



SLOVENSKI STANDARD

oSIST prEN 16121:2021

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Shranjevalno pohištvo za javno uporabo - Zahteve za varnost, trdnost, trajnost in stabilnost

Non-domestic storage furniture - Requirements for safety, strength, durability and stability

Behältnismöbel für den Nicht-Wohnbereich - Anforderungen an die Sicherheit, Festigkeit, Dauerhaltbarkeit und Standsicherheit

Meubles de rangement à usage collectif - Exigences pour la sécurité, la résistance, la durabilité et la stabilité

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Pohištvo

Furniture

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

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English Version

Non-domestic storage furniture - Requirements for safety, strength, durability and stability

Meubles de rangement à usage collectif - Exigences
pour la sécurité, la résistance, la durabilité et la
stabilité

Behältnismöbel für den Nicht-Wohnbereich -
Anforderungen an die Sicherheit, Festigkeit,
Dauerhaltbarkeit und Standsicherheit

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 207.

If this draft becomes a European Standard, 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.

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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.

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

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

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prEN 16121:2021 (E)**European foreword**

This document (prEN 16121:2021) has been prepared by Technical Committee CEN/TC 207 “Furniture”, the secretariat of which is held by UNI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 16121:2013+A1:2017 and EN 14073-2:2004.

In comparison with the previous edition, the following technical modifications have been made:

- Update on the requirements for finger entrapment reflecting CEN/TR 17202:2018 including an Annex containing test methods;
- Normative references have been updated;
- Requirements for glass have been improved;
- Finger entrapment/shear squeeze requirements have been corrected and made applicable to kindergarten only;
- Office and laboratory storage have been added to the list of applications;
- Test load added in Annex D.

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1 Scope

This document specifies requirements for the safety, strength, and durability for all types of non-domestic storage furniture including office storage furniture.

It does not apply to domestic storage, industrial storage, kitchen, catering equipment, retail storage, and industrial storage lockers.

Requirements for strength and durability do not apply to the structure of the building for example the strength of wall hanging cabinets includes only the cabinets and the parts used for attachment. The wall and the wall attachments are not included.

This document contains five annexes:

- Annex A (normative) Test methods for finger entrapment and shear and compression;
- Annex B (normative) Requirements for schools, kindergartens and similar applications;
- Annex C (normative) Selecting product from a range of furniture;
- Annex D (informative) Guidance of test severity in relation to application for non-domestic storage furniture;
- Annex E (informative) Suggested loads for tests not specified in this document.

It does not include requirements for the resistance to ageing, degradation and flammability.

2 Normative references (standards.iteh.ai)

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.

EN 71-1:2014+A1:2018, *Safety of toys - Part 1: Mechanical and physical properties*

EN 716-2:2017, *Furniture - Children's cots and folding cots for domestic use - Part 2: Test methods*

EN 12150-1:2015+A1:2019, *Glass in building - Thermally toughened soda lime silicate safety glass - Part 1: Definition and description*

EN 12600, *Glass in building - Pendulum test - Impact test method and classification for flat glass*

EN 14072:2003, *Glass in furniture - Test methods*

EN 16122:2012, *Domestic and non-domestic storage furniture - Test methods for the determination of strength, durability and stability*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

accessible parts

parts to which access can easily be gained by the user when in its intended configuration of use and for which the probability of unintentional user contact is high, including any parts that are less than 1000 mm above any surface on which a child could stand, but with the exception of doors, flaps and extension elements including their hardware

Note 1 to entry: This includes, but is not limited to:

- the exposed edges and corners of storage units to which the user has access when the doors, drawers and extension elements are closed,
- the corners and edges of handles.

3.2

parts accessible during setting up and folding

parts to which access can only be gained when setting up and folding the furniture

Note 1 to entry: For the definition of shear and squeeze points for furniture intended for use in schools and kindergartens see B.2.1.1.

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3.3

unit

complete item of furniture including the structure and all components such as drawers, doors and other storage features

3.4

total mass

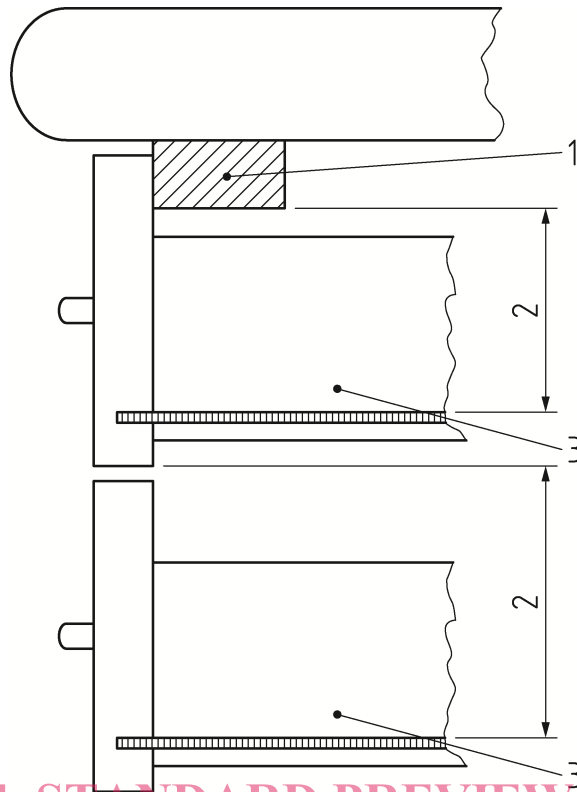
mass (kg) of the unit, or component plus the load defined in Table 2

3.5

clear height

unobstructed height above the top of the bottom surface

EXAMPLE The top of the extension element bottom and the lower edge of the extension element above, or the structure of the unit (see Figure 1).

