



SLOVENSKI STANDARD
SIST EN 13611:2019/oprA1:2021

01-oktober-2021

**Varnostne in nadzorne naprave za gorilnike in aparate na plin in/ali tekoča goriva -
Splošne zahteve - Dopolnilo A1**

Safety and control devices for burners and appliances burning gaseous and/or liquid
fuels - General requirements

Sicherheits- und Regeleinrichtungen für Brenner und Brennstoffgeräte für gasförmige
und/oder flüssige Brennstoffe - Allgemeine Anforderungen

Équipements auxiliaires pour brûleurs et appareils utilisant des combustibles gazeux ou
liquides - Exigences générales

[SIST EN 13611:2019/oprA1:2021](https://standards.iteh.ai/catalog/standards/sist/da97fe60-4dbe-4a52-ae12-10875d6de545/sist-en-13611-2019/oprA1:2021)
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Ta slovenski standard je istoveten z: EN 13611:2019/prA1

ICS:

23.060.40	Tlačni regulatorji	Pressure regulators
27.060.20	Plinski gorilniki	Gas fuel burners

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EUROPEAN STANDARD
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English Version

Safety and control devices for burners and appliances burning gaseous and/or liquid fuels - General requirements

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utilisant des combustibles gazeux ou liquides -
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Brennstoffgeräte für gasförmige und/oder flüssige
Brennstoffe - Allgemeine Anforderungen

This draft amendment is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 58.

This draft amendment A1, if approved, will modify the European Standard EN 13611:2019. 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.

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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.

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

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European foreword

This document (EN 13611:2019/prA1:2021) has been prepared by Technical Committee CEN/TC 58 “Safety and control devices for burners and appliances burning gaseous or liquid fuels”, the secretariat of which is held by BSI.

This document is currently submitted to CEN Enquiry.

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EN 13611:2019/prA1:2021 (E)**1 Modifications to the European foreword**

Replace the items d) and e) with: "

- d) Annex ZA has been deleted;
- e) Annex ZB has been updated;".

Add item g) and, subsequently, the following paragraph: "

- g) Annex ZC has been updated with respect to Directive 2014/68/EU relating to safety accessories and pressure accessories used in pressure equipment.

This document has been prepared under a **Commission's standardization request [TBD]**, and supports essential requirements of EU Directives."

2 Modification to Clause 1, Scope

Replace the 4th paragraph with: "

This document applies to pressure accessories which are subject to a maximum inlet pressure > 50 kPa and to safety accessories. Specific additional requirements are given in Annex F.

This document does not cover aspects of manufacturing processes, e.g. proof tests of pressure accessories."

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3 Modification to Clause 2, Normative references

Replace the Normative references with the following: "

- EN 334:2019, *Gas pressure regulators for inlet pressures up to 100 bar*
<https://standards.iteh.ai/catalog/standards/sist/da971c60-4dbe-4a52-ae12-10875d6dc545/sist-en-13611-2019-oprA1-2021>
- EN 377:1993,¹⁾ *Lubricants for applications in appliances and associated controls using combustible gases except those designed for use in industrial processes*
- EN 549:1994, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*
- EN 751-1:1996, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water — Part 1: Anaerobic jointing compounds*
- EN 751-2:1996, *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 751-3:1996, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water — Part 3: Unsintered PTFE tapes*
- EN 1759-1:2004, *Flanges and their joint — Circular flanges for pipes, valves, fittings and accessories, Class designated — Part 1: Steel flanges, NPS 1/2 to 24*
- EN 1759-3:2003, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, Class designated — Part 3: Copper alloy flanges*
- EN 1759-4:2003, *Flanges and their joint — Circular flanges for pipes, valves, fittings and accessories, class designated — Part 4: Aluminium alloy flanges*

1) As impacted by EN 377:1993+A1:1996.

