
Oprema in pribor za utekočinjeni naftni plin (UNP) - Premične, ponovno polnljive jeklenke iz jekla za UNP, ki niso varjene in trdo spajkane - Periodična kontrola - Dopolnilo A2

LPG equipment and accessories - Transportable refillable LPG cylinders other than traditional welded and brazed steel cylinders - Periodic inspection

Flüssiggas-Geräte und Ausrüstungsteile - Ortsbewegliche, wiederbefüllbare Flaschen für Flüssiggas (LPG), ausgenommen geschweißte und hartgelötete Stahlflaschen - Wiederkehrende Inspektion

Équipements pour GPL et leurs accessoires - Bouteilles transportables et rechargeables pour GPL autres que celles en acier soudé et brasé - Contrôle périodique

Ta slovenski standard je istoveten z: EN 16728:2016+A1:2018/prA2:2019

ICS:

23.020.35 Plinske jeklenke Gas cylinders

SIST EN
16728:2016+A1:2018/oprA2:2019

en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Full standard:
<https://standards.iteh.ai/catalog/standards/sist/0c71625d-f0b9-4f5e-93a1-77076e2a-4930/sist-en-16728-2016a1-2018-opra2-2019>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
EN 16728:2016+A1:2018
prA2

March 2019

ICS 23.020.35

English Version

LPG equipment and accessories - Transportable refillable LPG cylinders other than traditional welded and brazed steel cylinders - Periodic inspection

Équipements pour GPL et leurs accessoires - Bouteilles transportables et rechargeables pour GPL autres que celles en acier soudé et brasé - Contrôle périodique

Flüssiggas-Geräte und Ausrüstungsteile - Ortsbewegliche, wiederbefüllbare Flaschen für Flüssiggas (LPG), ausgenommen geschweißte und hartgelötete Stahlflaschen - Wiederkehrende Inspektion

This draft amendment is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 286.

This draft amendment A2, if approved, will modify the European Standard EN 16728:2016+A1:2018. If this draft becomes an amendment, 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.

This draft amendment was established by CEN 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.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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 16728:2016+A1:2018/prA2:2019 (E)

European foreword

This document (EN 16728:2016+A1:2018/prA2:2019) has been prepared by Technical Committee CEN/TC 286 "Liquefied petroleum gas equipment and accessories", the secretariat of which is held by NSAI.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade.

ITEH STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/0c71625d-10b9-4f5e-93a1-77076e2a-4930/sist-en-16728-2016a1-2018-opra2-2019>

1 Modification to Clause 3

Modify the following definitions as follows:

3.5

minor repair

activities that include cleaning and replacement of components accessible without any dismantling of the valve (e.g. outlet seal, excess flow device) and that do not affect the integrity of the pressure receptacle

Add the following definitions:

3.11

basic population of OMC

production of cylinders from only one over-moulding manufacturer using new inner cylinders manufactured by only one manufacturer within one calendar year, based on the same design type, the same materials and production processes

3.12

sub-group of OMC

part of a basic population, owned by one single owner

Note 1 to entry: A basic population is split into sub-groups, one per owner. If the whole basic population is owned by one owner, the sub-group equals the basic population.

2 Modification to Clause 5.3.1

Modify the 3rd sentence of the 1st paragraph as follows:

“The pneumatic proof pressure test and leak test shall only be implemented where such an operation does not entail any danger. The pneumatic proof pressure test may require the agreement of a competent authority.”

3 Modification to Clause 5.3.3.2.1

Modify bullet e) and g) as follows:

“e) The test pressure shall be held for the time necessary to inspect the cylinder and examine it for any leak and/or other defects, but not less than 5 s.”

“g) Cylinders that do not leak or show any permanent visible distortion after the pressure has been released shall be deemed to have passed this test. All other cylinders shall be set aside and examined by a competent person.”

