SLOVENSKI STANDARD
SIST EN 14071:2015

01-julij-2015

Nadomešča:
SIST EN 14071:2005

Oprema in pribor za utekočinjeni naftni plin (UNP) - Varnostni ventili za tlačne posode za utekočinjeni naftni plin (UNP) - Pomožna oprema

LPG equipment and accessories - Pressure relief valves for LPG pressure vessels - Ancillary equipment

Flüssiggas-Geräte und Ausrüstungsteile - Druckentlastungsventile für Behälter für Flüssiggas (LPG) - Zusatzausrüstung

Équipements pour GPL et leurs accessoires - Soupapes de sûreté des réservoirs de gaz de pétrole liquéfié (GPL) - Équipement auxiliaire

Ta slovenski standard je istoveten z: **EN 14071:2015**

ICS:

23.020.30	Tlačne posode, plinske jeklenke	Pressure vessels, gas cylinders
23.060.40	Tlačni regulatorji	Pressure regulators

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EUROPEAN STANDARD

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English Version

LPG equipment and accessories - Pressure relief valves for LPG pressure vessels - Ancillary equipment

Équipements pour GPL et leurs accessoires - Soupapes de sécurité des réservoirs de gaz de pétrole liquéfié (GPL) - Équipement auxiliaire

Flüssiggas-Geräte und Ausrüstungsteile - Druckentlastungsventile für Behälter für Flüssiggas (LPG) - Zusatzausrüstung

This European Standard was approved by CEN on 5 March 2015.

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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.

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Foreword

This document (EN 14071:2015) has been prepared by Technical Committee CEN/TC 286 “Liquefied petroleum gas 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of an identical text or by endorsement, at the latest by November 2015, and conflicting national standards shall be withdrawn at the latest by November 2015.

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

This document supersedes EN 14071:2004.

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.

The major changes in this revision include:

— the removal of requirements for protection caps;

— the introduction of additional testing;

— an update of the terminology.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This European Standard 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: it does not absolve the user from their legal obligations at any stage.

It is recommended that manufacturers develop an environmental management policy. For guidance, see the EN ISO 14000 series [1], [2] and [3].

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

All pressures are gauge pressures unless otherwise stated.

NOTE This European Standard 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 [5].

1 Scope

This European Standard specifies the design, testing and inspection requirements for pressure relief valve isolating devices, valve manifolds, vent pipes and system assemblies which are, where necessary, used with pressure relief valves for use in static pressure vessels for Liquefied Petroleum Gas (LPG) service.

This European Standard addresses both prototype testing and production testing of isolating devices and PRV manifolds.

Pressure relief valves for LPG pressure vessels are specified in EN 14129:2014.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 549:1994, *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 1092-1, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 1503-1:2000, *Valves — Materials for bodies, bonnets and covers — Part 1: Steels specified in European Standards*

EN 1503-2:2000, *Valves — Materials for bodies, bonnets and covers — Part 2: Steels other than those specified in European Standards*

EN 1503-3:2000, *Valves — Materials for bodies, bonnets and covers — Part 3: Cast irons specified in European Standards*

EN 1503-4:2002 *Valves — Materials for bodies, bonnets and covers — Part 4: Copper alloys specified in European Standards*

EN 1563:2011, *Founding — Spheroidal graphite cast irons*

EN 10204:2004, *Metallic products — Types of inspection documents*

EN 10270-3:2011, *Steel wire for mechanical springs — Part 3: Stainless spring steel wire*

EN 12164:2011, *Copper and copper alloys — Rod for free machining purposes*

EN 12165:2011, *Copper and copper alloys — Wrought and unwrought forging stock*

EN 12420, *Copper and copper alloys — Forgings*

EN 13480-3:2012, *Metallic industrial piping — Part 3: Design and calculation*

EN 13906-1, *Cylindrical helical springs made from round wire and bar — Calculation and design — Part 1 : Compression springs*

EN 14129:2014, *LPG Equipment and accessories — Pressure relief valves for LPG pressure vessels*

ISO 6957, *Copper alloys — Ammonia test for stress corrosion resistance*

ASME B1.20.1:2013, *Pipe threads, general purpose (inch)*

3 Terms and definitions

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

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

3.2
pressure vessel
assembly of the pressure envelope (including the openings and their closures) and non-pressure-retaining parts attached directly to it

3.3
pressure relief valve
(PRV)
self-closing valve which automatically, without the assistance of any energy other than that of the vapour concerned, discharges vapour at a predetermined pressure, and operates with a pop action

Note 1 to entry: This is known as a "safety valve" in ADR.

