



**SLOVENSKI STANDARD**  
**oSIST prEN ISO 20421-2:2016**  
**01-junij-2016**

---

**Kriogene posode - Velike premične, vakuumsko izolirane posode - 2. del: Zahteve za obratovanje (ISO/DIS 20421-2:2016)**

Cryogenic vessels - Large transportable vacuum-insulated vessels - Part 2: Operational requirements (ISO/DIS 20421-2:2016)

Kryo-Behälter - Große ortsbewegliche vakuumisolierte Behälter - Teil 2: Betriebsanforderungen (ISO/DIS 20421-2:2016)

Réceptifs cryogéniques - Grands réceptifs transportables, isolés, sous vide - Partie 2: Exigences de fonctionnement (ISO/DIS 20421-2:2016)

**Ta slovenski standard je istoveten z: prEN ISO 20421-2**

<https://standards.iteh.ai/catalog/standards/sist/66666487-bcb0-426f-9061-fc789790f27a/sist-en-iso-20421-2-2017>

**ICS:**

23.020.40      Proti mrazu odporne posode      Cryogenic vessels  
(kriogenske posode)

**oSIST prEN ISO 20421-2:2016**

**en,fr,de**



# DRAFT INTERNATIONAL STANDARD

## ISO/DIS 20421-2.2

ISO/TC 220

Secretariat: AFNOR

Voting begins on:  
2016-05-05Voting terminates on:  
2016-07-04

## Cryogenic vessels — Large transportable vacuum-insulated vessels —

### Part 2: Operational requirements

*Réceptifs cryogéniques — Grands réceptifs transportables, isolés, sous vide —  
Partie 2: Exigences de fonctionnement*

ICS: 23.020.40

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[SIST EN ISO 20421-2:2017](https://standards.iteh.ai/catalog/standards/sist/66666487-bcb0-426f-9061-fc789790f27a/sist-en-iso-20421-2-2017)

<https://standards.iteh.ai/catalog/standards/sist/66666487-bcb0-426f-9061-fc789790f27a/sist-en-iso-20421-2-2017>

### ISO/CEN PARALLEL PROCESSING

This draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five month enquiry.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.



Reference number  
ISO/DIS 20421-2.2:2016(E)

© ISO 2016

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[SIST EN ISO 20421-2:2017](https://standards.iteh.ai/catalog/standards/sist/66666487-bcb0-426f-9061-fc789790f27a/sist-en-iso-20421-2-2017)

<https://standards.iteh.ai/catalog/standards/sist/66666487-bcb0-426f-9061-fc789790f27a/sist-en-iso-20421-2-2017>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
[copyright@iso.org](mailto:copyright@iso.org)  
[www.iso.org](http://www.iso.org)

# Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Preliminaries before putting into service</b> .....	<b>2</b>
4.1 General.....	2
4.2 Marking and labelling.....	2
4.2.1 Marking.....	2
4.2.2 Labelling (or placarding).....	3
4.3 Handover documents.....	3
<b>5 Personnel training</b> .....	<b>3</b>
<b>6 General safety requirements</b> .....	<b>4</b>
6.1 General.....	4
6.2 Safety considerations.....	4
<b>7 Putting into service</b> .....	<b>5</b>
<b>8 Location</b> .....	<b>5</b>
<b>9 Transport</b> .....	<b>6</b>
<b>10 Filling</b> .....	<b>6</b>
10.1 General.....	6
10.2 Prefill checks.....	7
10.3 Preparations.....	7
10.4 After-fill check.....	8
<b>11 Product withdrawal</b> .....	<b>8</b>
<b>12 Change of service</b> .....	<b>8</b>
<b>13 Taking out service</b> .....	<b>9</b>
<b>14 Maintenance and repair</b> .....	<b>9</b>
<b>15 Periodic inspection</b> .....	<b>10</b>
<b>16 Additional requirements for flammable gases</b> .....	<b>11</b>
16.1 General safety requirements.....	11
16.1.1 General.....	11
16.1.2 Electrical equipment.....	11
16.1.3 Grounding (earthing) system.....	11
16.2 Putting into service (see also <a href="#">Clause 7</a> ).....	12
16.3 Location (see also <a href="#">Clause 8</a> ).....	12
16.4 Transport (see also <a href="#">Clause 9</a> ).....	12
16.5 Filling (see also <a href="#">Clause 10</a> ).....	12
16.6 Change of service (see also <a href="#">Clause 12</a> ).....	12
16.7 Taking out of service (see also <a href="#">Clause 13</a> ).....	12
16.8 Maintenance and repair (see also <a href="#">Clause 14</a> ).....	12
16.9 Emergency equipment and procedures.....	13
<b>Bibliography</b> .....	<b>14</b>

## ISO/DIS 20421-2.2:2016(E)

### 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 20421-2 was prepared by Technical Committee ISO/TC 220, *Cryogenic vessels*, Subcommittee, and by Technical Committee CEN/TC 268, *Cryogenic vessels* in collaboration.

