EESTI STANDARD EVS-EN 13458-2:2003



# Krüogeenanumad. Staatilised vaakumisolatsiooniga anumad. Osa 2: Disain, tootmine, inspekteerimine ja katsetamine

Cryogenic vessels - Static vacuum insulated vessels - Part 2: Design, fabrication, inspection and testing

EESTI STANDARDIKESKUS

**EESTI STANDARDI EESSÕNA** **NATIONAL FOREWORD**

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| Käesolev Eesti standard EVS-EN 13458-2:2003 sisaldab Euroopa standardi EN 13458-2:2002 + AC:2006 ingliskeelset teksti.<br><br>Käesolev dokument on jõustatud 18.02.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.<br><br>Standard on kättesaadav Eesti standardiorganisatsioonist. | This Estonian standard EVS-EN 13458-2:2003 consists of the English text of the European standard EN 13458-2:2002 + AC:2006.<br><br>This document is endorsed on 18.02.2003 with the notification being published in the official publication of the Estonian national standardisation organisation.<br><br>The standard is available from Estonian standardisation organisation. |

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| **Käsitlusala:**<br>This European Standard specifies requirements for the design, fabrication, inspection and testing of static vacuum insulated cryogenic vessels designed for a maximum allowable pressure of more than 0,5 bar | **Scope:**<br>This European Standard specifies requirements for the design, fabrication, inspection and testing of static vacuum insulated cryogenic vessels designed for a maximum allowable pressure of more than 0,5 bar |

**ICS** 23.020.40

**Võtmesõnad:** coolers, gas cylinders, incription, insulated, insulations, loading, marking, materials, pressure vessels, production, safety requirements, sample surveys, specification (approval), specifications, static pressure vessels, surveillance (approval), testing, vacuum

EUROPEAN STANDARD

NORME EUROPÉENNE

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English version

# Cryogenic vessels - Static vacuum insulated vessels - Part 2: Design, fabrication, inspection and testing

Récipients cryogéniques - Récipients fixes isolés sous vide - Partie 2: Conception, fabrication, inspection et essais

Kryo-Behälter - Ortsfeste vakuum-isolierte Behälter - Teil 2: Bemessung, Herstellung und Prüfung

This European Standard was approved by CEN on 12 August 2002.

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, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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# Contents

# Foreword

This document (EN 13458-2:2002) has been prepared by Technical Committee CEN/TC 268 "Cryogenic vessels", 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 May 2003, and conflicting national standards shall be withdrawn at the latest by May 2003.

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.

In this European Standard the annexes A, B E, G, I and K are normative and the annexes C, D, F, H and J are informative.

EN 13458 consists of the following Parts under the general title, *Cryogenic vessels – Static vacuum insulated vessels*

— *Part 1: Fundamental requirements*

— *Part 2: Design, fabrication, inspection and testing*

— *Part 3: Operational requirements*

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, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## 1 Scope

This European Standard specifies requirements for the design, fabrication, inspection and testing of static vacuum insulated cryogenic vessels designed for a maximum allowable pressure of more than 0,5 bar.

This European Standard is applicable to static vacuum insulated cryogenic vessels for fluids as specified in EN 13458-1, and does not apply to vessels designed for toxic fluids.

For static vacuum insulated cryogenic vessels designed for a maximum allowable pressure of not more than 0,5 bar this standard can be used as a guide.

## 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 (including amendments).

EN 287-1, *Approval testing of welders – Fusion welding – Part 1: Steels*.

EN 287-2, *Approval testing of welders – Fusion welding – Part 2: Aluminium and aluminium alloys*.

EN 288-3:1992, *Specification and approval of welding procedures for metallic materials – Part 3: Welding procedure tests for the arc welding of steels*.

EN 288-4:1992, *Specification and approval of welding procedures for metallic materials – Part 4: Welding procedure tests for the arc welding of aluminium and its alloys*.

EN 288-8, *Specification and approval of welding procedures for metallic materials – Part 8: Approval by a pre-production welding test*.

EN 473, *Qualification and certification of NDT personnel – General principles*.

EN 875:1995, *Destructive tests on welds in metallic materials – Impact tests – Test specimen location, notch orientation and examination*.

EN 895:1995, *Destructive tests on welds in metallic materials – Transverse tensile test*.

EN 910:1996, *Destructive tests on welds in metallic materials – Bend tests.*

EN 1252-1:1998, *Cryogenic vessels – Materials – Part 1: Toughness requirements for temperatures below –80 °C*.

EN 1252-2, *Cryogenic vessels – Materials – Part 2: Toughness requirements for temperatures between –80 °C and –20 °C*.

EN 1418, *Welding personnel – Approval testing of welding operators for fusion welding and resistance weld setters for fully mechanised and automatic welding of metallic materials*.

EN 1435, *Non-destructive examination of welds – Radiographic examination of welded joints.*

EN 1626, *Cryogenic vessels – Valves for cryogenic service*.

EN 1797, *Cryogenic vessels – Gas/material compatibility.*

EN 10028-4, *Flat products made of steels for pressure purposes – Part 4: Nickel alloy steels with specified low temperature properties.*

EN 10028-7:2000, *Flat products made of steels for pressure purposes – Part 7: Stainless steels.*

prEN 10216-5, *Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 5: Stainless steel tubes.*

prEN 10217-7, *Welded steel tubes for pressure purposes - Technical delivery conditions - Part 7: Stainless steel tubes.*

EN 12300, *Cryogenic vessels – Cleanliness for cryogenic service.*

EN 13068-3, *Non-destructive testing – Radioscopic testing – Part 3: General principles of radioscopic testing of metallic materials by X- and gamma rays.*

EN 13133, *Brazing – Brazer approval.*

EN 13134, *Brazing – Procedure approval.*

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

EN 13445-4, *Unfired pressure vessels – Part 4: Fabrication.*

EN 13458-1:2002, *Cryogenic vessels – Static vacuum insulated vessels - Part 1: Fundamental requirements.*

prEN 13458-3, *Cryogenic vessels – Static vacuum insulated vessels – Part 3: Operational requirements.*

prEN 13648-1, *Cryogenic vessels – Safety devices for protection against excessive pressure – Part 1: Fundamental requirements*

prEN 13648-3, *Cryogenic vessels – Safety devices for protection against excessive pressure – Part 3: Determination of required discharge – Capacity and sizing.*

prEN ISO 4126-2, *Safety devices for protection against excessive pressure – Part 2: Bursting disc safety devices (ISO/DIS 4126-2:1996).*

EN ISO 6520-1:1998, *Welding and allied processes – Classification of geometrical imperfections in metallic materials – Part 1: Fusion welding (ISO 6520-1:1998).*

ISO 1106-1, *Recommended practice for radiographic examination of fusion welded joints - Part 1: Fusion welded butt joints in steel plates up to 50 mm thick.*

SA-353/A353M, *Specification for pressure vessel plates, alloy steel, 9 percent nickel, double-normalized and tempered.*

SA-479/SA-479M, *Specification for stainless steel bars and shapes for use in boilers and other pressure vessels.*

SA-522/SA-522M, *Specification for forged or rolled 8 and 9% nickel alloy steel flanges, fittings, valves and parts for low-temperature service.*

SA-553/SA-553M, *Specification for pressure vessel plates, alloy steel quenched and tempered 8 and 9 percent nickel.*