4 Modification to Clause F.1.1

Modify the 1st sentence as follows:

“This annex is applicable to over-moulded cylinders as defined in 3.6 and designed and manufactured in accordance with EN 1442, EN 14140 or Annex I, parts 1 to 3 to Council Directive 84/527/EEC.”

In the 3rd sentence, replace:

OMC's

with

over-moulded cylinders

prEN 16728:2016/prA2:2018 (E)

5 Modification to F.1.3

Modify the list as follows:

- identification and/or automatic sampling of cylinders from a sub-group, to perform tests and/or manage the periodic inspection test date;
- recording of relevant data of periodic inspection in the database (date and place of periodic inspection) for availability to inspection bodies, filling centres and competent authorities;
- marking which indicates the successful completion of the periodic inspection;
- that in the case of an issue with a part or the whole sub-group, affected cylinder(s) are automatically withdrawn at filling plant, before filling.

6 Modification to F.2.1

In the 1st paragraph, add at the end of the sentence:

“and supplemented by F.2.4.”

Delete the last sentence:

“When the cylinder return to a filling plant at time of periodic inspection, the inspections described in 5.4, 5.5 and 5.6 shall be fulfilled for each OMC”.

7 Modification to F.2.2

Delete the title F.2.2.1 General

Delete the 3rd paragraph of the subclause:

“Prior to any possible reuse of the inner receptacle for over-moulding, the former over-moulding case shall be removed and a hydraulic test shall be carried out.”

Delete the subclause F.2.2.2 Sampling and its content

Delete the subclause F.2.2.2.1 General and its content

Delete the subclause F.2.2.2.2 Peeling and corrosion test and its content

Delete the subclause F.2.2.2.3 Adhesion tests of the polyurethane material and its content

Delete the subclause F.2.2.3 Test frequency and its content

8 Modification to Clause F.2.3

Delete the content of subclause F.2.3 and replace it by the following:

“Burst tests, in accordance with EN 1442 or EN 14140, shall be performed on each related sample according to the Table F.3 and shall be conducted after the first 3 years in service and every 5 years thereafter”

9 Modification to Clause F.2.4

Delete the subclause F.2.4 and its content and replace it by the following:

F.2.4 Supplementary tests

F.2.4.1 Peeling and corrosion tests

Each cylinder of the sample according to Table F.3 shall be tested. Tests shall be done in conformance with EN ISO 4628-3:2016. The minimum peeling and corrosion criteria are Grade Ri2.

F.2.4.2 Adhesion tests of the polyurethane material

Each cylinder of the sample shall be tested (see Table F.2). Five adhesion tests shall be carried out per cylinder. The minimum adhesion value is set to 0,5 N/mm².

The adhesion test procedure is described in EN 14140.

NOTE Table F.2 gives the correspondence between the numbers of cylinders of the sub-group divided by one thousand and the sample size according to ISO 2859-1:1999+A1:2011

F.2.4.3 Test frequency

The additional tests described in F.2.4.1 and F.2.4.2 shall be carried out after 3 years of service, and every 5 years thereafter.

Table F.2 — Sampling size for adhesion test

Sub-group of OMC	Related range from ISO 2859-1	Sampling size according to ISO 2859-1:1999+A1:2011
< 9 000	2 to 8	2
Between 9 000 and 16 000	9 to 15	2
Between 16 000 and 25 000	16 to 25	3
Between 25 000 and 51 000	26 to 50	5
Between 51 000 and 91 000	51 to 90	5
Between 91 000 and 150 000	91 to 150	8

10 Modification to Clause F.2.5

Delete the subclause F.2.5 and its content and replace it by the following:

F.2.5 Statistical evaluation of test results – Method and minimum requirements

The procedure for statistical evaluation according to the related rejection criteria is described in the following

