



# SLOVENSKI STANDARD

## SIST EN 14427:2004/A1:2006

01-marec-2006

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Transportable refillable composite cylinders for LPG - Design and construction

Ortsbewegliche wiederbefüllbare Flaschen aus Verbundwerkstoff für Flüssiggas (LPG) -  
Gestaltung und Konstruktion

Bouteilles en matériau composite, transportables et rechargeables, pour gaz de pétrole  
liquéfiés (GPL) - Conception et fabrication

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Ta slovenski standard je istoveten z: EN 14427:2004/A1:2005

### ICS:

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 14427:2004/A1**

December 2005

ICS 23.020.30

English Version

**Transportable refillable composite cylinders for LPG - Design  
and construction**

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Verbundwerkstoff für Flüssiggas (LPG) - Gestaltung und  
Konstruktion

This amendment A1 modifies the European Standard EN 14427:2004; it was approved by CEN on 17 November 2005.

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.

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

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## Foreword

This document (EN 14427:2004/A1:2005) 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 14427:2004 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2006, and conflicting national standards shall be withdrawn at the latest by June 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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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**EN 14427:2004/A1:2005 (E)****1 Modification to Clause 2**

Add the following reference:

"EN 14763, *LPG equipment and accessories – Transportable refillable composite cylinders for Liquefied Petroleum Gas (LPG) – Procedure for checking before, during and after filling*"

**2 Modification to Clause 5.1**

Add a 1 after NOTE, i.e:

"NOTE 1 Attention is drawn to....."

Add a new note as follows:

"NOTE 2 Reference should also be made to EN 14763, which requires the cylinder manufacturer to perform additional tests to determine the rejection limits for in-service damage and to include these limits in the documentation for the cylinder."

**3 Modification to Clause 5.2.9 and Clause 5.2.10**

Delete clauses 5.2.9 and 5.2.10 and replace with the following:

**"5.2.9 Test No. 9 – Cylinder body integrity impact tests"****5.2.9.1 General**

The ability of the cylinder design (thickness, materials and mechanical properties) to withstand loadings other than internal pressure shall be demonstrated by a series of impact tests.

The tests shall be carried out at ambient conditions unless the manufacturer has opted for the alternative test permitted by 5.2.1.1.1 c), in which case the tests shall be carried out with the cylinders at – 20 °C.

Each type of test shall be carried out on cylinders without internal pressure and cylinders pressurised to 20 bar.

The specified impact energy and striking velocity shall be achieved by striking the test cylinder with a moving striker or by dropping the cylinder from an appropriate height. In all cases, the location of the impact shall be as specified in the test procedure and the direction of impact shall intersect with the axis of the cylinder.

The strikers (flat surface and edge) shall be of metallic material having a hardness greater than that of the cylinder and sufficiently robust to prevent the impact energy being absorbed by deflection of the striker.

### 5.2.9.2 Flat surface impact test

#### 5.2.9.2.1 Procedure

The striker shall be a flat surface with a length equal to the overall cylinder length and width equal to the cylinder diameter.

The impact energy,  $F$ , shall be determined by:

$$F = 30M$$

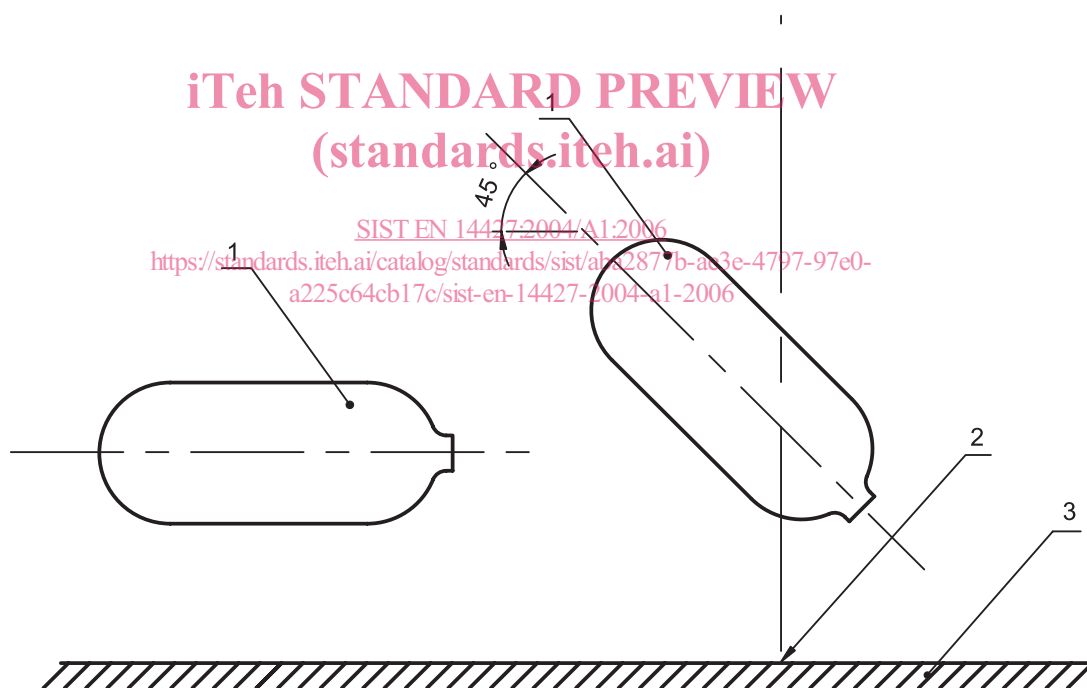
Where:

$F$  is the energy, in Joules,

$M$  is the maximum operating mass of the cylinder, in kg.

The striking velocity shall be between 7 m/s and 8 m/s.

