Tööstuslikud termotöötlusseadmed. Osa 2: Põlemis- ja kütusekasutussüsteemide ohutusnõuded

Industrial thermoprocessing equipment - Safety requirements for combustion and fuel handling systems

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EUROPEAN STANDARD

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English Version

Industrial thermoprocessing equipment - Safety requirements for combustion and fuel handling systems

Equipements thermiques industriels - Partie 2: Prescriptions de sécurité concernant la combustion et la manutention des combustibles

Industrielle Thermoprozessanlagen - Teil 2: Sicherheitsanforderungen an Feuerungen und Brennstoffführungssysteme

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Foreword

This document (EN 746-2:2010) has been prepared by Technical Committee CEN/TC 186 “Industrial Thermoprocessing Equipment”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by November 2010, and conflicting national standards shall be withdrawn at the latest by May 2011.

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 746-2:1997.

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.

Following a request from CEN/TC 186, CEN has agreed to defer the date of withdrawal of EN 746-2:1997 for a transitional period of 12 months.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

This European Standard is a Type C standard as defined in EN ISO 12100-1.

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

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

This Part of EN 746 assumes that the equipment is not creating any potentially explosive atmosphere and is located in a normally ventilated area.

This European Standard forms one part of a series of safety standards covering Industrial Thermoprocessing Equipment (IThE). The full list of these standards is given below:

EN 746, *Industrial thermoprocessing equipment*

Part 1: Common safety requirements for industrial thermoprocessing equipment

Part 2: Safety requirements for combustion and fuel handling systems

Part 3: Safety requirements for the generation and use of atmosphere gases

Part 4: Particular safety requirements for hot dip galvanising thermoprocessing equipment

Part 5: Particular safety requirements for salt bath thermoprocessing equipment

Part 6: Particular safety requirements for material melting, re-melting and liquid phase maintaining thermoprocessing equipment

Part 7: Particular safety requirements for vacuum thermoprocessing equipment

Part 8: Particular safety requirements for quenching equipment

Compliance with European product standards e.g. EN 267, EN 12952-8, EN 12953-7 or EN 676 is not sufficient to ensure the minimum safety requirement for industrial thermoprocessing equipment. This part 2 of EN 746 shall always have priority for IThE.

An IThE generally consists of the following components:

— processing chamber (e.g. steel construction with lining);

— heating system;

— protective system;

— control and instrumentation system/operator-control level.

It is assumed that (IThE) will only be operated and maintained by trained personnel.

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1 Scope

This part of EN 746 together with EN 746-1 specifies safety requirements for single and multiple burners that are part of Industrial Thermoprocessing Equipment. (In this standard referred to as IThE).

This document deals with significant hazards, hazardous situations and events relevant to combustion and fuel handling systems that are part of IThE as listed in Clause 4, when used as intended and under the conditions foreseen by the manufacturer.

This European Standard covers:

— fuel pipework downstream of and including the manual isolating valve;

— burner(s), burner system and ignition device;

— safety related control system (protective system).

This European Standard applies to any oxidation with air or other gases containing free oxygen of gaseous, liquid and solid fuels or any combustion of them to release thermal energy.

For thermal or catalytic post combustion and waste incineration, this European Standard applies only to auxiliary burners designed to start-up and/or support the process.

The pressure hazard of the piping and components covered by this standard is within the limits of maximum pressure/size relationship as described in normative Annex E.

This European Standard also gives the necessary requirements for the information for use.

This European Standard does not cover hazards from heating generated by electricity.

This European Standard does not deal with the hazards created by the release of flammable substances from the products processed in the IThE.

NOTE EN 1539, *Dryers and ovens, in which flammable substances are released — Safety requirements*

This European Standard is not applicable to combustion and fuel handling systems

— of welding and soldering machines;

— up-stream of the IThE manual isolating valve.

This European Standard is not applicable to electricity cabling and power cabling upstream of the IThE control panel/protective system.

Noise can be a significant hazard for combustion and fuel handling systems. It is not dealt with in this standard.

This European Standard is not applicable to combustion and fuel handling systems as part of IThE which is manufactured before the date of its publication as EN.