- EN 10226-1:2004, *Pipe threads where pressure tight joints are made on the threads — Part 1: Taper external threads and parallel internal threads — Dimensions, tolerances and designation*
- EN 10226-2:2005, *Pipe threads where pressure tight joints are made on the threads — Part 2: Taper external threads and taper internal threads — Dimensions, tolerances and designation*
- EN 12186:2014, *Gas infrastructure — Gas pressure regulating stations for transmission and distribution — Functional requirements*
- EN 12279:2000, *Gas supply systems — Gas pressure regulating installations on service lines — Functional requirements*
- EN 12516-2:2014, *Valves — Shell design strength — Part 2: Experimental method*
- EN 12516-4:2014, *Valves — Shell design strength — Part 4: Experimental method*
- EN 13555:2014, *Flanges and their joints — Gasket parameters and test procedures relevant to the design rules for gasketed circular flange connections*
- EN 13906-1:2013, *Cylindrical helical springs made from round wire and bar — Calculation and design — Part 1: Compression springs*
- EN 13906-2:2013, *Cylindrical helical springs made from round wire and bar — Calculation and design — Part 2: Extension springs*
- EN 13906-3:2013, *Cylindrical helical springs made from round wire and bar — Calculation and design — Part 2: Torsion springs*
- EN 50159:2010, *Railway applications — Communication, signalling and processing systems — Safety-related communication in transmission systems*
- EN 60068-2-6:2008, *Environmental testing — Part 2-6: Tests — Test Fc: Vibration (sinusoidal)(IEC 60068-2-6:2007)*
- EN 60384-14:2013, *Fixed capacitors for use in electronic equipment — Part 14: Sectional specification — Fixed capacitors for electromagnetic interference suppression and connection to the supply mains (IEC 60384-14:2010)*
- EN 60384-16:2005, *Fixed capacitors for use in electronic equipment — Part 16: Sectional specification: Fixed metallized polypropylene film dielectric d.c. capacitors (IEC 60384-16:2005)*
- EN 60529:1991, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*
- EN 60730-1:2016, *Automatic electrical controls — Part 1: General requirements (IEC 60730-1:2013)*
- EN 60747-5-2:2001, *Discrete semiconductor devices and integrated circuits — Part 5-2: Optoelectronic devices — Essential ratings and characteristics (IEC 60747-5-2:1997)*
- EN 60947-5-1:2004, *Low-voltage switchgear and controlgear — Part 5-1: Control circuit devices and switching elements — Electromechanical control circuit devices (IEC 60947-5-1:2003)*
- EN 61000-4-29:2000, *Electromagnetic compatibility (EMC) — Part 4-29: Testing and measurement techniques — Voltage dips, short interruptions and voltage variations on d.c. input power port immunity tests (IEC 61000-4-29:2000)*
- EN 61508-2:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems (IEC 61508-2:2010)*
- EN 61508-3:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 3: Software requirements (IEC 61508-3:2010)*
- EN 61508-4:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 4: Definitions and abbreviations (IEC 61508-4:2010)*

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EN 61508-6:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 6: Guidelines on the application of IEC 61508-2 and IEC 61508-3 (IEC 61508-6:2010)*

EN 61508-7:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems — Part 7: Overview of techniques and measures (IEC 61508-3:2010)*

EN 61558-2-6:2009, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V — Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers (IEC 61558-2-6:2009)*

EN 61558-2-16:2009, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V — Part 2-16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units (IEC 61558-2-16:2009)*

EN 61643-11:2012, *Low-voltage surge protective devices — Part 11: Surge protective devices connected to low-voltage power systems — Requirements and test methods (IEC 61643-11:2011, modified)*

EN 61810-1:2015, *Electromechanical elementary relays — Part 1: General and safety requirements (IEC 61810-1:2015)*

EN 62061:2005, *Safety of machinery — Functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061:2005)*

EN ISO 228-1:2003, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation (ISO 228-1:2000)*

EN ISO 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2015)*

ISO 37:2017, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 262:1998, *ISO general purpose metric screw threads — Selected sizes for screws, bolts and nuts*

ISO 301:2006, *Zinc alloy ingots intended for castings*

ISO 815-1:2014, *Rubber, vulcanized or thermoplastic — Determination of compression set — Part 1: At ambient or elevated temperatures*

ISO 1817:2015, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

ISO 7637-2:2011, *Road vehicles — Electrical disturbances from conduction and coupling — Part 2: Electrical transient conduction along supply lines only*

ISO 7637-3:2016, *Road vehicles — Electrical disturbances from conduction and coupling — Part 3: Electrical transient transmission by capacitive and inductive coupling via lines other than supply lines*

ISO 23529:2016, *Rubber — General procedures for preparing and conditioning test pieces for physical test methods*

".

4 Modifications to Clause 3, Terms and definitions

Add to 3.1 the following Note 1 to entry: "

Note 1 to entry: Within this document the term 'control' is equivalent to the term 'fitting' of Regulation (EU) 2016/426."

