SLOVENSKI STANDARD
SIST EN 16119:2022

01-februar-2022

Nadomešča:
SIST EN 16119:2013

Oprema in pribor za utekočinjeni naftni plin (UNP) - Tesnilne kape in čepi za ventile jeklenk in tlačnih posod za UNP - Specifikacija in preskušanje

LPG equipment and accessories - Sealing caps and plugs for LPG cylinder and pressure vessel valves - Specification and testing

Flüssiggas-Geräte und Ausrüstungsteile - Dichtkappen und Dichtstopfen für Flaschen und Behälter für Flüssiggas (LPG) - Spezifikation und Prüfungen

Équipements pour GPL et leurs accessoires - Bouchons d'étanchéité mâles et femelles pour robinets de bouteilles et réservoirs - Spécifications et essais

Ta slovenski standard je istoveten z: **EN 16119:2021**

ICS:

23.020.32	Tlačne posode	Pressure vessels
23.020.35	Plinske jeklenke	Gas cylinders
83.140.50	Tesnila	Seals

SIST EN 16119:2022 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 16119

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ICS 23.060.99

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English Version

LPG equipment and accessories - Sealing caps and plugs for LPG cylinder and pressure vessel valves - Specification and testing

Équipements pour GPL et leurs accessoires - Bouchons et obturateurs d'étanchéité pour robinets de bouteilles et vannes de réservoirs sous pression - Spécifications et essais

Flüssiggas-Geräte und Ausrüstungsteile - Dichtkappen und Dichtstopfen für Flaschen und Druckbehälter für Flüssiggas (LPG) - Spezifikation und Prüfungen

This European Standard was approved by CEN on 22 November 2021.

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-CENELEC 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-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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 16119:2021) has been prepared by Technical Committee CEN/TC 286 "LPG 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 June 2022, and conflicting national standards shall be withdrawn at the latest by June 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 16119:2013.

EN 16119:2021 includes the following significant technical changes with respect to EN 16119:2013:

— Addition of external leak tightness term and definition

— Introduction of requirement for UV resistance

— Parameters for LPG resistance have been tightened

— Introduction of pressure test after endurance test

— Environmental checklist deleted

In this document the unit bar is used, due to its universal use in the gas industry. It should, however, be noted that bar is not an SI unit, and that the corresponding SI unit for pressure is Pa (1 bar = 10^5 Pa = 10^5 N/m^2).

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document calls for the use of substances and procedures that may be injurious to health and/or the environment if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations at any stage.

It is recommended that companies using this document develop an environmental management policy. For guidance see ISO 14000 series.

Protection of the environment is a key political issue in Europe and elsewhere. For TC 286 this is covered in CEN/TS 16765 [4] LPG equipment and accessories - Environmental considerations for CEN/TC 286 standards, and this Technical Specification should be read in conjunction with this document. The Technical Specification provides guidance on the environmental aspects to be considered regarding equipment and accessories produced for the LPG industry and the following is addressed:

a) design;

b) manufacture;

c) packaging;

d) use and operation; and

e) disposal.

It has been assumed in the drafting of this document that the execution of its provisions is entrusted to appropriately qualified and experienced people.

All pressures are gauge pressures unless otherwise stated.

This document requires measurement of material properties, dimensions and pressures. All such measurements are subject to a degree of uncertainty due to tolerances in measuring equipment etc. It may be beneficial to refer to the leaflet, Measurement uncertainty leaflet SP INFO 2000:27 [3].

1 Scope

This document specifies the design, testing and marking requirements for caps and plugs used to form a pressure tight seal with liquefied petroleum gas (LPG) cylinder valves and pressure vessel valves. Sealing caps and plugs provide an additional seal for self-closing and manually operated valves.

Protection caps or dust caps and tamper evident seals that do not form an additional seal as part of their design are excluded from the scope of this document.

Cylinder valve caps and plugs can be used with valves for liquid and vapour manufactured in accordance with EN ISO 14245 and EN ISO 15995.

Pressure vessel valve caps and plugs can be used with valves for liquid and vapour manufactured in accordance with EN 13175. Occasional liquid withdrawal valve caps and plugs are excluded from the scope of this document.

Reusable and single use sealing caps and plugs are included in this document.

This document does not exclude the use of other designs that provide an equivalent level of safety.

NOTE The term “pressure vessel” does not include LPG tank vehicles, also called “road tankers”, in CEN/TC 286 standards.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 549, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*

EN 751-1, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water - Part 1: Anaerobic jointing compounds*

EN 751-2, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water - Part 2: Non-hardening jointing compounds*

EN 751-3, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water - Part 3: Unsintered PTFE tapes*

EN 12164, *Copper and copper alloys - Rod for free machining purposes*

EN 12165, *Copper and copper alloys - Wrought and unwrought forging stock*

EN 12420, *Copper and copper alloys - Forgings*

EN 13175, *LPG equipment and accessories — Specification and testing for Liquefied Petroleum Gas (LPG) tank valves and fittings*

EN 15202, *LPG equipment and accessories - Essential operational dimensions for LPG cylinder valve outlet and associated equipment connections*

EN ISO 11114-1, *Gas cylinders - Compatibility of cylinder and valve materials with gas contents - Part 1: Metallic materials (ISO 11114-1)*

EN ISO 11114-2, *Gas cylinders - Compatibility of cylinder and valve materials with gas contents - Part 2: Non-metallic materials (ISO 11114-2)*

EN ISO 14021, *Environmental labels and declarations - Self-declared environmental claims (Type II environmental labelling) (ISO 14021)*

EN ISO 14024, *Environmental labels and declarations - Type I environmental labelling - Principles and procedures (ISO 14024)*

EN ISO 14025, *Environmental labels and declarations - Type III environmental declarations - Principles and procedures (ISO 14025)*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
liquefied petroleum gas
LPG
low pressure liquefied gas composed of one or more light hydrocarbons which are assigned to UN 1011, UN 1075, UN 1965, UN 1969 or UN 1978 only and which consists mainly of propane, propene, butane, butane isomers, butene with traces of other hydrocarbon gases

Note 1 to entry: In some countries, UN numbers 1011 and 1978 may also be designated LPG.

