

**Krüogeenanumad. Staatilised, ilma
vaakumita isoleeritud anumad. Osa 2:
Konstrueerimine, tootmine,
kontrollimine ja katsetamine**

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 14197-2:2004 sisaldab Euroopa standardi EN 14197-2:2003 + AC:2006 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 20.02.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 14197-2:2004 consists of the English text of the European standard EN 14197-2:2003 + AC:2006.</p> <p>This document is endorsed on 20.02.2004 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>
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<p>Käsitlusala:</p> <p>This European Standard specifies requirements for the design, fabrication, inspection and testing of static non-vacuum insulated cryogenic vessels designed for a maximum allowable pressure of more than 0,5 bar.</p> <p>This European standard applies to static non-vacuum insulated cryogenic vessels for fluids as specified in EN 13458-1 and does not apply to vessels designed for toxic fluids. For static non-vacuum insulated cryogenic vessels designed for a maximum allowable pressure of not more than 0,5 bar this European Standard may be used as a guide.</p>	<p>Scope:</p> <p>This European Standard specifies requirements for the design, fabrication, inspection and testing of static non-vacuum insulated cryogenic vessels designed for a maximum allowable pressure of more than 0,5 bar.</p> <p>This European standard applies to static non-vacuum insulated cryogenic vessels for fluids as specified in EN 13458-1 and does not apply to vessels designed for toxic fluids. For static non-vacuum insulated cryogenic vessels designed for a maximum allowable pressure of not more than 0,5 bar this European Standard may be used as a guide.</p>
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ICS 23.020.40

Võtmesõnad: coolers, gas cylinders, ins, insulations, loading, marking, materials, mathematical calculations, pressure vessels, production, safety requirements, sample surveys, specification (approval), specifications, static pressure vessels, surveillance (approval), testing

ICS 23.020.40

English version

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

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

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

This European Standard was approved by CEN on 1 September 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.

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

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Foreword

This document (EN 14197-2:2003) has been prepared by 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 2004, and conflicting national standards shall be withdrawn at the latest by May 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.

EN 14197 consists of the following parts under the general title, "*Cryogenic vessels – Static non-vacuum insulated vessels*" :

- *Part 1: Fundamental requirements;*
- *Part 2: Design, fabrication, inspection and testing;*
- *Part 3: Operational requirements.*

Annexes A, B, F, G and I are normative. Annexes C, D, E, H and J 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 requirements for the design, fabrication, inspection and testing of static non-vacuum insulated cryogenic vessels designed for a maximum allowable pressure of more than 0,5 bar.

This European standard applies to static non-vacuum insulated cryogenic vessels for fluids as specified in EN 14197-1 and does not apply to vessels designed for toxic fluids.

For static non-vacuum insulated cryogenic vessels designed for a maximum allowable pressure of not more than 0,5 bar this European Standard may 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 473:2000, *Non destructive testing - 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, *Destructive tests on welds in metallic materials – Transverse tensile test.*

EN 910, *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 mechanized and automatic welding of metallic materials.*

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

EN 1626:1999, *Cryogenic vessels - Valves for cryogenic service.*

EN 1708-1:1999, *Welding - Basic weld joint details in steel - Part 1: Pressurized components*

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.*

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

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

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

EN 13648-1, *Cryogenic vessels - Safety devices for protection against excessive pressure - Part 1 : Safety valves for cryogenic service.*

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

EN 14197-1, *Cryogenic vessels – Static non-vacuum insulated vessels – Part 1: Fundamental requirements.*

prEN 14197-3, *Cryogenic vessels – Static non-vacuum insulated vessels – Part 3: Operational requirements.*

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

ISO 1106-1:1984, *Recommended practice for radiographic examination of fusion welded joints – Part 1: Fusion welded butt joints in steel plates up to 50 mm thick.*

3 Terms and definitions and symbols

3.1 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 14197-1 and the following apply.

3.1.1

static vessel

stationary unit capable of receiving, storing (under pressure) and dispensing cryogenic fluids. The vessel is not intended to be used for transporting liquid product

3.1.2

vessel

pressure vessel proper intended to contain the cryogenic fluid

3.1.3

outer jacket

gas-tight enclosure which contains the vessel

3.1.4

automatic welding

welding in which the parameters are automatically controlled. Some of these parameters can be adjusted to a limited extent, either manually or automatically, during welding to maintain the specified welding conditions

3.1.5

maximum allowable pressure, p_s

maximum pressure for which the equipment is designed, as specified by the manufacturer, defined at a location specified by the manufacturer, being the location of connection of protective or limiting devices or the top of the equipment.

NOTE p_s is equivalent to PS used in article 1, 2.3 of the PED.