

---

**Stabilni valjasti varjeni jekleni rezervoarji serijske izdelave za skladiščenje utekočinjenega naftnega plina (UNP) podzemne izvedbe z notranjo prostornino do 13 m<sup>3</sup> - Načrtovanje in izdelava**

Static welded steel cylindrical tanks, serially produced for the storage of Liquefied Petroleum Gas (LPG) having a volume not greater than 13 m<sup>3</sup> and for installation underground - Design and manufacture

Ortsfeste, geschweißte zylindrische Behälter aus Stahl, die serienmäßig für die Lagerung von Flüssiggas (LPG) hergestellt werden, mit einem Fassungsvermögen bis 13 m<sup>3</sup> für erdgedeckte Aufstellung - Gestaltung und Herstellung

[SIST EN 14075:2003/A1:2005](https://standards.iteh.ai/catalog/standards/sist/c69f4bd5-4505-4ad7-ba9a-2003-01-14075-2003/A1:2005)

Réservoirs cylindriques fixes en acier soudés, fabriqués en série, d'un volume inférieur ou égal a 13 m<sup>3</sup>, destinés au stockage enterré des gaz de pétrole liquéfiés (GPL) - Conception et fabrication

**Ta slovenski standard je istoveten z: EN 14075:2002/A1:2004**

---

**ICS:**

23.020.10	Nepremične posode in rezervoarji	Stationary containers and tanks
-----------	----------------------------------	---------------------------------

**SIST EN 14075:2003/A1:2005****en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 14075:2003/A1:2005](https://standards.iteh.ai/catalog/standards/sist/c69f4bd5-4505-4ad7-ba9a-d4ba4c29d1c0/sist-en-14075-2003-a1-2005)

<https://standards.iteh.ai/catalog/standards/sist/c69f4bd5-4505-4ad7-ba9a-d4ba4c29d1c0/sist-en-14075-2003-a1-2005>

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 14075:2002/A1**

December 2004

ICS 23.020.30

English version

**Static welded steel cylindrical tanks, serially produced for the storage of Liquefied Petroleum Gas (LPG) having a volume not greater than 13 m<sup>3</sup> and for installation underground - Design and manufacture**

Réservoirs cylindriques fixes en acier, soudés, fabriqués en série, d'un volume inférieur ou égal à 13 m<sup>3</sup>, destinés au stockage enterré des gaz de pétrole liquéfiés (GPL) - Conception et fabrication

Ortsfeste, geschweißte zylindrische Behälter aus Stahl, die serienmäßig für die Lagerung von Flüssiggas (LPG) hergestellt werden, mit einem Fassungsvermögen bis 13 m<sup>3</sup> für erdgedeckte Aufstellung - Gestaltung und Herstellung

This amendment A1 modifies the European Standard EN 14075:2002; it was approved by CEN on 21 October 2004.

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, 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**

**EN 14075:2002/A1:2004 (E)****Foreword**

This document (EN 14075:2002/A1:2004) 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 14075:2002 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2005, and conflicting national standards shall be withdrawn at the latest by June 2005.

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(s).

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

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

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 14075:2003/A1:2005

<https://standards.iteh.ai/catalog/standards/sist/c69f4bd5-4505-4ad7-ba9a-d4ba4c29d1c0/sist-en-14075-2003-a1-2005>

*Page 8, sub-clause 3.4*

Delete "batch" and replace with "production-batch".

*Page 8, sub-clause 3.8*

Delete 3.8 completely and re-number subsequent definitions.

*Page 9, sub-clause 3.11*

Delete 3.11 and replace with the following:

**"3.10**

**Ar<sub>3</sub>**

critical point, on the iron – iron carbide equilibrium diagram, representing the temperature at the end of transformation of austenite to ferrite on cooling of the steel"

*Page 9, sub-clause 4.1*

Delete the 5<sup>th</sup> bullet point and replace it with the following:

— "steels in sub-group 2.2 shall have a carbon equivalent limited to 0,43 %, maximum, when calculated in accordance with EN 10028-5."

*Page 10, sub-clause 4.2*

Delete 1<sup>st</sup> paragraph and replace it with the following:

"Materials for pressure parts, other than shells and ends, shall conform to the appropriate harmonised European Standard for the material, or a similar specification which has European materials approval or particular material appraisal."

