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KÜLMUTUSSÜSTEEMIDE JA KÜTTEPUMPADE SURVESÜSTEEMID. OSA 2: TORUSTIKUD. ÜLDNÕUDED

Pressure equipment for refrigerating systems and heat pumps - Part 2: Piping - General requirements

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NATIONAL FOREWORD

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See Eesti standard EVS-EN 14276-2:2020 sisaldab Euroopa standardi EN 14276-2:2020 ingliskeelset teksti.	This Estonian standard EVS-EN 14276-2:2020 consists of the English text of the European standard EN 14276-2:2020.
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 26.02.2020.	Date of Availability of the European standard is 26.02.2020.
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ICS 23.020.30, 27.080, 27.200

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EUROPEAN STANDARD

NORME EUROPÉENNE

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English Version

Pressure equipment for refrigerating systems and heat pumps - Part 2: Piping - General requirements

Équipements sous pression pour systèmes de réfrigération et pompes à chaleur - Partie 2 : Tuyauteries - Exigences générales

Druckgeräte für Kälteanlagen und Wärmepumpen - Teil 2: Rohrleitungen - Allgemeine Anforderungen

This European Standard was approved by CEN on 1 December 2019.

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European foreword

This document (EN 14276-2:2020) has been prepared by Technical Committee CEN/TC 182 “Refrigerating systems, safety and environmental requirements”, 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of an identical text or by endorsement, at the latest by August 2020, and conflicting national standards shall be withdrawn at the latest by August 2020.

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 supersedes EN 14276-2:2007+A1:2011.

This document has been prepared under a standardization request 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.

EN 14276, *Pressure equipment for refrigerating systems and heat pumps*, is currently composed of the following parts:

— *Part 1: Vessels - General requirements*;

— *Part 2: Piping - General requirements*.

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, Turkey and the United Kingdom.

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Introduction

This document recognizes the unique nature of piping for refrigerating systems or heat pumps and is intended to address the specific needs of the refrigeration and heat pump industry. This document should be read in conjunction with the various parts of the EN 13480 series and EN 14276-1:2020.

The unique nature of a refrigerating system is defined in the Introduction of EN 14276-1:2020.

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1 Scope

1.1 This document specifies the requirements for material, design, manufacturing, testing and documentation for stationary piping intended for use in refrigerating systems, heat pumps and secondary cooling and heating systems. These refrigerating systems and heat pump systems are referenced in this document as refrigerating systems as defined in EN 378-1:2016.

The term “refrigerating system” used in this document includes heat pumps.

1.2 This document applies to piping, including welded or brazed attachments up to and including the flanges, screwed, welded or brazed connectors, or to the edge to be welded or brazed at the first circumferential joint connecting piping or other elements.

1.3 This document applies to the selection, application and installation of safety accessories intended to protect the piping during the various phases of the refrigeration cycle.

1.4 This document applies to the following piping:

— heat exchanger consisting of piping for the purpose of cooling or heating air where piping aspects are predominant;

— piping incorporated into an assembly (e.g. self-contained system, condensing unit);

— field erected piping.

1.5 This document applies to piping with an internal pressure down to –1 bar, to account for the evacuation of the piping prior to charging with refrigerant.

1.6 This document applies to both the mechanical loading conditions and thermal conditions as defined in EN 13445-3:2014/A5:2018 associated with refrigerating systems. It applies to piping subject to the maximum allowable temperatures for which nominal design stresses for materials are derived using EN 14276-1:2020 or as specified in this document. In addition, piping designed to this document will have a maximum design temperature not exceeding 200 °C and a maximum design pressure not exceeding 160 bar. Outside of these limits, the EN 13480 series can be used for the design construction and inspection of the piping. Under these circumstances, the unique nature of a refrigerating plant, as indicated in the introduction of EN 14276-1:2020, will also be taken into account.

1.7 This document applies to piping where the main pressure bearing parts are manufactured from metallic ductile materials as defined in Clause 4 and in EN 14276-1:2020.

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 378-1:2016, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 1: Basic requirements, definitions, classification and selection criteria*

EN 378-2:2016, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 2: Design, construction, testing, marking and documentation*

EN 378-3:2016, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 3: Installation site and personal protection*

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EN 378-4:2016, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 4: Operation, maintenance, repair and recovery*

EN 764-1:2015+A1:2016, *Pressure equipment — Part 1: Vocabulary*

EN 764-2:2012, *Pressure equipment — Part 2: Quantities, symbols and units*

EN 764-4:2014, *Pressure equipment — Part 4: Establishment of technical delivery conditions for metallic materials*

EN 764-5:2014, *Pressure equipment — Part 5: Inspection documentation of metallic materials and compliance with the material specification*

EN 1653:1997,[1] *Copper and copper alloys — Plate, sheet and circles for boilers, pressure vessels and hot water storage units*

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

EN 12178:2016, *Refrigerating systems and heat pumps — Liquid level indicating devices — Requirements, testing and marking*

EN 12735-1:2016, *Copper and copper alloys — Seamless, round tubes for air conditioning and refrigeration — Part 1: Tubes for piping systems*

EN 12735-2:2016, *Copper and copper alloys — Seamless, round tubes for air conditioning and refrigeration — Part 2: Tubes for equipment*

EN 13445-3:2014,[2] *Unfired pressure vessels — Part 3: Design*

EN 13445-5:2014,[3] *Unfired pressure vessels — Part 5: Inspection and testing*

EN 13480-2:2017,[4] *Metallic industrial piping — Part 2: Materials*

EN 13480-3:2017, *Metallic industrial piping — Part 3: Design and calculation*

CEN/TR 13480-7:2017, *Metallic industrial piping — Part 7: Guidance on the use of conformity assessment procedures*

EN 14276-1:2020, *Pressure equipment for refrigerating systems and heat pumps — Part 1: Vessels — General requirements*

EN ISO 2553:2013, *Welding and allied processes — Symbolic representation on drawings — Welded joints (ISO 2553:2013)*

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[1] As impacted by EN 1653:1997/A1:2000.

[2] As impacted by EN 13445-3:2014/A5:2018.

[3] As impacted by EN 13445-5:2014/A1:2018.

[4] As impacted by EN 13480-2:2017/A1:2018, EN 13480-2:2017/A2:2018 and EN 13480-2:2017/A3:2018.

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EN ISO 3452-1:2013, *Non-destructive testing — Penetrant testing — Part 1: General principles (ISO 3452-1:2013)*

EN ISO 4063:2010, *Welding and allied processes — Nomenclature of processes and reference numbers (ISO 4063:2009)*

EN ISO 5817:2014, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections (ISO 5817:2014)*

EN ISO 10042:2018, *Welding — Arc-welded joints in aluminium and its alloys — Quality levels for imperfections (ISO 10042:2018)*

EN ISO 10675-1:2016, *Non-destructive testing of welds — Acceptance levels for radiographic testing — Part 1: Steel, nickel, titanium and their alloys (ISO 10675-1:2016)*

EN ISO 10675-2:2017, *Non-destructive testing of welds — Acceptance levels for radiographic testing — Part 2: Aluminium and its alloys (ISO 10675-2:2017)*

EN ISO 10893-8:2011, *Non-destructive testing of steel tubes — Part 8: Automated ultrasonic testing of seamless and welded steel tubes for the detection of laminar imperfections (ISO 10893-8:2011)*

EN ISO 10893-11:2011, *Non-destructive testing of steel tubes — Part 11: Automated ultrasonic testing of the weld seam of welded steel tubes for the detection of longitudinal and/or transverse imperfections (ISO 10893-11:2011)*

EN ISO 11666:2018, *Non-destructive testing of welds — Ultrasonic testing — Acceptance levels (ISO 11666:2018)*

EN ISO 16826:2014, *Non-destructive testing — Ultrasonic testing — Examination for discontinuities perpendicular to the surface (ISO 16826:2012)*

EN ISO 17636-1:2013, *Non-destructive testing of welds — Radiographic testing — Part 1: X- and gamma-ray techniques with film (ISO 17636-1:2013)*

EN ISO 17636-2:2013, *Non-destructive testing of welds — Radiographic testing — Part 2: X- and gamma-ray techniques with digital detectors (ISO 17636-2:2013)*

EN ISO 17637:2016, *Non-destructive testing of welds — Visual testing of fusion-welded joints (ISO 17637:2016)*

EN ISO 17640:2010, *Non-destructive testing of welds — Ultrasonic testing — Techniques, testing levels, and assessment (ISO 17640:2010)*

EN ISO 23277:2015, *Non-destructive testing of welds — Penetrant testing — Acceptance levels (ISO 23277:2015)*

ISO 817:2014, *Refrigerants — Designation and safety classification*

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