



# SLOVENSKI STANDARD SIST EN ISO 16495:2014

01-januar-2014

Nadomešča:

SIST EN ISO 16104:2003

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**Embalaža - Transportna embalaža za nevarno blago - Preskusne metode (ISO 16495:2013)**

Packaging - Transport packaging for dangerous goods - Test methods (ISO 16495:2013)

Verpackung - Verpackungen zur Beförderung gefährlicher Güter - Prüfverfahren (ISO 16495:2013)

Emballages - Emballages de transport pour marchandises dangereuses - Méthodes d'essai (ISO 16495:2013)

**Ta slovenski standard je istoveten z: EN ISO 16495:2013**

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**ICS:**

13.300	Varstvo pred nevarnimi izdelki	Protection against dangerous goods
55.020	Pakiranje in distribucija blaga na splošno	Packaging and distribution of goods in general

**SIST EN ISO 16495:2014**

**en,fr,de**

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EUROPEAN STANDARD

EN ISO 16495

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

## Packaging - Transport packaging for dangerous goods - Test methods (ISO 16495:2013)

Emballages - Emballages de transport pour marchandises dangereuses - Méthodes d'essai (ISO 16495:2013)

Verpackung - Verpackungen zur Beförderung gefährlicher Güter - Prüfverfahren (ISO 16495:2013)

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## Foreword

This document (EN ISO 16495:2013) has been prepared by Technical Committee ISO/TC 122 "Packaging" in collaboration with Technical Committee CEN/TC 261 "Packaging" 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of an identical text or by endorsement, at the latest by February 2014, and conflicting national standards shall be withdrawn at the latest by February 2014.

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

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ISO  
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2013-09-01

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**Packaging — Transport packaging for  
dangerous goods — Test methods**

*Emballages — Emballages de transport pour marchandises  
dangereuses — Méthodes d'essai*

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**ISO 16495:2013(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.

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 documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. [www.iso.org/directives](http://www.iso.org/directives)

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. [www.iso.org/patents](http://www.iso.org/patents)

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

The committee responsible for this document is CEN/TC 261, *Packaging*, in collaboration with Technical Committee ISO/TC 122, *Packaging*, Subcommittee SC 3, *Performance requirements and tests for means of packaging, packages and unit loads* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement). [standards.iteh.ai](http://standards.iteh.ai)

This first edition of ISO 16495 cancels and replaces ISO 16104:2003 and ISO 16467:2003, which have been technically revised. [SIST EN ISO 16495:2014](http://standards.iteh.ai/catalog/standards/sist/0be65033-29aa-40c6-acfc-7be52714f261/details/iso-16495-2014)

This corrected version includes the above revision details, which were missing in the original. <https://standards.iteh.ai/catalog/standards/sist/0be65033-29aa-40c6-acfc-7be52714f261/details/iso-16495-2014>

## Introduction

This International Standard was developed to provide requirements and test procedures to meet the multi-modal United Nations Recommendations on the Transport of Dangerous Goods Model Regulations referred to as “UN recommendations” throughout this International Standard, and successful passing of the tests may lead to the allocation of an appropriate UN packaging mark. The UN Recommendations have been developed by the United Nations Sub Committee of Experts on the Transport of Dangerous Goods as a ‘model regulation’ in the light of technical progress, the advent of new substances and materials, the exigencies of modern transport systems and, above all, the need to ensure the safety of people, property and the environment. Amongst other aspects, the UN Recommendations cover principles of classification and definition of classes, listing of the principal dangerous goods, general packing requirements, testing procedures, marking, labelling or placarding, and shipping documents. There are in addition special recommendations related to particular classes of goods.

The UN Recommendations are given legal entity by the provisions of a series of international modal agreements and national legislation for the transport of dangerous goods. The international agreements include the following:

- The European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) (covering most of Europe).[1]
- Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) (covering most of Europe, parts of North Africa and the Middle East).[2]
- The International Maritime Dangerous Goods Code (IMDG Code) (worldwide).[3]
- The International Civil Aviation Organization’s Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO TIs) (worldwide).[4]

The application of this International Standard will need to take account the requirements of these international agreements and the relevant national regulations for domestic transport of dangerous goods.

It is important to note that there will be certain modal differences from the UN Recommendations and that the schedule for revision of the Recommendations and modal provisions may lead to temporary inconsistencies with this International Standard.

It is noted that success in the tests and the allocation of an official UN mark do not on their own authorize the use of a packaging for any dangerous goods, which are subject to the packing instructions published in the various modal regulations.

This International Standard is based on Revision 17 of the UN Recommendations.

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# Packaging — Transport packaging for dangerous goods — Test methods

## 1 Scope

This International Standard specifies the information needed for the design type testing of packaging, Intermediate Bulk Containers (IBCs) and large packaging intended for use in the transport of dangerous goods.

NOTE 1 This International Standard can be used in conjunction with one or more of the international regulations set out in the Bibliography.

NOTE 2 The term “packaging” includes packaging for Class 6.2 infectious substances according to the United Nations.

## 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 2206:1987, *Packaging — Complete, filled transport packages — Identification of parts when testing*

ISO 2248:1985, *Packaging — Complete, filled transport packages — Vertical impact testing by dropping*

ISO 2875:2000, *Packaging — Complete, filled transport packages and unit load — Water-spray test*

ISO/IEC 17025:2005, *General requirements for the competence of testing and calibration laboratories*

United Nations Recommendations on the Transport of Dangerous Goods — Model Regulations

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in the UN Recommendations, Chapter 1.2.1, and the following apply.

