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| STN | Zváranie a príbuzné procesy Zariadenia na plameňové zváranie Bezpečnostné požiadavky pre zariadenia s otvoreným kyslíkovo-acetylénovým plameňom | STN EN 17942 05 2150 |
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Welding and allied processes - Gas welding equipment - Safety requirements for thermoprocess equipment with open firing oxy-fuel gas welding equipment

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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Welding and allied processes - Gas welding equipment - Safety requirements for thermoprocess equipment with open firing oxy-fuel gas welding equipment

Soudage et techniques connexes - Matériel de soudage
aux gaz - Prescriptions de sécurité pour les
équipements thermiques avec matériel de soudage
oxygaz à flamme nue

Schweißen und verwandte Prozesse -
Gasschweißgeräte - Sicherheitsanforderungen an
industrielle Thermoprozessanlagen mit
freibrennenden Gasschweißgeräten der
Autogentechnik

This European Standard was approved by CEN on 21 July 2024.

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EN 17942:2024 (E)**European foreword**

This document (EN 17942:2024) has been prepared by Technical Committee CEN/TC 121 “Welding and allied processes”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by March 2025, and conflicting national standards shall be withdrawn at the latest by March 2025.

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 has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

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, Türkiye and the United Kingdom.

Introduction

This document is a type-C standard as stated in EN ISO 12100:2010.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium and large enterprises);
- health and safety bodies (regulators, accident prevention organizations, market surveillance etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

- machine users/employers (small, medium and large enterprises);
- machine users/employees (e.g. trade unions, organizations for people with special needs);
- service providers, e.g. for maintenance (small, medium and large enterprises);
- consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the scope of this document.

When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

This document assumes that the equipment does not generate a potentially explosive atmosphere and is located in an area with normal ventilation.

Even in the case of compliance with European product standards, e.g. EN 267, EN 12952-8, EN 12953-7 or EN 676, it is possible that the minimum safety requirements for IThE are not met. This document is intended to be applied to Industrial Thermoprocessing Equipment with open firing oxy-fuel gas welding equipment.

Thermoprocessing equipment (IThE) generally comprises the following components:

- gas distribution system, beginning in the direction of flow with the manually isolation main shut-off valve at the inlet of the thermoprocessing equipment;
- burner, burner assembly and ignition system, open firing;
- safety control system (protective system).

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1 Scope

This document, together with EN 746-1:1997+A1:2009, EN 746-2:2010 and ISO 13577-4:2022, specifies the safety requirements for industrial thermoprocessing equipment “Open firing oxy-fuel gas welding equipment”, as well as the relevant gas distribution and protective systems. (Industrial thermoprocessing equipment is referred below as “IThe”).

This document applies to IThe supplied with fuel gases. Annex B contains examples of typical IThe.

This document covers the significant hazards, hazardous situations and events listed in Annex A for oxy-fuel IThe, associated gas supply systems and protective systems on the basis that they are used as intended and under the conditions specified by the manufacturer.

This document applies to:

- gas distribution system, beginning in the direction of flow with the manually isolation main shut-off valve at the inlet of the thermoprocessing equipment;
- burner, burner assembly and ignition devices, open firing;
- safety control system (protective system).

This document is applicable to all types of combustion of fuel gases with atmospheric air, compressed air or oxygen.

This document also includes necessary requirements for user information.

This document does not apply to manual burners, systems for flame spraying and micro soldering torches.

This document does not apply to systems for welding, cutting and associated processes using plasma and laser technology. This document does not cover the hazards arising as a result of the release of flammable substances from the products processed in the IThe.

This document does not apply to equipped mobile trolleys which include oxygen and fuel gas cylinders with pressure regulators and welding or cutting torches.

This document is not applicable to electrical wiring and heavy-current wiring connected upstream of the IThe control cabinet/control panel/protective system.

Noise and optical radiation can cause significant hazards when using gas welding equipment. These are not covered in this document.

This document is applicable to oxy-fuel IThe, associated gas supply systems and protective systems manufactured after the date of publication of this document in the Official Journal of the EU.