Replace 3.10 with the following: "

3.10

maximum inlet pressure (PS)

highest inlet pressure as stated in the instructions at which the control can be operated

Note 1 to entry: The Definition of "maximum inlet pressure (PS)" in this document is equivalent to the definition of "maximum allowable pressure" in Directive Directive 2014/68/EU."

Add after 3.46 the following subclauses: "

3.47

safety accessory

safety related measurement, control and regulation devices (SRMCR) used on fired pressure equipment

Note 1 to entry: Examples for safety accessories: automatic shut-off valves, automatic burner control systems, pressure sensing devices.

Note 2 to entry: Safety accessories can include pressure bearing parts.

3.48

pressure accessory

controls used on fired pressure equipment with an operational function and having pressure-bearing housings with a risk of pressure according to categories II, III or IV of Directive 2014/68/EU."

5 Modification to 6.1, General

Replace the 2nd and 3rd paragraph with the following: "
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Mechanical controls shall be designed such that access to internal parts requires the use of tools. For other controls access to internal parts shall only be possible by the use of tools. All pressure bearing parts of a control shall withstand the mechanical and thermal stresses to which it is subjected without any deformation affecting safety.

Safety accessories and pressure accessories with a product of the maximum inlet pressure PS and the volume V of less than $600\,000\text{ kPa} \cdot \text{dm}^3$ ($6\,000\text{ bar} \cdot \text{L}$) or with a product of PS and DN of less than $300\,000\text{ kPa}$ ($3\,000\text{ bar}$) shall conform to the requirements of Annex F."

6 Modification to 6.3.4, Springs

Replace the 2nd paragraph with the following: "

Springs providing the sealing and/or closing force for any closure member of the control shall be made of corrosion-resistant materials and shall be designed for static and dynamic loading according to EN 13906-1:2013 or EN 13906-2:2013 or EN 13906-3:2013."

7 Modification to Table A.1

Replace entry "PS" with

PS	Maximum inlet pressure
----	------------------------

EN 13611:2019/prA1:2021 (E)**8 Modification to Annex F**

Replace Annex F with the following: "

F.1 Introduction

This annex makes use of the corresponding clauses in this standard by adapting them and stating "addition", "modification" or "replacement". Only the affected subclauses are mentioned in this annex, hence the following numbering is non-consecutive.

This Annex does not apply to pressure accessories of category I which are covered by Regulation (EU) 2016/426 on appliances burning gaseous fuels.

F.6.2 Mechanical parts of the control

Shall be according to 6.2 with the following addition:

F.6.2.11 Design of pressure bearing parts**F.6.2.11.1 Requirements**

Parts of pressure accessories and safety accessories that are subjected to the maximum inlet pressure (PS) under normal operating conditions, or could be subjected to the maximum inlet pressure (PS) in the event of a failure, shall resist a pressure equal to the maximum inlet pressure (PS) multiplied by the safety factor f .

Depending on the material, the safety factors f shall be determined according to Table F.1:

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Table F.1 — Minimum value of the safety factor f

Group of materials	Minimum value of the safety factor f	
		For parts of the body stressed by forces from torque and bending moments (pipelines) only
Rolled and forged steel	1,70	2,13
Cast steel	2,00	2,50
Spheroidal graphite cast iron and malleable cast iron	2,50	3,13
Copper-zinc wrought alloys and aluminium alloys	2,00	2,50
Copper-tin cast alloys and copper-zinc cast alloys	2,50	3,13
Aluminium cast alloys A_{\min} 4 %	2,50	3,13
Aluminium cast alloys A_{\min} 1,5 %	3,20	4,00

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For other materials than mentioned in Table F.1, a safety factor $f = 4$ shall be considered, if not otherwise defined by EN harmonized design standards.

Pressure bearing parts of safety accessories and pressure accessories with

- a product of the maximum inlet pressure PS and the volume V of less than $600\,000\text{ kPa} \cdot \text{dm}^3$ ($6\,000\text{ bar} \cdot \text{L}$), or
- a product of PS and DN of less than $300\,000\text{ kPa}$ ($3\,000\text{ bar}$)

shall be assessed by one of the following methods considering the determined safety factor f :

- experimental design method by performing a pressure strength test as specified in F.6.2.11.2; or
- strength calculation as specified in F.6.2.11.3.

During and after the pressure strength test according to F.6.2.11.2 no fracture of pressure bearing parts shall be visible with the naked eye.

F.6.2.11.2 Experimental design method

Pressure bearing parts of pressure accessories and pressure accessories, which are designed without calculation shall be tested by applying a test pressure of f times (according to F.6.2.11.1) the maximum inlet pressure PS at maximum ambient temperature, as stated in the instructions, to one test sample for a minimum of 5 min.