*Page 11, sub-clause 4.4*

Delete 1<sup>st</sup> paragraph and replace with the following:

"The welding consumables shall be such that they are capable of giving consistent welds with properties at least equal to those specified for the parent materials of the finished tank."

*Page 11, sub-clause 4.5*

Delete sub-clause and replace with the following:

"The tank manufacturer shall obtain certificates showing the chemical analysis and details of the mechanical properties of the steel supplied for the construction of the pressure retaining parts of the tank. The certificates shall be in accordance with EN 10204, certificate Type 3.1.B. The certificate shall include, or be supplemented by, the material manufactures' documented affirmation of compliance to the material specification."

*Page 11, sub-clause 5.1*

Add a comma after "ISO 9162".

*Page 12, sub-clause 5.3*

Delete sub-clause and replace with the following:

"The design pressure,  $p$  (see 3.8), shall not be less than the maximum pressure reached in service, in accordance with Annex A. It shall be selected taking into account:

**EN 14075:2002/A1:2004 (E)**

- the pressure developed by the LPG at the maximum soil temperature at 1 m depth; and
- the maximum pressure of the LPG delivered into the tank.”

*Page 12, sub-clause 5.4*

Delete note 1 and replace with the following:

"NOTE 1 This can be demonstrated by calculation in accordance with EN 13445-3"

*Page 14, sub-clause 7.5.1*

Delete 2<sup>nd</sup> paragraph and replace with the following:

“Ends shall be made from one piece of plate.”

*Page 14, sub-clause 7.5.2.1*

Delete 1<sup>st</sup> paragraph and replace with the following:

“Cold formed ends shall be heat treated after forming, unless it can be demonstrated that the properties specified in 4.1 are met, or a burst test on a prototype tank demonstrates that the formed component is not the weakest part of the tank.”

*Page 15, sub-clause 7.5.3*

Delete 1<sup>st</sup> paragraph and replace with the following:

“For cold-formed parts not subject to heat treatment, no mechanical tests are required in respect of the forming operation except where required by 7.5.2.1 for ends.”

*Page 15, sub-clause 7.5.4*

<https://standards.iteh.ai/catalog/standards/sist/c69f4bd5-4505-4ad7-ba9a-d4ba4c29d1c0/sist-en-14075-2003-a1-2005>

Delete 3<sup>rd</sup> paragraph and replace with the following:

“Any pressure part, which fails to conform to the specification, shall be rejected. The testing shall be repeated on two other formed parts of the same production-batch where the test results shall conform to the specification.”

*Page 15, sub-clause 7.5.4*

Delete 5<sup>th</sup> paragraph and replace with the following:

“If any of the tests on the re-heat treated parts fail, the formed parts or production-batch shall be rejected.”

*Page 16, sub-clause 7.5.6*

Delete sub-clause and replace with the following:

“Formed parts shall be marked in such a manner that the material and the manufacturer of the formed parts can be identified during manufacture of the tank. In the case of production-batch testing, individual formed parts shall be traceable to the production-batch.”

*Page 19, table 2, title*

Delete and replace with the following:

**"Table 2 — Extent of non-destructive testing on longitudinal welds and weld joint coefficients"**

Page 19, sub-clause 9.2.4

Delete subclause and replace with the following:

“10 % of the aggregate length of all welds attaching nozzles, branches and compensating plates to the shell and ends and 10 % of all other attachment welds to pressure components shall be examined for imperfections by magnetic particle and/or penetrant techniques, see 9.3.4 or 9.3.5.”

Page 20, sub-clause 9.5, NOTE

Delete text and replace with the following:

“NOTE For tanks required to conform to the PED Categories III and IV, testing personnel qualifications should be approved by a third party organisation, recognised by a member state.”

Page 24, clause 11

Delete clause and replace with the following:

“Tank details shall be permanently marked on a corrosion resistant nameplate or other appropriate permanently attached non-pressure part. The position of the markings shall remain visible when the tank is installed. As a minimum the nameplate shall have the following information:

- name and address or other means of identification of the manufacturer;
- serial number;
- type or production-batch number;
- maximum and minimum allowable limits of temperature (TS) and pressure (PS);
- nominal water capacity in litres;
- date of manufacture;
- design code;
- test pressure (PT) in bar and date of test.

