

English version

Cryogenic vessels – Transportable vacuum insulated vessels of not more than 1 000 litres volume

Part 2: Design, fabrication, inspection and testing

Réceptacles cryogéniques – Réceptacles transportables, isolés sous vide, d'un volume n'excédant pas 1 000 litres – Partie 2: Conception, fabrication, inspection et essai

Kryo-Behälter – Ortsbewegliche, vakuum-isolierte Behälter mit einem Fassungsraum von nicht mehr als 1 000 Liter – Teil 2: Bemessung, Herstellung und Prüfung

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

**Cryogenic vessels - Transportable
vacuum insulated vessels of not more
than 1000 litres volume - Part 2: Design,
fabrication, inspection and testing**

Cryogenic vessels - Transportable vacuum insulated
vessels of not more than 1000 litres volume - Part 2:
Design, fabrication, inspection and testing

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 1251-2:2000 sisaldab Euroopa standardi EN 1251-2:2000+AC:2006 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 17.07.2000 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 1251-2:2000 consists of the English text of the European standard EN 1251-2:2000+AC:2006.</p> <p>This document is endorsed on 17.07.2000 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 is applicable to the design, fabrication, inspection and testing of transportable vacuum insulated cryogenic vessels of not more than 1000 l volume and designed for a maximum allowable pressure greater than atmospheric. This standard applies to transportable vacuum insulated cryogenic vessels for fluids and is not applicable to such vessels designed for oxidic fluids.</p>	<p>Scope:</p> <p>This European Standard is applicable to the design, fabrication, inspection and testing of transportable vacuum insulated cryogenic vessels of not more than 1000 l volume and designed for a maximum allowable pressure greater than atmospheric. This standard applies to transportable vacuum insulated cryogenic vessels for fluids and is not applicable to such vessels designed for oxidic fluids.</p>
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Foreword

This European Standard 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 July 2000, and conflicting national standards shall be withdrawn at the latest by July 2000.

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, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

The standard has been submitted for reference into the RID and/or in the technical annexes of the ADR.

Therefore the standards listed in the normative references and covering basic requirements of the RID/ADR not addressed within the present standard are normative only when the standards themselves are referred to in the RID and/or in the technical annexes of the ADR.

The other parts of EN 1251 are :

- Part 1: Fundamental requirements ;
- Part 3: Operational requirements.

The Standard covers validation of design by calculation or by an experimental method.

1 Scope

This European Standard is applicable to the design, fabrication, inspection and testing of transportable vacuum insulated cryogenic vessels of not more than 1 000 litres volume and designed for a maximum allowable pressure greater than atmospheric.

This standard applies to transportable vacuum insulated cryogenic vessels for fluids as specified in EN 1251-1 and is not applicable to such vessels designed for toxic fluids.

For details of acceptable materials see clause 8 of EN 1251-1.

Additional requirements for flammable fluids are given in annex C.

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 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, *Specification and approval of welding procedures for metallic materials - Part 3: Welding procedure tests for arc welding of steels*

EN 288-4, *Specification and approval of welding procedures for metallic materials - Part 4: Welding procedure tests for 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 729-2, *Quality requirements for welding - Fusion welding of metallic materials - Part 2: Comprehensive quality requirements*

EN 729-3, *Quality requirements for welding - Fusion welding of metallic materials - Part 3: Standard quality requirements*

EN 895, *Destructive tests on welds in metallic materials - Transverse tensile test*

EN 910, *Destructive tests on welds in metallic materials - Bend tests*

EN 962, *Transportable gas cylinders - Valve protection devices caps and valve guards for industrial and medical gas cylinders - Design, construction and tests*

EN 970, *Non-destructive examination of fusion welds - Visual examination*

EN 1251-1, *Cryogenic vessels - Transportable vacuum insulated vessels of not more than 1 000 litres volume - Part 1: Fundamental requirements*

EN 1251-3, *Cryogenic vessels - Transportable vacuum insulated vessels of not more than 1 000 litres volume - Part 3: Operational requirements*

EN 1252-1, *Cryogenic Vessels - Materials - Part 1: Toughness requirements for temperatures below -80°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, *Cryogenic Vessels - Valves for cryogenic service*

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

EN 1797-1, *Cryogenic vessels - Gas/material compatibility - Part 1 : Oxygen compatibility*

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

EN 10204, *Metallic products - Types of inspection documents*

EN 12213, *Cryogenic vessels - Evaluation methods of thermal insulation performance*

EN 12300, *Cryogenic vessels - Cleanliness for cryogenic service*

EN 22244:1992, *Packaging - Complete, filled transport packages - Horizontal impact tests (horizontal or inclined plane tests - Pendulum test) (ISO 2244:1985)*

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

3 Definitions and symbols

3.1 Definitions

For the purposes of this standard, the following definitions apply in addition to those given in EN 1251-1:

3.1.1

automatic welding

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

3.1.2

maximum allowable pressure, P_s

the maximum pressure which may be exerted under normal conditions of use

3.1.3

volume of the inner vessel

the volume of the shell, excluding nozzles, pipes, etc. determined at minimum design temperature and atmospheric pressure

3.2 Symbols

For the purposes of this standard, the following symbols apply :

c	allowance for corrosion, in millimetres
d_i	internal diameter of tube or nozzle, in millimetres
f	narrow side of rectangular or elliptical plate, in millimetres
l_b	buckling length, in millimetres