3.4
pressure relief valve system
PRV system
pressure relief valve(s) for use on the pressure vessel complete with isolating device or PRV manifold, and vent pipe where appropriate

3.5
pressure relief valve isolating device
device fitted between the storage tank and the external pressure relief valve, which permits the replacement of the pressure relief valve without de-pressuring the pressure vessel

3.6
coefficient of discharge
Kd
ratio of the actual measured flow capacity divided by the calculated theoretical capacity for the same fluid at the same operating conditions

3.7
pressure relief valve manifold
PRV manifold
device fitted to a storage vessel permitting two or more pressure relief valves to be fitted only one of which can be isolated at a time, which permits replacement of the isolated pressure relief valve without depressurizing the vessel

3.8
discharge capacity
capacity at the flow rating pressure of a pressure relief valve expressed in cubic metres per minute of free air at STP

3.9
vent pipe
open-ended pipe, fitted with a protection cap and attached to the pressure relief valve outlet, to direct discharged fluid away from the protected pressure vessel surface

3.10
design signal flow
limited flow of LPG intended to equalise pressures so that a replacement PRV can be properly fitted to an isolating device; indicate the effectiveness of the internal shut off in an isolating device before the PRV is completely removed; and produce an acoustic signal

3.11
Standard Temperature and Pressure
STP
15,6 °C (288,7 K), 1,013 bar absolute (0,1013 MPa absolute)

3.12
flow rating pressure
inlet pressure at which the discharge capacity is measured

3.13
lift
actual travel of the sealing disc away from the closed position

3.14
sealing element
non-metallic resilient component which effects a seal by contact with the valve seat

3.15
valve seat
normally raised area of the pressure relief valve body on to which the sealing element effects a seal

3.16
maximum allowable pressure
PS
maximum pressure for which the equipment is designed

Note 1 to entry: All pressures are gauge pressures unless otherwise stated.

3.17
nominal diameter (DN)
numerical designation of the size of a component, which is a convenient round number, approximately equal to the manufacturing dimensions in millimetres (mm)

3.18
external leak tightness
resistance to leakage through the fitting to or from the atmosphere

4 Operating conditions

4.1 Equipment designed in accordance with this European Standard shall be suitable for:

— minimum operating temperature of −20°C;

— maximum operating temperature of 65°C;

— maximum allowable pressure of 25 bar; and

— minimum pressure of 50 mbar absolute.

4.2 For some parts of Europe and certain applications, temperatures lower than - 20°C can be encountered. For these conditions, a temperature rating of - 40°C shall apply.

NOTE 1 In service, temperatures below this can be encountered during short periods, for example, during discharge.

NOTE 2 Vacuum conditions on the isolating device or PRV manifold, arising from butane at low temperature or evacuation of the pressure vessel can expose the valve or fitting to a vacuum of 50 mbar absolute.

5 Materials

5.1 General

5.1.1 All materials in contact with LPG shall be physically and chemically compatible with LPG under all normal operating conditions for which the device is intended to be used.

5.1.2 Material for components shall be selected for adequate strength in service. The material shall resist atmospheric corrosion, brass dezincification, stress corrosion, impact and material failure. Where stress corrosion could be present in a material, stress relieving heat treatment shall be carried out where necessary.

5.1.3 The components exposed to atmosphere shall be manufactured from corrosion resistant materials or suitably protected against corrosion.

NOTE Alternative materials to those listed in 5.2 are not precluded, providing they comply with a standard or specification that ensures control of chemical and physical properties, and quality appropriate to the end use.

5.2 Metallic materials

5.2.1 Equipment shall be made from steel, stainless steel, copper alloys or other suitable materials.

5.2.2 For pressure containing components steel and stainless steels shall comply with EN 1503-1:2000 or EN 1503-2:2000, cast iron shall comply with EN 1503-3:2000 and copper alloys shall comply with EN 1503-4:2002.

5.2.3 Components made from stainless steel shall contain not less than 16 % chromium, and not less than 7 % nickel. Springs shall be manufactured from stainless steel in accordance with EN 10270-3:2011, or from a material with an equivalent resistance to corrosion.

5.2.4 Hot stamped brass shall be non-porous and shall be suitable for machining or other processes. Leaded brass shall be CW614N or CW617N in accordance with EN 12420, EN 12164:2011 or EN 12165:2011. Sand-cast brass shall not be used. Cold drawn brass rods shall only be used for machining after adequate testing for internal cracking, porosity or other inclusions and shall be heat treated if required. Components produced from stamping brass shall not exhibit cold shuts, also known as folds, or surface defects. Components manufactured from hot stamped brass, drawn brass or machined from brass rod, shall be capable of withstanding, without cracking, the stress-cracking test.

5.2.5 Spheroidal graphite cast iron shall comply with EN 1563:2011, with an elongation at fracture of more than 18 %. Other ductile irons or cast irons shall not be used. Castings shall be free from inclusions and surface defects, which could adversely affect the strength, leak tightness or performance of the device.