The letters shall be at least 4 mm high.

NOTE Where applicable, it could be necessary to include the CE symbol, a mark or identification of the notified body and any other information specified by the purchaser. The minimum height for the CE symbol is 5 mm.

Certification shall be produced for each tank or production-batch of tanks, indicating compliance with the requirements of this document.”

Page 28, sub-clause B.5

Delete and replace with the following:

### “B.5 Thickness tolerance

The thickness of each part of the tank after forming shall not be less than the thickness determined in Annex E.”

**EN 14075:2002/A1:2004 (E)**

Page 30, sub-clause C.2

Delete 1<sup>st</sup> paragraph and replace with the following:

"Pressure gauges shall be selected in accordance with EN 837-2. The gauge shall have an accuracy equal to or better than 1,6 % of the reading. The test pressure of the tank shall give a reading on the gauge between 50 % and 90 % of full scale deflection."

Page 34, subclause E.2.1

Delete and replace with the following:

"Tanks shall be designed using the formulae given in E.2.2 to E.2.5."

Page 35, sub-clause E.2.3, definition of the term C

Delete text and replace with the following:

"C is a factor determined from Figure E.1 or by calculation (see E.2.6);"

Page 37, sub-clause E.2.5

Renumber as E.2.6 and insert the following new E.2.5:

**"E.2.5 Hemispherical ends"**

The required thickness of a hemispherical end is given by:

$$e_s = \frac{pR}{2fz - 0,5p}$$

SIST EN 14075:2003/A1:2005

<https://standards.iteh.ai/catalog/standards/sist/c69f4bd5-4505-4ad7-ba9a-d4ba4c29d1c0/sist-en-14075-2003-a1-2005>

This method is valid for  $e/D_o \leq 0,16$ :

where

- $R$  is the inside radius of the end;
- $p$  is the design pressure;
- $z$  is the joint efficiency, = 1,0 for one piece ends;
- $f$  is the nominal design stress."

The thickness of the cylinder to which the end attaches shall be kept at or above the minimum determined by E.2.2 for the cylinder up to the tangent line.

Page 37, sub-clause E.3.1

Delete 2<sup>nd</sup> paragraph and replace with the following:

"The design method specified in this sub-clause only applies to cylindrical shells and ends having circular or elliptical openings, where the assumptions and conditions specified in E.3.2 and E.3.9 are satisfied."

Page 37, sub-clause E.3.2 b)

Delete the word "dished".



Page 38, sub-clause E.3.3

E.3.3. delete text/formulae and replace with the following:

“The distance between openings or branches, measured from the outside of the branches, pads, or compensation plates shall be not less than  $2 l_m$ , where

$$l_m = \sqrt{(2r_{im} + e_m)e_m}$$

where

for shells  $r_{im} = D_o/2 - e_m$

for hemispherical and torispherical ends  $r_{im} = r_{ih}$ , and

for ellipsoidal ends  $r_{im} = D_i \left[ \frac{0,22D_i}{h_i} + 0,02 \right]$

where

$D_o$  is the outside diameter of shell or dished end;

$D_i$  is the inside diameter of shell or straight flange of dished end;

$e_m$  is the actual thickness of the main body (shell or end) less any thinning allowance;

$h_i$  is the inside height of an ellipsoidal end;

$l_m$  is the length of the main body considered as effective compensation measured along the wall centreline from the edge of the opening or outside of the branch;

$r_{im}$  is the inside radius of the main body (shell or end);

$r_{ih}$  is the inside radius of the hemispherical end, or spherical portion of the torispherical end.”

Page 38, sub-clause E.3.5

Delete and replace with the following:

### “E.3.5 Cylindrical shells and ends with openings

Cylindrical shells and ends with openings shall be reinforced where necessary.

The reinforcement area of the main body with openings cannot be calculated directly, but shall be assumed in the first instance. That assumption may be verified by means of the method described in E.3.6 to E.3.14. The applied method is based on calculated thickness for pressure derived from E.2.2 for cylindrical shells, from E.2.3 for dished ends and E.2.5 for hemispherical ends, and leads to relationships between a pressure loaded area  $A_p$  and stress loaded cross sectional area  $A_f$  (see Figure E.3). The calculation may need to be repeated using a corrected assumption of the reinforcement area.”