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 88-1:2022+A1:2023, *Safety and control devices for gas burners and gas burning appliances - Part 1: Pressure regulators for inlet pressures up to and including 50 kPa*

EN 88-2:2022, *Safety and control devices for gas burners and gas burning appliances - Part 2: Pressure regulators for inlet pressures above 50 kPa up to and including 500 kPa*

EN 88-3:2022, *Safety and control devices for gas burners and gas burning appliances - Part 3: Pressure and/or flow rate regulators for inlet pressures up to and including 500 kPa, electronic types*

- EN 125:2022, *Flame supervision devices for gas burning appliances - Thermoelectric flame supervision devices*
- EN 161:2022, *Automatic shut-off valves for gas burners and gas appliances*
- EN 298:2022, *Automatic burner control systems for burners and appliances burning gaseous or liquid fuels*
- EN 331:2015, *Manually operated ball valves and closed bottom taper plug valves for gas installations for buildings*
- EN 334:2019, *Gas pressure regulators for inlet pressure up to 10 MPa (100 bar)*
- EN 437:2021, *Test gases - Test pressures - Appliance categories*
- EN 560:2018, *Gas welding equipment - Hose connections for equipment for welding, cutting and allied processes*
- EN 561:2002, *Gas welding equipment - Quick-action coupling with shut-off valves for welding, cutting and allied processes*
- EN 746-1:1997+A1:2009, *Industrial thermoprocessing equipment - Part 1: Common safety requirements for industrial thermoprocessing equipment*
- EN 746-2:2010, *Industrial thermoprocessing equipment — Part 2: Safety requirements for combustion and fuel handling systems*
- EN 1256:2006, *Gas welding equipment - Specification for hose assemblies for equipment for welding, cutting and allied processes*
- EN 1643:2022, *Safety and control devices for burners and appliances burning gaseous and/or liquid fuels - Valve proving systems for automatic shut-off valves*
- EN 1854:2022+A1:2023, *Safety and control devices for burners and appliances burning gaseous and/or liquid fuels - Pressure sensing devices for gas burners and gas burning appliances*
- EN 60079-29-1:2016, *Explosive atmospheres - Part 29-1: Gas detectors - Performance requirements of detectors for flammable gases*
- EN 60204-1:2018, *Safety of machinery - Electrical equipment of machines - Part 1: General requirements*
- EN IEC 61439-1:2021, *Low-voltage switchgear and controlgear assemblies - Part 1: General rules*
- EN IEC 61439-2:2021, *Low-voltage switchgear and controlgear assemblies - Part 2: Power switchgear and controlgear assemblies*
- EN 61439-3:2012,¹ *Low-voltage switchgear and controlgear assemblies — Part 3: Distribution boards intended to be operated by ordinary persons (DBO) (IEC 61439-3:2012)*
- EN 61439-4:2013, *Low-voltage switchgear and controlgear assemblies - Part 4: Particular requirements for assemblies for construction sites (ACS)*

¹ Document impacted by AC:2019.

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EN 61439-5:2015, *Low-voltage switchgear and controlgear assemblies - Part 5: Assemblies for power distribution in public networks*

EN 61439-6:2012, *Low-voltage switchgear and controlgear assemblies - Part 6: Busbar trunking systems (busways)*

EN 61508-1:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 1: General requirements*

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*

EN 61508-3:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 3: Software requirements*

EN 61508-4:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 4: Definitions and abbreviations*

EN 61508-5:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 5: Examples of methods for the determination of safety integrity levels*

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*

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

EN 61511-1:2017,² *Functional safety — Safety instrumented systems for the process industry sector — Part 1: Framework, definitions, system, hardware and application programming Requirements (IEC 61511-1:2016)*

EN 61511-2:2017, *Functional safety - Safety instrumented systems for the process industry sector - Part 2: Guidelines for the application of IEC 61511-1*

EN 61511-3:2017, *Functional safety - Safety instrumented systems for the process industry sector - Part 3: Guidance for the determination of the required safety integrity levels*

