

**Külmetussüsteemid ja soojuspumbad.
Ventiilid. Nõuded, testimine ja
markeerimine**

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

| | |
|--|---|
| <p>Käesolev Eesti standard EVS-EN 12284:2003 sisaldab Euroopa standardi EN 12284:2003 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 14.10.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p> | <p>This Estonian standard EVS-EN 12284:2003 consists of the English text of the European standard EN 12284:2003.</p> <p>This document is endorsed on 14.10.2003 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p> |
|--|---|

| | |
|--|--|
| <p>Käsitlusala: This European Standard specifies safety requirements, safety factors, test methods, test pressures used and marking of refrigerating valves and other components with similar bodies, hereinafter called valves, for use in refrigerating systems</p> | <p>Scope: This European Standard specifies safety requirements, safety factors, test methods, test pressures used and marking of refrigerating valves and other components with similar bodies, hereinafter called valves, for use in refrigerating systems</p> |
|--|--|

ICS 23.060.20

Võtmesõnad: compressive strength, definition, definitions, design, heat pumps, marking, materials, pressure resistance, refrigerating plants, safety, safety engineering, safety requirements, specification (approval), specifications, test pressure, testing, tightness, valves

ICS 23.060.20

English version

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

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

Kälteanlagen und Wärmepumpen - Ventile -
Anforderungen, Prüfung und Kennzeichnung

This European Standard was approved by CEN on 21 April 2003.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

| | Page |
|--|-----------|
| Foreword..... | 3 |
| 1 Scope | 3 |
| 2 Normative references | 3 |
| 3 Terms and definitions..... | 4 |
| 4 List of Symbols | 6 |
| 5 General Requirements..... | 7 |
| 6 Materials..... | 8 |
| 7 Design | 10 |
| 8 Construction and workmanship..... | 11 |
| 9 Testing | 14 |
| 10 Marking and additional information..... | 17 |
| 11 Documentation..... | 18 |
| Annex A (normative) Procedure for the design of a valve by use of a simplified method of calculation..... | 20 |
| Annex B (normative) Experimental design method for valves..... | 23 |
| Annex C (normative) Determination of the allowable pressure at the maximum operating temperature | 28 |
| Annex D (normative) Determination of the allowable pressure at minimum operating temperature (Requirements to avoid brittle fracture) | 29 |
| Annex E (informative) Compilation of material characteristics of often used materials | 34 |
| Annex F (informative) Justification of the individual methods..... | 54 |
| Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 97/23/EC. | 60 |
| Bibliography | 61 |

Foreword

This document (EN 12284:2003) 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 March 2004, and conflicting national standards shall be withdrawn at the latest by March 2004.

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.

Annexes A, B, C, D are normative and annexes E and F are informative

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European standard specifies safety requirements, safety factors, test methods, test pressures used and marking of refrigerating valves and other components with similar bodies, hereinafter called valves, for use in refrigerating systems.

It describes the procedure to be followed when designing (by calculation or by an experimental design method) valve parts subjected to pressure as well as the criteria to be used in the selection of materials.

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

This standard 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.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

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

EN 378-2:2000, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 2: Design, construction, testing, marking and documentation.*

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

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

EN 764-5, *Pressure equipment — Part 5: Compliance and Inspection Documentation of Materials.*

EN 1563, *Founding — Spheroidal graphite cast irons.*

EN 12284:2003 (E)

EN 10045-1, *Metallic materials — Charpy impact test — Part 1: Test method.*

EN 10087, *Free-cutting steels — Technical delivery conditions for semi-finished products, hot-rolled bars and rods.*

EN 10204, *Metallic products — Types of inspection documents.*

prEN 12516-2, *Industrial valves — Shell design strength — Part 2: Calculation methods for steel valve shells.*

EN 13445-2:2002, *Unfired pressure vessels — Part 2: Materials.*

prEN 14276-1:2001, *Pressure equipment for refrigerating systems and heat pumps — Part 1: Vessels — General requirements.*

EN 60534-2-1:1998, *Industrial-process control valves — Part 2-1: Flow capacity — Sizing equations for fluid flow under installed conditions (IEC 60534-2-1:1998).*

EN ISO 6708:1995, *Pipework components — Definition and selection of DN (nominal size (ISO 6708:1995).*

ISO 7268:1983, *Pipe components — Definition of nominal pressure.*

CR-ISO 15608:2000, *Welding — Guidelines for a metallic material grouping system (ISO/TR 15608:2000).*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1

Valve

device with shut-off, non-return, regulating- or control functions for refrigerant flow or a filter device in similar dimensions. It can be operated by hand, by an actuator or by the system pressure of the plant

NOTE The expression 'control valve' denotes an automatic valve with a feedback system and the expression 'regulating valve' denotes a hand-operated valve which may have a shaped cone to assist the regulating function.

3.2

Operating range

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

3.3

Nominal size (DN)

an alpha-numeric designation of size for components of a pipework system [See EN ISO 6708:1995]

3.4

Nominal pressure (PN)

a value of a pressure in the range of the maximum allowable pressure for planning a plant or a component (see ISO 7268:1983)

3.5

Corrosion

all forms of material wastage (e. g. oxidation, erosion, wear and abrasion)

3.6

Maximum design temperature

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

3.7

Minimum design temperature

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