

**VEDELGAASI SEADMED JA LISAVARUSTUS. ÜLERÕHU  
KAITSEKLAPID VEDELGAASI (LPG) MAHUTITELE.  
ABISEADMED**

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

**EESTI STANDARDI EESSÕNA****NATIONAL FOREWORD**

See Eesti standard EVS-EN 14071:2015 sisaldab Euroopa standardi EN 14071:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 14071:2015 consists of the English text of the European standard EN 14071:2015.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 13.05.2015.	Date of Availability of the European standard is 13.05.2015.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 23.060.40

**Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele**

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:  
Aru 10, 10317 Tallinn, Eesti; koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

**The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation**

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Aru 10, 10317 Tallinn, Estonia; homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

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.

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, 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 United Kingdom.



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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

# Contents

Page

Foreword.....	4
Introduction.....	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions.....	7
4 Operating conditions.....	8
5 Materials.....	9
5.1 General.....	9
5.2 Metallic materials.....	9
5.3 Non-metallic components.....	10
5.4 Lubricants, sealants, and adhesives.....	10
5.5 Inspection Documents.....	10
6 Design.....	10
6.1 Introduction.....	10
6.2 Pressure relief valve isolating devices.....	10
6.2.1 General.....	10
6.2.2 Actuation.....	11
6.2.3 Indication of closure.....	11
6.2.4 Guiding arrangements.....	11
6.2.5 Isolating mechanism security.....	11
6.2.6 Interchangeability.....	11
6.3 PRV manifold.....	12
6.3.1 General.....	12
6.3.2 Indication of port closure.....	15
6.3.3 Port closure.....	15
6.4 Vent pipe.....	15
6.4.1 Design.....	15
6.4.2 Materials.....	15
6.4.3 Effect from external conditions.....	15
6.5 Connections.....	15
6.6 Threads.....	15
6.7 Minimum requirements for springs.....	16
7 Testing of the design.....	16
7.1 General.....	16
7.2 Test requirements.....	16
7.3 Hydraulic proof test.....	17
7.4 Relief valve isolator test.....	17
7.5 Testing of audible signal of isolating devices and residual flow of isolating devices and PRV manifolds.....	17
7.6 Resistance of the isolating mechanism.....	17
7.7 Over-torque deformation test.....	18
7.8 Operation test.....	18
7.8.1 General.....	18
7.8.2 System test.....	18
7.9 Stress cracking test.....	18
7.9.1 General.....	18
7.9.2 Mercury(I)nitrate immersion test.....	18

7.9.3	Moist ammonia air stress cracking test .....	19
8	Production testing of isolating devices and PRV manifolds .....	19
9	Marking and labelling .....	19
9.1	PRV isolating device .....	19
9.2	Pressure relief valve PRV manifolds .....	19
10	User instructions .....	20
10.1	PRV isolating devices .....	20
10.2	PRV manifolds .....	20
Annex A (normative) Dimensions of master test pieces for PRV and isolating devices .....		21
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 97/23/EC for pressure equipment .....		23
Bibliography .....		25

## 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