EN 62061:2005,³ *Safety of machinery — Functional safety of safety-related electrical, electronic and programmable electronic control systems (IEC 62061:2005)*

EN IEC/IEEE 82079-1:2020, *Preparation of information for use (instructions for use) of products — Part 1: Principles and general requirements (IEC/IEEE 82079-1:2019)*

EN ISO 2503:2009,⁴ *Gas welding equipment — Pressure regulators and pressure regulators with flow-metering devices for gas cylinders used in welding, cutting and allied processes up to 300 bar (30 MPa) (ISO 2503:2009)*

EN ISO 3821:2019, *Gas welding equipment - Rubber hoses for welding, cutting and allied processes (ISO 3821:2019, Corrected version 2021-05)*

² Document impacted by A1:2017.

³ Document impacted by Cor.:2010, A1:2013 and A2:2015.

⁴ Document impacted by A1:2015.

EN ISO 4126-1:2013,⁵ *Safety devices for protection against excessive pressure — Part 1: Safety valves (ISO 4126-1:2013)*

EN ISO 5171:2019, *Gas welding equipment - Pressure gauges used in welding, cutting and allied processes (ISO 5171:2019)*

EN ISO 5172:2006,⁶ *Gas welding equipment — Blowpipes for gas welding, heating and cutting — Specifications and tests (ISO 5172:2006)*

EN ISO 5175-1:2017, *Gas welding equipment - Safety devices - Part 1: Devices incorporating a flame (flashback) arrestor (ISO 5175-1:2017)*

EN ISO 5175-2:2017, *Gas welding equipment - Safety devices - Part 2: Devices not incorporating a flame (flashback) arrestor (ISO 5175-2:2017, Corrected version 2019-01)*

EN ISO 7291:2010,⁷ *Gas welding equipment — Pressure regulators for manifold systems used in welding, cutting and allied processes up to 30 MPa (300 bar) (ISO 7291:2010)*

EN ISO 9012:2023, *Gas welding equipment - Air-aspirated hand blowpipes - Specifications and tests (ISO 9012:2023)*

EN ISO 9090:2019, *Gas tightness of equipment for gas welding and allied processes (ISO 9090:2019)*

EN ISO 9539:2010,⁸ *Gas welding equipment — Materials for equipment used in gas welding, cutting and allied processes (ISO 9539:2010)*

EN ISO 9606-1:2017, *Qualification testing of welders - Fusion welding - Part 1: Steels (ISO 9606-1:2012 including Cor 1:2012 and Cor 2:2013)*

EN ISO 11114-1:2020, *Gas cylinders - Compatibility of cylinder and valve materials with gas contents - Part 1: Metallic materials (ISO 11114-1:2020)*

EN ISO 11114-2:2021, *Gas cylinders - Compatibility of cylinder and valve materials with gas contents - Part 2: Non-metallic materials (ISO 11114-2:2021)*

EN ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13585:2012, *Brazing - Qualification test of brazers and brazing operators (ISO 13585:2012)*

EN ISO 13849-1:2023, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2023)*

EN ISO 13849-2:2012, *Safety of machinery - Safety-related parts of control systems - Part 2: Validation (ISO 13849-2:2012)*

EN ISO 14114:2018, *Gas welding equipment - Acetylene manifold systems for welding, cutting and allied processes - General requirements (ISO 14114:2017)*

⁵ Document impacted by A1:2016.

⁶ Document impacted by A1:2012 and A2:2015.

⁷ Document impacted by A1:2015.

⁸ Document impacted by A1:2013.

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EN ISO 14731:2019, *Welding coordination - Tasks and responsibilities (ISO 14731:2019)*

EN ISO 15296:2018, *Gas welding equipment - Vocabulary (ISO 15296:2017)*

ISO 13574:2015, *Industrial furnaces and associated processing equipment — Vocabulary*

ISO 13577-4:2022, *Industrial furnaces and associated processing equipment — Safety — Part 4: Protective systems*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN