SLOVENSKI STANDARD
SIST EN ISO 21922:2022

01-januar-2022

Nadomešča:
SIST EN 12284:2004

Hladilni sistemi in toplotne črpalke - Ventili - Zahteve, preskušanje in označevanje (ISO 21922:2021)

Refrigerating systems and heat pumps - Valves - Requirements, testing and marking (ISO 21922:2021)

Kälteanlagen und Wärmepumpen - Ventile - Anforderungen, Prüfung und Kennzeichnung (ISO 21922:2021)

Systèmes de réfrigération et pompes à chaleur - Robinetterie - Exigences, essais et marquage (ISO 21922:2021)

Ta slovenski standard je istoveten z: **EN ISO 21922:2021**

ICS:

23.060.20	Zapirni ventili (kroglasti in pipe)	Ball and plug valves
27.080	Toplotne črpalke	Heat pumps
27.200	Hladilna tehnologija	Refrigerating technology

SIST EN ISO 21922:2022 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 21922

November 2021

ICS 27.080; 27.200

Supersedes EN 12284:2003

English Version

Refrigerating systems and heat pumps - Valves - Requirements, testing and marking (ISO 21922:2021)

Systèmes de réfrigération et pompes à chaleur - Robinetterie - Exigences, essais et marquage (ISO 21922:2021)

Kälteanlagen und Wärmepumpen - Ventile - Anforderungen, Prüfung und Kennzeichnung (ISO 21922:2021)

This European Standard was approved by CEN on 23 May 2021.

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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.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN ISO 21922:2021) has been prepared by Technical Committee ISO/TC 86 "Refrigeration and air-conditioning" in collaboration with 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of an identical text or by endorsement, at the latest by May 2022, and conflicting national standards shall be withdrawn at the latest by May 2022.

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 12284:2003.

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) / Regulation(s).

For the relationship with EU Directive(s) / Regulation(s), 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/national committee. A complete listing of these bodies can be found on the CEN website.

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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 21922:2021 has been approved by CEN as EN ISO 21922:2021 without any modification.

Annex ZA
(informative)

Relationship between this European Standard and the essential safety requirements of Directive 2014/68/EU

This European Standard has been prepared under a Commission's standardization request "M/071" to provide one voluntary means of conforming to essential safety requirements of Directive2014/68/EU on the harmonisation of the laws of the Member States relating to the making available on the market of pressure equipment.

Once this standard is cited in the Official Journal of the European Union under that Directive 2014/68/EU, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential safety requirements of that Directive, and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Directive 2014/68/EU

Essential Safety Requirements of Directive 2014/68/EU	Clause(s)/subclause(s) of this EN	Remarks/Notes
4.3	6.11	Material documentation
3.1.4	6.1.1, 6.4, 6.6, 6.7, D.3.3	Heat treatment
2.2.2	7.3	Design for adequate strength
7.1.2	Annex A.2	Allowable stresses
2.6	7.12	Corrosion
3.1.1	8	Preparation of the component parts
3.2.2, 7.4	9.1	Proof test
3.3	10.2	Marking and labelling
3.4	11	Operating instructions
7.2	Table A.2	Joint coefficients
2.2.3	Annex A, C and D	Design for adequate strength by calculation
2.2.4	Annex B, C and D	Design for adequate strength by experimental method
4.1 a) and 7.5	Annex D	Requirements to avoid brittle fracture

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

INTERNATIONAL STANDARD

ISO 21922

First edition
2021-08

Refrigerating systems and heat pumps — Valves — Requirements, testing and marking

Systèmes de réfrigération et pompes à chaleur — Robinetterie — Exigences, essais et marquage

Reference number
ISO 21922:2021(E)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO TC 86, *Refrigeration and air-conditioning*, Subcomittee SC 1, *Safety and environmental requirements for refrigerating systems*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 182, *Refrigerating systems, safety and environmental requirements*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition is based on EN 12284:2003.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document is intended to describe the safety requirements, safety factors, test methods, test pressures used, and marking of valves and other components with similar bodies for use in refrigerating systems.

Refrigerating systems and heat pumps — Valves — Requirements, testing and marking

1 Scope

This document specifies safety requirements, certain functional requirements, and marking of valves and other components with similar bodies, hereinafter called valves, for use in refrigerating systems including heat pumps.

This document includes requirements for valves with extension pipes.

This document describes the procedure to be followed when designing valve parts subjected to pressure as well as the criteria to be used in the selection of materials.

This document describes methods by which reduced impact values at low temperatures may be taken into account in a safe manner.

This document applies to the design of bodies and bonnets for pressure relief devices, including bursting disc devices, with respect to pressure containment but it does not apply to any other aspects of the design or application of pressure relief devices.

In addition, this document is applicable to valves with a maximum operating temperature not exceeding 200 °C and a maximum allowable pressure not exceeding 160 bar[1)].

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.

ISO 148-1, *Metallic materials. Charpy pendulum impact test — Part 1: Test method*

ISO 5149-1, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 1: Definitions, classification and selection criteria*

ISO/TR 15608, *Welding — Guidelines for a metallic material grouping system*

EN 12516-2, *Industrial valves — Shell design strength — Part 2: Calculation method for steel valve shells*

EN 13445-3, *Unfired pressure vessels — Part 3: Design*

EN 14276-2:2020, *Pressure equipment for refrigerating systems and heat pumps — Part 2: Piping — General requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5149-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

1) 1 bar = 0,1 MPa.

3.1
valve
device with a pressure enclosure and an intended additional functionality, such as influencing the fluid flow by opening, closing or partially obstructing the passage of the flow or by diverting or mixing the fluid flow, indicating moisture content or filtering the fluid flow

Note 1 to entry: A device with a pressure enclosure and an intended additional functionality is designated as pressure accessory according to the European Pressure Equipment Directive 2014/68/EU.

3.2
extension pipe
piping connected to a valve by the valve manufacturer, which does not influence the pressure strength of the valve itself

Note 1 to entry: Extension pipes often have different diameters in two ends.

Note 2 to entry: The application of extension pipes is determined by the manufacturer and has the advantage that the pressure strength verification of the extension pipes becomes independent of the safety factors used for the verification of the valve.

3.3
valve assembly
combination of a valve and one or more extension pipes

EXAMPLE An example of a valve assembly is given in Clause H.6.

3.4
operating range
combination of temperature and pressure conditions at which the valve can safely be operated

3.5
nominal size
DN
alphanumeric designation of size for components of a pipework system, which is used for reference purposes comprising the letters *DN* followed by a dimensionless whole number which is indirectly related to the physical size, in millimetres, of the bore or outside diameter of the end connections

Note 1 to entry: The number following the letters *DN* does not represent a measurable value and should not be used for calculation purposes except where specified in this document.

Note 2 to entry: Where the nominal size is not specified, for the purpose of this document it is assumed to be the internal diameter of the pipe or component in mm (DN/ID).

Note 3 to entry: Nominal size is not the same as port size which is commonly used for the size of the valve seat opening.

Note 4 to entry: For additional information regarding the *DN* system, see Annex I.

[SOURCE: ISO 6708:1995, 2.1, modified — Notes to entry added.]

3.6
nominal pressure
PN
numerical designation which is a convenient rounded number for reference purposes

Note 1 to entry: All equipment of the same nominal size (DN) designated by the same PN number shall have compatible mating dimensions.

[SOURCE: ISO 7268:1983/Amd.1:1984, modified]

3.7
corrosion
all forms of material waste (e. g. oxidation, erosion, wear and abrasion)

3.8
maximum operating temperature
highest temperature that can occur during operation or standstill of the refrigerating system or during testing under test conditions

3.9
minimum operating temperature
lowest temperature that can occur during operation or standstill of the refrigerating system or during testing under test conditions

3.10
pressure bearing part
part, which is subject to stress due to internal pressure greater than 50 kPa (0,5 bar) gauge

3.11
main pressure bearing part
part, which constitute the envelope under pressure, essential for the integrity of the equipment

Note 1 to entry: Examples are bonnets, housings, end covers and flanges.

[SOURCE: EN 13445-1:2014]

3.12
seat tightness class
letter from A to G indicating the internal tightness of the valve across the valve seat(s)

3.13
competent body
third party organisation which has recognized competence in the assessment of quality systems for the manufacture of materials and in the technology of the materials concerned

Note 1 to entry: National legislation can place additional requirements on the competent body depending on the market for which the valve is intended.

3.14
type of valve connection
standard and size of the valve connection to other equipment directly fixed to the valves end

Note 1 to entry: Possible types of valve connection are e.g.

a) *NPS* 2, i.e. a butt-welding connection to ASME/ANSI B 36.10 2 inch steel pipe,

b) *NPT* ½ , i.e. a screwed connection with ½ inch male end according to ASME/ANSI B 1.20.1,

c) EN 1092-1/11/C/*DN* 200 x 6,3/*PN* 40, i.e. a flange type 11 with facing type C (tongue) of nominal size *DN* 200, wall thickness 6,3 mm, *PN* 40.

3.15
pressure sensitive part
part of a valve which will not have a reliable function after exposure to the greater of 1,5 times *PS* and 1,25 times PS_0

Note 1 to entry: Examples include bellows, diaphragms or float balls.

3.16
spindle
part of the valve which actuates the intended functionality, e.g. opening or closing for influencing the fluid flow

Note 1 to entry: A valve does not necessarily need to incorporate a spindle.