ICS 23.020.40 SLOVENSKÁ TECHNICKÁ NORMA Február 2025

STN	**Kryogénne nádoby Stabilné nádoby izolované vákuom Časť 2: Prevádzkové požiadavky (ISO 21009-2: 2024)**	**STN EN ISO 21009-2** 69 8874

Cryogenic vessels Static vacuum-insulated vessels Part 2: Operational requirements (ISO 21009-2:2024)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 01/25

Obsahuje: EN ISO 21009-2:2024, ISO 21009-2:2024

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EN ISO 21009-2

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ICS 23.020.40 Supersedes EN ISO 21009-2:2015

English Version

Cryogenic vessels - Static vacuum-insulated vessels - Part 2: Operational requirements (ISO 21009-2:2024)

Récipients cryogéniques - Récipients fixes isolés sous vide - Partie 2: Exigences de fonctionnement (ISO 21009-2:2024)

Kryo-Behälter - Ortsfeste vakuumisolierte Behälter - Teil 2: Betriebsanforderungen (ISO 21009-2:2024)

This European Standard was approved by CEN on 1 October 2024.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN ISO 21009-2:2024 E

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European foreword

This document (EN ISO 21009-2:2024) has been prepared by Technical Committee ISO/TC 220 "Cryogenic vessels" in collaboration with Technical Committee CEN/TC 268 “Cryogenic vessels and specific hydrogen technologies applications” 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 April 2025, and conflicting national standards shall be withdrawn at the latest by April 2025.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 21009-2:2015.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users’ national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 21009-2:2024 has been approved by CEN as EN ISO 21009-2:2024 without any modification.

Annex ZA
(informative)

Relationship between this European Standard and the essential requirements of Directive 2014/68/EU (Pressure Equipment Directive) aimed to be covered

This European Standard has been prepared under a Commission's standardization request M/601 to provide one voluntary means of conforming to essential requirements of 2014/68/EU (Pressure equipment Directive).

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Annex I of Directive 2014/68/EU (Pressure Equipment Directive)

Essential Requirements of Directive 2014/68/EU	Clause(s)/subclause(s) of this EN	Remarks/Notes
3.4 a	Clauses 5.1, 6, 7, 8, 9, 10, 11 and 12	Operating instructions
3.4 b	–	
3.4 c	–	

Table ZA.2 — Applicable Standards to confer presumption of conformity as described in this Annex ZA

Reference in Clause 2	International Standard Edition	Title	Corresponding European Standard Edition
ISO 23208	ISO 23208:2017	*Cryogenic vessels — Cleanliness for cryogenic service*	EN ISO 23208:2019
ISO 21009-1	ISO 21009-1:2022	*Cryogenic vessels — Static vacuum-insulated vessels — Part 1: Design, fabrication, inspection and tests*	None. For applicable standard edition see Column 2

The documents listed in the Column 1 of Table ZA.2, in whole or in part, are normatively referenced in this document, i.e. are indispensable for its application. The achievement of the presumption of conformity is subject to the application of the edition of Standards as listed in Column 4 or, if no European Standard Edition exists, the International Standard Edition given in Column 2 of Table ZA.2.

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

International Standard

ISO 21009-2

Cryogenic vessels — Static vacuum-insulated vessels —

Part 2: Operational requirements

Récipients cryogéniques — Récipients fixes isolés sous vide — Partie 2: Exigences de fonctionnement

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 220, *Cryogenic vessels,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 268, *Cryogenic vessels and specific hydrogen technologies applications,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 21009-2:2015), which has been technically revised.

The main changes are as follows:

— updated definition of “authorized person”;

— updated requirements for protective clothing to prevent exposure to cryogenic fluids;

— added requirements for dealing with oxygen-enriched condensation;

— added requirements to use the results of a risk assessment for the design on underground installations;

— added requirements to use measures such as gas monitoring systems and ventilation to mitigate hazards for underground installations;

— added requirements to consider the risks associated with spill containment (diking) for outdoor installations if diking is needed;

— added requirements that controls for filling an indoor tank from an outdoor source shall be accessible to the operator and that vents shall be piped to a safe location;

— added requirements that automatic control devices shall fail to a safe operating mode upon the loss of power or pneumatic supply;

— added requirement to remove moisture as well as contaminants during a first fill;

— added option to use approved first fill procedure in place of manufacturer instructions;

— added requirements to ensure the fill process does not fill beyond a maximum level and pressure;

— added requirement to cap fill fittings to avoid moisture or contaminant entry to the tank;

— added separate recommended procedures for purging hydrogen tanks with helium and for other inert gases;

— updated safety distances for flammable cryogenic fluids.

A list of all parts in the ISO 21009 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

International Standard **ISO 21009-2:2024(en)**

Cryogenic vessels — Static vacuum-insulated vessels —

Part 2: Operational requirements

1 Scope

This document specifies operational requirements for static vacuum insulated vessels designed for a maximum allowable pressure of more than 50 kPa (0,5 bar). It can also be used as a guideline for vessels designed for a maximum allowable pressure of less than 50 kPa (0,5 bar).

This document applies to vessels designed for cryogenic fluids specified in ISO 21009-1.

Static cryogenic vessels are often partly equipped by the manufacturer, but can be installed or re- installed by another party, such as the operator, user or owner.

NOTE 1 For the installation of these vessels, additional requirements can apply.

NOTE 2 Some requirements of this document can be covered by local regulations, e.g. safety distances, occupational safety and health.

NOTE 3 Additional requirements can apply to the operation of large scale and field-fabricated vessels.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 21009-1, *Cryogenic vessels — Static vacuum-insulated vessels — Part 1: Design, fabrication, inspection and tests*

ISO 23208, *Cryogenic vessels — Cleanliness for cryogenic service*