This second edition cancels and replaces the first edition of ISO 20421-2:2005, which has been technically revised.

ISO 20421 consists of the following parts, under the general title *Cryogenic vessels — Large transportable vacuum-insulated vessels*:

- *Part 1: Design, fabrication, inspection and testing*
- *Part 2: Operational requirements*

[SIST EN ISO 20421-2:2017](https://standards.iteh.ai/)

<https://standards.iteh.ai/catalog/standards/sist/66666487-bcb0-426f-9061-fc789790f27a/sist-en-iso-20421-2-2017>

## Introduction

Elements of this part of ISO 20421 support the requirements of the UN-Recommendations on the Transport of Dangerous Goods and other international, national or local requirements.

Large transportable cryogenic vessels are often partly equipped by the manufacturer, but may be completed or re-equipped by another party, such as the operator or owner. For this reason some of the scope of this part of ISO 20421, which includes putting into service, inspection, filling, maintenance and emergency procedures, overlaps with ISO 20421-1.

This part of ISO 20421 applies to vessels for cryogenic fluids, primarily as specified in ISO 20421-1. It may also be used for vessels for cryogenic fluids manufactured and designed to other standards, e.g. EN 13530 2. In case of conflict between the requirements of this standard with applicable regulations, regulations take precedence.

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[SIST EN ISO 20421-2:2017](https://standards.iteh.ai/catalog/standards/sist/66666487-bcb0-426f-9061-fc789790f27a/sist-en-iso-20421-2-2017)

<https://standards.iteh.ai/catalog/standards/sist/66666487-bcb0-426f-9061-fc789790f27a/sist-en-iso-20421-2-2017>





# Cryogenic vessels — Large transportable vacuum-insulated vessels —

## Part 2: Operational requirements

### 1 Scope

This part of ISO 20421 specifies operational requirements for large transportable vacuum-insulated cryogenic vessels.

The scope includes putting into service, filling, withdrawal, transport within the location, storage, maintenance, periodic inspection and emergency procedures.

For the transport of these vessels by public road, rail, waterway, sea and air, additional requirements can apply; these are defined in specific regulations.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 20421-1, *Cryogenic vessels — Large transportable vacuum-insulated vessels — Part 1: Design, fabrication, inspection and testing*

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

ISO 21010, *Cryogenic vessels — Gas/materials compatibility*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 3.1

##### **putting into service**

operation by which a new vessel being used for the first time or an existing vessel being returned to service is prepared for use

Note 1 to entry: ISO 20421-1 or similar design standard e.g. EN 13530-2

#### 3.2

##### **filling**

operation by which a transportable vessel undergoes a prefill check, filling with a cryogenic fluid and an after-fill check

#### 3.3

##### **withdrawal**

operation by which the product is taken from a vessel connected to the supply system

## ISO/DIS 20421-2.2:2016(E)

### 3.4

#### **outdoor location**

location outside of any building or structure and not enclosed by more than two walls or one wall if a roof is also present

### 3.5

#### **underground location**

area or room whose ground or floor is on all sides significantly lower than the adjacent ground surfaces

### 3.6

**large transportable cryogenic vessel a thermally insulated vessel of more than 450 l intended for the transport of one or more cryogenic fluids, consisting of an inner vessel, an outer jacket, all of the valves and service equipment together with the structural parts**

Note 1 to entry: The large transportable cryogenic vessel comprises a complete assembly that is ready for service.

Note 2 to entry: A "large transportable cryogenic vessel" is hereinafter referred to as "vessel".

### 3.7

#### **authorized person**

person authorized by the applicable regulations

### 3.8

#### **enterprise**

any person or company that has a legal duty of care

### 3.9

#### **filler**

any enterprise which loads cryogenic fluids into a cryogenic vessel

### 3.10

#### **owner**

enterprise that legally owns the cryogenic vessel

### 3.11

#### **operator**

any enterprise for filling, storage, transport and withdrawal of cryogenic product

### 3.12

#### **Holding time**

time that will elapse from the establishment of the initial filling condition until the pressure has risen due to heat influx to the lowest set pressure of the pressure limiting device(s)

## 4 Preliminaries before putting into service

### 4.1 General

Before putting into service, verification shall take place to ensure that the vessel is suitable for the intended service and that the marking, labelling and handover documents are complete.

### 4.2 Marking and labelling

#### 4.2.1 Marking

Marking shall be in accordance with the applicable design standard and/or regulations, e.g. ISO 20421-1.