### 3.1

#### **brimful capacity**

volume of water in litres held by the packaging, IBC, inner packaging of a combination packaging and/or large packaging, when filled through the designed filling orifice to the point of overflowing in its normal position of filling, and considered for testing purposes as maximum capacity

### 3.2

#### **nominal capacity**

capacity in litres which, by convention, is used to represent a class of packaging of a similar brimful capacity

### 3.3

#### **single packaging**

means of packaging that does not require an inner packaging to be capable of performing its containment function and it includes composite packaging

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### 4 Test report

All packaging, IBCs and large packaging tested for conformity with the UN Recommendations shall be the subject of a test report (in accordance with [Annex A](#)) which should include a specification check prepared in accordance with [Annex B, C](#) or D. It shall be possible to specifically identify the packaging, IBC and large packaging relative to each test report, either by the retention of uniquely referenced packaging, IBCs and large packaging or by inclusion of sufficient photographs and/or drawings with unique references to enable identification of the packaging, IBCs and large packaging and all its components.

### 5 Selection and preparation of packaging, IBCs and large packaging for testing

For the selection and preparation of packaging, IBCs and large packaging for testing the type of contents, (liquid, viscous or solid) is decisive.

NOTE Guidance on the determination of the type of contents given in [Annex E](#).

#### 5.1 Selection of packaging, IBCs and large packaging

Sufficient numbers of packaging, IBCs and large packaging per design type shall be selected for testing and

- a) shall be examined for damage which might invalidate the tests, in which event the packaging, IBCs and large packaging shall be replaced,
- b) shall be marked with a test reference which shall also be entered on the test record and later used on the test report, and
- c) the different parts of the packaging shall be identified in accordance with ISO 2206, and
- d) shall be individually weighed to establish the tare or filled gross mass.

NOTE 1 The form of such weighing can vary according to whether the packaging, IBCs and large packaging have been supplied full or empty to the test station. Where the masses of individual empty packaging, IBCs and large packaging are recorded, it is necessary to record only a typical filled gross mass (or vice versa).

NOTE 2 Under some circumstances it can be desirable to have a range of packaging, IBCs and large packaging tested.

Examples include

- in a number of different sizes but of the same construction,
- with variety of closures,
- for use with a range of solid contents.

In such situations selective testing procedure can be used to avoid testing of every possible permutation. The competent authority can allow this procedure after consultation.

#### 5.2 Information to be provided with packaging, IBCs and large packaging

##### 5.2.1 General

Each packaging, IBCs and large packaging type shall be accompanied by a specification for that design type containing the data set outlined in [Annex B, C](#) or D and by the following additional information contained in [5.2.2](#) to [5.2.6](#) as appropriate.

##### 5.2.2 Test contents - Using water and non-dangerous substances

Where the tests are to be carried out using water or other non-dangerous substances, a statement of the packing group for which the packaging is to be tested shall be provided, together with data, enabling

appropriate selection of inert test contents. For liquids, such data shall include the required maximum relative density for the tests together with data on, for instance, the internal pressure test required. For solids, such data shall include mass, grain size and any other relevant characteristics, for example, bulk density, angle of repose etc., to clearly show equivalence of physical characteristics.

### 5.2.3 Test contents - Using the dangerous substance

Where the tests are to be carried out using the dangerous substance(s) to be transported, a statement of their packing group and their physical characteristics shall be provided. (See for example Safety Data Sheet) Liquids shall be defined by their relative density together with viscosity and method of determination. Solids shall be defined by their mass and grain size and any other relevant characteristic, for example, bulk density, angle of repose etc. to ensure physical characteristics are sufficiently identified and included. This data shall be recorded in the test report (see [Annex A](#)).

Where the tests are carried out using the actual substance to be transported then they shall be applicable for other substances having the same or similar characteristics.

### 5.2.4 Vapour pressure

For liquids, the vapour pressure (at a given temperature) of the substance to be carried or the hydraulic pressure to be achieved during the tests shall be provided.

### 5.2.5 Test contents - Using articles

Where the packaging and large packaging is intended for the transport of (an) article(s), a statement of the packing group, an appropriate description and drawing(s) of the article(s) and or photographs and details of the way in which dummy articles were filled for the purpose of testing shall be provided.

### 5.2.6 Closing instructions

Any special filling or closing instructions including, where relevant, the closure torque, or taping patterns shall be provided.

### 5.2.7 Handling characteristics of IBCs and large packaging

Each IBC and large packaging design shall be accompanied by a statement of its mechanical handling characteristics. This shall relate to bottom lift, top lift or both, as applicable, and number of identical items to be stacked during transport.

## 5.3 Selection of contents and filling of packaging, IBCs and large packaging prior to testing

### 5.3.1 General

Single packaging, IBCs, the inner packaging of combination packaging and large packaging shall be filled for drop and stacking tests to not less than

- 98 % of brimful capacity for liquids, and
- 95 % of brimful capacity for solids.

NOTE There can be exceptions, some flexible packaging (see [5.3.4](#)) and some packaging designed to be transported part full (see [5.3.5](#)).

Packaging, IBCs, the inner packaging of combination packaging and large packaging for liquids, or those capable of containing liquids, shall have their capacity determined as in [5.3.3](#). Other packages the capacity shall be determined by other suitable means e.g. by calculation.