Two un-pressurised cylinders shall each be impacted with the surface parallel to the cylinder. The cylinders shall then be impacted on the shoulder of the end, with the surface at 45° to the cylinder axis (see Figure 1).



#### Key

- 1 Cylinder
- 2 Point of impact
- 3 Flat surface

Figure 1 — Impact test with a flat surface

**EN 14427:2004/A1:2005 (E)**

On completion of both impacts, the cylinders shall be visually examined for signs of damage and assessed against the rejection criteria established in accordance with EN 14763.

If both cylinders show damage equal to or worse than these rejection criteria, then one cylinder shall be subject to a burst test in accordance with test No. 5 (see 5.2.5)

If one or both cylinders show no visible damage or damage below the rejection criteria, or if the rejection criteria has not been established, then one cylinder shall be subject to a burst test in accordance with test No. 5 (see 5.2.5) and the other subject to a pressure cycle test in accordance with test No. 6 (see 5.2.6).

The tests shall be repeated with two further cylinders, which have been pressurised to 20 bar.

**5.2.9.2 Criteria**

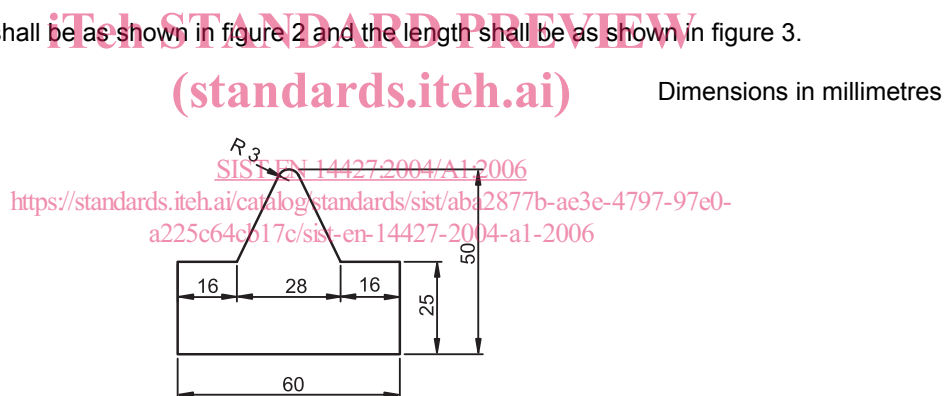
After impacts, the pressurised cylinders shall not leak.

Cylinders subject to the burst test shall meet the requirements of test No. 5 (see 5.2.5).

Cylinders subject to the fatigue test shall meet the requirements of test No. 6 (see 5.2.6).

**5.2.9.3 Edge impact test****5.2.9.3.1 Procedure**

The profile of the striker shall be as shown in figure 2 and the length shall be as shown in figure 3.



**Figure 2 — Striker profile**

The impact energy,  $F$ , shall be determined by:

$$F = 12M$$

Where:

$F$  is the energy, in Joules,

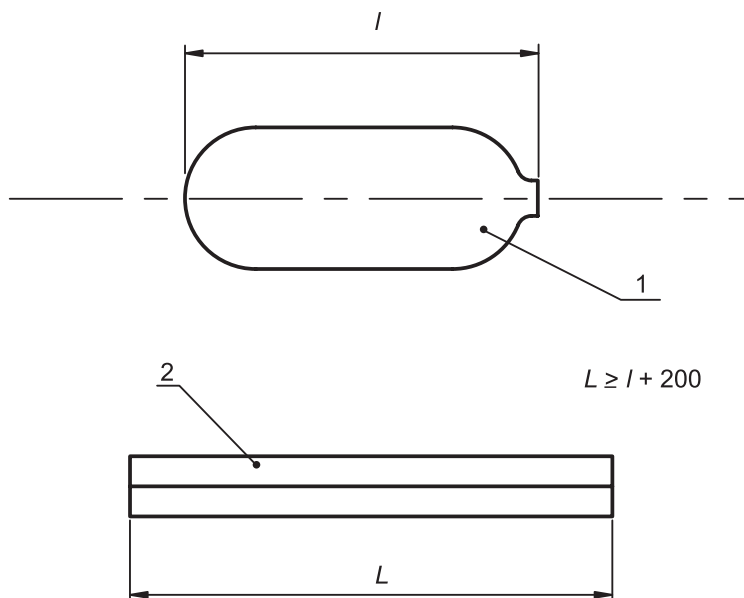
$M$  is the maximum operating mass of the cylinder, in kg.

The striking velocity shall be between 4 m/s and 5 m/s.

Two un-pressurised cylinders shall each be impacted with the edge parallel to the cylinder axis (see figure 3). The cylinders shall then be impacted with the edge perpendicular to the cylinder axis (see figure 4). The position of the two impacts shall be separated by a minimum of 45° round the cylinder circumference.



Dimensions in millimetres

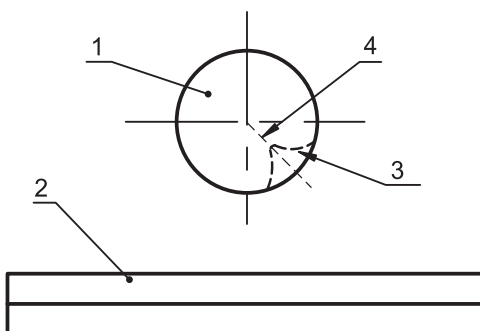
**Key**

- 1 Test cylinder
- 2 Striker (see figure 2)

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**Figure 3 — Impact test with cylinder axis parallel to edge,  $L$**

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**Key**

- 1 Cylinder
- 2 Striker (see figure 2)
- 3 Indentation from first drop
- 4 Impact points to be separated by at least 45°

**Figure 4 — Impact test with cylinder axis perpendicular to edge,  $L$**