homogeneous if all the tanks are as follows:

- manufactured in the same year;
- manufactured at the same place;
- of the same grade and quality of steel;
- of the same dimensions and nominal capacity, within tolerance limits;
- of the same design code or standard;
- of the same method of manufacture;
- of the same design pressure;
- of the same nominal thickness.

Manufacturer's documents should be produced to demonstrate homogeneity."

8 Modification to I.5

Delete I.5 and replace with the following:

"I.5 Inspection period

Re-qualification inspection of a batch can start 2 years before the re-qualification year. At least 20 % of the sample should be tested during the re-qualification year, and the entire sample before the re-qualification date."