

**Krüogeenanumad. Materjalid. Osa 1:  
Tugevusnõuded temperatuuridel alla -  
80 °C**

Cryogenic vessels - Materials - Part 1: Toughness  
requirements for temperatures below -80°C

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 1252-1:1999 sisaldab Euroopa standardi EN 1252-1:1998+AC:1998 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 23.11.1999 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 1252-1:1999 consists of the English text of the European standard EN 1252-1:1998+AC:1998.</p> <p>This document is endorsed on 23.11.1999 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><b>Käsitlusala:</b> Käesolev Euroopa standard määrab kindlaks tugevusnõuded metallilistele materjalidele kasutamiseks allpool -80 °C, et tagada nende sobivus krüogeenseteks mahutiteks.</p>	<p><b>Scope:</b></p>
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**ICS** 23.020.40

**Võtmesõnad:** kasutusnõuded, kokkupõrkekatsetus, krüogeenid, materjalid, mehaaniline tugevus, mehaanilised omadused, metallid, paindetugevus, survemahutid, tugevus, vastuvõetavus

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Descriptors: Cryogenic vessels, materials, toughness.

**English version**

**Cryogenic vessels – Materials**

Part 1: Toughness requirements for temperatures below  $-80\text{ °C}$

Réceptifs cryogéniques – Matériaux – Partie 1: Exigences de ténacité pour les températures inférieures à $-80\text{ °C}$	Kryo-Behälter – Werkstoffe – Teil 1: Anforderungen an die Zähigkeit bei Temperaturen unter $-80\text{ °C}$
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This European Standard was approved by CEN on 1998-02-15.

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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**CEN**

European Committee for Standardization  
Comité Européen de Normalisation  
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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 September 1998, and conflicting national standards shall be withdrawn at the latest by September 1998.

This European Standard 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 standard.

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.

This European Standard is composed of the following parts :

EN 1252-1	Cryogenic vessels - Materials - Part 1: Toughness requirements for temperatures below - 80 °C
prEN 1252-2 <sup>1)</sup>	Cryogenic vessels - Materials - Part 2 : Mechanical characteristics for temperatures between - 80°C to - 10°C

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<sup>1)</sup> This European Standard is in preparation

## Introduction

The use of materials at low temperatures entails special problems which have to be addressed. Consideration has to be given, in particular, to changes in mechanical characteristics, expansion and contraction phenomena and the thermal conduction of the various materials. Austenitic stainless steel may transform from austenitic to martensitic phase when cooled down ; this will lead to dimensional change that need to be considered during design. However, the most important property to be considered is the material toughness at low temperature.

### 1 Scope

This European standard specifies the toughness requirements of metallic materials for use at a temperature below - 80 °C to ensure their suitability for cryogenic vessels.

This standard is not applicable to unalloyed steels and cast materials.

This standard is not applicable to cryogenic vessels for liquefied natural gas (LNG).

### 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 485-3	1993	Aluminium and aluminium alloys - Sheet, strip and plate - Part 3 : Tolerances on shape and dimensions of hot-rolled products
EN 1652		Copper and copper alloys - Plate, sheet, strip and circles for general purposes
EN 1653		Copper and copper alloys - Plate, sheet and circles for boilers, pressure vessels and hot water storage units
prEN 1981		Copper and copper alloys - Master alloys
EN 10028-1	1992	Flat products made of steels for pressure purposes - Part 1 : General requirements
EN 10028-4	1994	Flat products made of steels for pressure purposes - Part 4 : Nickel alloy steels with specified low temperature properties
prEN 10028-7		Flat products made of steels for pressure purposes - Part 7 : Stainless steels
EN 10045-1		Metallic materials - Charpy impact test - Part 1 : Test method
EN 12163		Copper and copper alloys - Rod for general purposes