Table F.3 — Sampling and criteria

Test interval (years)	Type of test	Standard	Rejection criteria	Sampling out of a sub-group
After 3 years in service	Burst test	EN 1442:2017	Burst pressure point of the representative sample shall be above the lower limit of tolerance interval on the Sample Performance Chart $\Omega_m \geq 1 + \Omega_s \times k3(n;p;1-\alpha)$ ^a No individual test result shall be less than the test pressure	$\sqrt[3]{Q}$ or Q/200 whichever is lower, and with a minimum of 20 per sub-group (Q)
	Peeling and corrosion	EN ISO 4628-3:2016	Max corrosion grade: Ri2	Q/1 000
	Adhesion of Polyurethane	ISO 2859-1:1999 + A1:2011 EN 1442:2017 EN 14140:2014 + AC:2015	Adhesion value > 0.5 N/mm ²	See ISO 2859-1:1999 + A1:2011 applied to Q/1000
Every 5 years thereafter	Burst test	EN 1442:2017	Burst pressure point of the representative sample shall be above the lower limit of tolerance interval on the Sample Performance Chart $\Omega_m \geq 1 + \Omega_s \times k3(n;p;1-\alpha)$ ^a No individual test result shall be less than the test pressure	$\sqrt[6]{Q}$ or Q/100 whichever is lower, and with a minimum of 40 per sub-group (Q)
	Peeling and corrosion	EN ISO 4628-3:2016	Max corrosion grade: Ri2	Q/1 000
	Adhesion of Polyurethane	ISO 2859-1:1999 + A1:2011 EN 1442:2017 EN 14140:2014 + AC:2015	Adhesion value > 0.5 N/mm ²	See ISO 2859-1:1999 + A1:2011 applied to Q/1000
^a Burst pressure point (BPP) of the representative sample is used for the evaluation of test results by using a Sample Performance Chart: Step 1: Determination of the burst pressure point (BPP) of a representative sample				

Each sample is represented by a point whose coordinates are the mean value of burst test results and the standard deviation of burst test results, each normalized to the relevant test pressure.

$$\text{BPP: } (\Omega_s = \frac{s}{PH} ; \Omega_m = \frac{x}{PH})$$

with

- x*: sample mean value;
- s*: sample standard deviation;
- PH*: test pressure

Step 2: Plotting on a Sample Performance Chart

Each BPP is plotted on a Sample Performance Chart with following axis:

Abscissa: Standard Deviation normalized to test pressure (Ω_s)

Ordinate: Mean value normalized to test pressure (Ω_m)

Step 3: Determination of the relevant lower limit of tolerance interval in the Sample Performance Chart

Results for burst pressure shall first be checked according to the Joint Test (multidirectional test) using a significance level of $\alpha = 0,05$ (see paragraph 7 of ISO 5479:1997) to determine whether the distribution of results for each sample is normal or non-normal.

— For a normal distribution, the determination of the relevant lower limit of tolerance is given in step 3.1.

— For a non-normal distribution, the determination of the relevant lower limit of tolerance is given in step 3.2.

Step 3.1: Lower limit of tolerance interval for results following a normal distribution

In accordance with the standard ISO 16269-6:2014, and considering that the variance is unknown, the unilateral statistical tolerance interval shall be considered for a confidence level of 95 % and a fraction of population equal to 99,9999 %.

By application in the Sample Performance Chart, the lower limit of tolerance interval is represented by a line of constant survival rate defined by the formula:

$$\Omega_m = 1 + \Omega_s \times k3(n;p;1-\alpha)$$

with

- p*: proportion of the population selected for the tolerance interval (99,9999 %);
- $1 - \alpha$: confidence level (95 %);
- n*: sample size.

The value for *k3* dedicated to Normal Distributions shall be taken from the Table F.4.

Step 3.2: Lower limit of tolerance interval for results following a non-normal distribution

The unilateral statistical tolerance interval shall be calculated for a confidence level of 95 % and a fraction of population equal to 99,9999 %.

The lower limit of tolerance is represented by a line of constant survival rate defined by the formula given in previous step 3.1, with factors *k3* based and calculated on the properties of a Weibull Distribution.

The value for *k3* dedicated to Weibull Distributions shall be taken from Table F.4.