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2 Normative references

The following referenced documents are indispensable for the application 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 88-1:2007, *Pressure regulators and associated safety devices for gas appliances — Part 1: Pressure regulators for inlet pressures up to and including 500 mbar*

EN 88-2:2007, *Pressure regulators and associated safety devices for gas appliances — Part 2: Pressure regulators for inlet pressures above 500 mbar up to and including 5 bar*

EN 125:1991, *Flame supervision devices for gas burning appliances — Thermo-electric flame supervision devices*

EN 161:2007, *Automatic shut-off valves for gas burners and gas appliances*

EN 230:2005, *Automatic burner control systems for oil burners*

EN 264:1991, *Safety shut-off devices for combustion plants using liquid fuels — Safety requirements and testing*

EN 298:2003, *Automatic gas burner control systems for gas burners and gas burning appliances with or without fans*

EN 331:1998, *Manually operated ball valves and closed bottom taper plug valves for gas installations for buildings*

EN 334:2005, *Gas pressure regulators for inlet pressures up to 100 bar*

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 1057:2006, *Copper and copper alloys — Seamless, round copper tubes for water and gas in sanitary and heating applications*

EN 1643:2000, *Valve proving systems for automatic shut-off valves for gas burners and gas appliances*

EN 1854:2006, *Pressure sensing devices for gas burners and gas burning appliances*

EN 10241:2000, *Steel threaded pipe fittings*

EN 10242:1995, *Threaded pipe fittings in malleable cast iron*

EN 12067-1:1998, *Gas/air ratio controls for gas burners and gas burning appliances — Part 1: Pneumatic types*

EN 12067-2:2004, *Gas/air ratio controls for gas burners and gas burning appliances — Part 2: Electronic types*

EN 12078:1998, *Zero governors for gas burners and gas burning appliances*

EN 14382:2005, *Safety devices for gas pressure regulating stations and installations — Gas safety shut-off devices for inlet pressure up to 100 bar*

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EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005, modified)*

EN 60664 -1:2007, *Insulation coordination for equipment within low-voltage systems — Part 1: Principles, requirements and tests (IEC 60664-1:2007)*

EN 60947-4-1:2001, *Low-voltage switchgear and controlgear — Part 4-1: Contactors and motor-starters; Electromechanical contactors and motor-starters (IEC 60947-4-1:2000)*

EN 61140:2002, *Protection against electric shock - Common aspects for installation and equipment (IEC 61140:2001)*

EN 61558-1:2005, *Safety of power transformers, power supplies, reactors and similar products — Part 1: General requirements and tests (IEC 61558-1:2005)*

EN 61810-1:2008, *Electromechanical elementary relays — Part 1: General requirements (IEC 61810-1:2008)*

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

EN ISO 5817:2007, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections (ISO 5817:2003, corrected version:2005, including Technical Corrigendum 1:2006)*

EN ISO 8434-1:2007, *Metallic tube connections for fluid power and general use — Part 1: 24 degree cone connectors (ISO 8434-1:2007)*

EN ISO 8434-4:2000, *Metallic tube connections for fluid power and general use — Part 4: 24° cone connectors with O-ring weld-on nipples (ISO 8434-4:1995)*

EN ISO 12100-1, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles and specifications (ISO 12100-2:2003)*

EN ISO 13849-1:2008, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2006)*

EN ISO 19879:2005, *Metallic tube connections for fluid power and general use — Part 5: Test methods for hydraulic fluid power connections (ISO 19879:2005)*

ISO 7-1:1994, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

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

ISO 6976:1995, *Natural gas — Calculation of caloric values, density, relative density and Wobbe index from composition*

ISO 7005-1:1992, *Metallic flanges —Part 1: Steel flanges*

ISO 7005-2:1988, *Metallic flanges — Part 2: Cast iron flanges*

ISO 7005-3:1988, *Metallic flanges — Part 3: Copper alloy and composite flanges*

ISO 8434-2:1994, *Metallic tube fittings for fluid power and general use — Part 2: 37 degree flared connectors*

ISO 8434-3:2005, *Metallic tube connections for fluid power and general use — Part 3: O-ring face seal fittings*

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