The test shall be carried out in such a manner that deformations of the test sample in all directions are possible.

Forces from fastening systems to the test sample shall be similar to those experienced under normal installation conditions.

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After application of the test pressure the sample is cooled to $(20 \pm 5) ^\circ\text{C}$ and visually inspected for fractures of pressure bearing parts.

NOTE The verification of strength by the finite element method (FEM/FEA) can be an alternative method to the experimental design method reflected by this pressure strength test. Guideline ASME V&V 10-2006 can be a reference for verification and validation of static computational models, calculated by FEM/FEA.

F.6.2.11.3 Strength calculation method

The strength calculation for pressure bearing parts of safety accessories and pressure accessories shall be carried out according to EN 12516-2:2014 and EN 12516-4:2014+A1:2018 considering the determined safety factor f and shall be documented comprehensibly. The calculation documents shall be inspected.

NOTE Pressure bearing parts are typically designed by using simulation programmes for the calculation.

F.6.3 Materials

Shall be according to 6.3 with the following addition:

F.6.3.8 Materials for pressure bearing parts

Materials for pressure bearing parts shall comply with national and/or international established material standards for pressure applications and with the restrictions given in Table F.2.

All selected materials complying with Table F.2 which are neither complying with EN harmonized material standards nor subject of an european approval for pressure equipment materials (EAM), shall be submitted to a Particular Material Appraisal procedure.

Table F.2 — Materials
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Restrictions				
Group	Material Properties	Control		
	Amin ^a %	PS _{max} bar	(PS · DN ^b) _{max} bar · mm	DN _{max} ^e mm
Pressure containing parts and inner metallic partition walls				
Rolled and forged steel ^c	16	100	–	–
Cast steel ^c	15	100	–	–
Spheroidal graphite cast iron ^d	7	20	1500	1000
	15	50	5000	300
Malleable cast iron	6	20	1000	100
Copper-zinc wrought alloys	15	100	–	25
Copper-tin and copper-zinc cast alloys	5	20	1000	100
	15	100	–	25
Aluminium wrought alloys	4	20	–	50
	7	50	–	50
		100	–	25

Restrictions				
Material		Control		
Group	Properties	PS _{max} bar	(PS · DN ^b) _{max} bar · mm	DN _{max} ^e mm
	A _{min} ^a %			
Aluminium cast alloys	1,5	10	250	150
	4	20	1600	1000
Integral process and sensing lines				
Copper	–	25	–	–
Steel	–	100	–	–
Connectors				
Steel	8	–	–	–
Fasteners				
Steel for bolts, screws, studs	9	50	–	–
	12	100	–	–
NOTE For castings the specified mechanical characteristics are those measured on machined test piece prepared from separately cast test samples in accordance with the relevant document for the selected materials.				
<p>^a A = percentage elongation after fracture (according to the applicable document relevant to the chosen material). https://standards.iteh.ai/catalog/standards/sist/da97fe60-4dbe-4a52-ae12-1087546d-545/sist-en-13611-2019-pra1-2021</p> <p>^b The body inlet nominal size has to be considered; for the bodies of pilots or fixtures this term shall refer to their inlet connections.</p> <p>^c The bending rupture energy measured in accordance with EN ISO 148-1:2016 shall be not less than 27 J as average of three test pieces with minimum individual of 20 J at minimum operating temperature. For minimum operating temperature of –20 °C, bending rupture energy at –46 °C of minimum 14 J is acceptable instead of a bending rupture energy of 27 J at –20°C</p> <p>^d The bending rupture energy measured in accordance with EN ISO 148-1:2016 shall be not less than 12 J as an average of three test pieces and no less than 9 J as a minimum individual value at a temperature of –20 °C for PS > 25 bar when used in regulator class 2.</p> <p>^e DN max refers to both inlet and outlet connections including technical solutions with enlarged outlet.</p>				

(See EN 334:2019, Table 5)

Subject to a particular material appraisal, materials used in similar applications under similar operating conditions, which have been recognized as being safe to use are also regarded as suitable. The safety of controls using such materials shall also be verified in combination with the pressure strength test according to F.7.9.2.

Examples of suitable materials for pressure bearing parts are provided in Annex G (informative) and Annex H (informative).

NOTE An official list of European approved materials (EAM) and harmonized standards are published by the European Commission.

F.6.4.5 Flanges