3.2
plug
component which seals a female connection

3.3
cap
component which seals a male connection

3.4
cylinder valve
primary shutoff device intended for liquid filling and liquid or vapour service fitted to LPG cylinders

Note 1 to entry: The valve can also include additional devices e.g. liquid level indicator, excess flow device, pressure relief valve, sediment tube, non-return valve and eduction tube.

3.5
external leak tightness
resistance to leakage through the fitting to or from the atmosphere

3.6
sealing cap or plug
device which is intended to seal the inlet and or outlet connection of a valve

Note 1 to entry: It may also provide protection to the valve connection. The device may provide protection against the ingress of dust, dirt or other contamination. The device may also be used to provide tamper evidence.

3.7
protection cap
dust cap
device fitted to the valve outlet intended to protect the outlet and/or prevent the ingress of foreign matter and/or indicate unauthorised manipulation

3.8
reusable sealing cap or plug
sealing cap or plug that is designed for reuse and has a means of attachment to the valve

3.9
single use sealing caps and plugs
sealing caps or plugs that are rendered incapable of reuse in their original condition by their removal from the valve

3.10
tamper evidence
visible indication that interference has taken place with the cap or plug of the cylinder or pressure vessel

Note 1 to entry: This also includes sealing caps or plugs where a tamper evident strip is destroyed by their removal from the valve.

3.11
Standard Temperature and Pressure
STP
15,6 °C (288,7 K), 1,013 bar absolute (0,101 3 MPa absolute)

4 Operating temperatures

Caps and plugs designed in accordance with this document shall be suitable for the following conditions:

a) a minimum operating temperature of −20 °C;

b) a minimum operating temperature of −40 °C for those parts of Europe where caps or plugs are subject to more severe temperature conditions; the material and design shall be shown to be satisfactory for operations under these conditions and shall meet the requirements of Annex A;

c) a maximum operating temperature of 65 °C.

5 Materials

5.1 Environmental

The manufacturer shall endeavour to acquire materials and components from suppliers who have a declared environmental policy; see EN ISO 14021, EN ISO 14024 and EN ISO 14025.

5.2 General

5.2.1 Materials in contact with LPG shall be physically and chemically compatible with LPG under all normal operating conditions for which the cap or plug is intended and shall meet the requirements for propane and butane in accordance with EN ISO 11114-1 and EN ISO 11114-2.

5.2.2 Metallic and non-metallic materials used for the cap or plug shall be selected to give adequate strength in service. Material shall be selected to resist failure due to atmospheric corrosion, ultraviolet (UV) degradation, brass dezincification, stress corrosion or material failure. The cap or plug material shall be compatible with the valve body material.

5.3 Metallic materials

5.3.1 Metallic materials shall be stainless steel, copper alloys, aluminium alloys, zinc alloys, or other suitable materials.

5.3.2 Hot stamped brass shall be non-porous and shall be suitable for machining or other processes. Sand-cast brass shall not be used.

Leaded brass shall be CW614N or CW617N in accordance with EN 12164 or EN 12165 and forged brass in accordance with EN 12420.

Cold drawn brass rods up to 45 mm in diameter shall only be used after heat treatment and testing for internal cracking. Cold drawn brass rods greater than 45 mm in diameter shall not be used.

Components produced from stamping brass shall not exhibit cold shuts, also known as folds, or surface defects.

5.3.3 Stainless steels shall contain not less than 16 % chromium and not less than 7 % nickel.

5.3.4 Castings shall be free from inclusions and surface defects, which adversely affect the strength, external leak tightness or performance of the cap or plug.

5.4 Non-metallic materials

5.4.1 All non-metallic materials for caps and plugs shall not distort, harden or adhere to the body of the valve.

5.4.2 Where exposed to UV, non-metallic materials shall be capable of resisting UV degradation and shall meet the requirements of 7.4 and Annex B.

5.4.3 All rubber materials shall also comply with the requirements of EN 549.

5.4.4 Where used on operating threads and seals, lubricants, sealants and adhesives shall be compatible with LPG and not interfere with the operation of the plug or cap. Sealants shall comply with EN 751-1, EN 751-2 or EN 751-3.

6 Design

6.1 General

6.1.1 The cap or plug components shall be designed with adequate strength and adequate clearances to ensure correct operation under normal conditions of service, handling and carriage.

6.1.2 The cap or plug sealing element shall be secured to prevent it becoming lost during the intended period of service. Where a cap or plug is intended to be attached to the valve, the connection element shall be designed to ensure that it is retained for the intended period of service.

6.1.3 Reusable caps or plugs shall be designed for the strength appropriate to the maximum allowable pressure of the contents at 65 °C. This shall ensure that the caps or plugs do not permanently deform or rupture to the extent that it impairs use.