**Key**

- 1 structure of the unit
- 2 clear height H
- 3 extension element

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Figure 1 — Clear height

3.6**levelling device**

adjustable device intended to keep the item of furniture perpendicular to the floor

EXAMPLE Adjustable feet or similar.

3.7**tray**

storage element that is designed, under normal use, to be removed from the storage unit and used independently

3.8**potential energy****Nm**

multiplication of the total mass (kg) of the unit (or the part), gravity (m/s^2) and the height (m) above the floor to the centre of gravity

Note 1 to entry: For the purpose of this document gravity can be considered to be 10 m/s^2 .

4 Test sequence and tolerances

4.1 Individual units

When a single unit is supplied for test all the safety tests (5) shall be carried out on the same sample and in the order in which they are listed in this document. Tests for strength and durability (6) may be carried out on a second sample.

4.2 Range of units

For a range of units featuring similar construction and sharing hardware, or single units with features utilizing identical hardware and fixings (e.g. a unit with different size drawers), selected tests shall be carried out on the worst case units/components as detailed in Annex C.

The tests shall be carried out in the order in which they are listed in this document.

If one unit or component within a range of products does not satisfy the requirements of this document then compliance for the full range cannot be claimed.

4.3 Tolerances

Unless otherwise stated, the following tolerances are applicable:

Forces: $\pm 5\%$ of the nominal force;

NOTE 1 Forces can be replaced by masses. The relationship $10N = 1\text{ kg}$ can be used.

Velocities: $\pm 5\%$ of the nominal velocity;

Masses: $\pm 1\%$ of the nominal mass;

Dimensions: $\pm 1\text{ mm}$ of the nominal dimension;

Angles: $\pm 2^\circ$ of the nominal angle.

NOTE 2 For the purposes of uncertainty measurement, test results are not considered to be adversely affected when the above tolerances are met.

5 Safety requirements

5.1 Principles of safety requirements

5.1.1 General

Safety requirements are based upon the knowledge that storage furniture and its parts are likely to cause injury only when they are heavy and fall through a significant distance. This is possible if floor standing units overbalance, wall or screen mounted units become detached, or heavy parts become detached from units.

Therefore, the tests contained in Table 4 are only considered to affect safety when:

- The height of the centre of gravity of the unit, or any part, is $> 650\text{ mm}$ above the floor and the total mass is $> 10\text{ kg}$,
- or
- When the potential energy (3.8) of the unit, or any part, is $> 65\text{ Nm}$ and the height of the centre of gravity of the unit, or any part, is $\leq 650\text{ mm}$.

5.1.2 Determination of centre of gravity

The centre of gravity of a component or unit shall be taken as the geometric centre of that unit, except in the case of extension elements, where the geometric centre of the usable volume shall be used.

The height of the centre of gravity above the floor shall be measured for storage furniture or their components when installed according to the manufacturer's instructions. Levelling devices shall be set at their middle position.

Height adjustable components shall be placed in their highest position.

All wall or top hanging units, or components thereof, are considered to have their centre of gravity more than 650 mm above the floor.

5.1.3 Determination of total mass

The total mass is the mass of the component or unit plus the mass supported by it.

Unless the component is conspicuously and durably marked by the manufacturer with a maximum load, the mass of the contents shall be determined according to Table 1, which specifies mass per unit area for shelves and the mass per unit volume for extension elements, baskets and trays etc.

The volume of fixed baskets and trays shall be taken as the volume contained below their top edge.

The volume of extension elements shall be taken as the area of its bottom multiplied by the clear height (3.5).

Table 1 — Load to determine total mass and load applied to all components other than those undergoing test, excluding stability tests

Part	Unit	Load	
		Non-domestic	Office
Horizontal surfaces, tops, shelves, door baskets etc.	kg/dm ²	1,5	1,5
Extension elements, trays and baskets	kg/dm ³	0,2	0,5
Suspended pocket files	kg/dm ^a	4	4
Clothes rails	kg/dm	4	5
^a measured perpendicular to the plane of the pocket files			

5.2 General safety requirements

The storage units shall be so designed as to minimize the risk of injury to the user.

All parts of the storage unit with which the user comes into contact, during intended use, shall be so designed that physical injury and damage are avoided. This requirement is met when:

1. the accessible parts are rounded or chamfered, and all other edges accessible during intended use are free from burrs and sharp edges,
2. feet of tubular components shall be capped or otherwise closed.

Movable and adjustable parts shall be designed so that injuries and inadvertent operation are avoided.

It shall not be possible for any load bearing part of the storage unit to come loose unintentionally.

All parts which are lubricated to assist sliding shall be designed to protect users from lubricant stains when in normal use.

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If it can cause injury, all roll fronts and doors sliding vertically including those constructed from hinged elements shall not move by themselves from any position higher than 200 mm measured from the closed position.

In order to avoid pinching points for feet, the safe height for vertically moving units shall be at least 100 mm from the floor.

Subject to the conditions contained within the general safety principles (5.1.1), all extension elements and trays shall not become detached from the unit when subjected to one horizontal pull force of 200 N applied to the handle of the loaded extension element/tray. The extension element/tray shall be loaded in accordance with Table 1, unless the component is conspicuously and durably marked by the manufacturer with a maximum load. In this case the component shall be loaded with the stated maximum load.

5.3 Holes in tubular/rigid components

There shall be no holes in the ends of tubular components or holes in rigid components in accessible parts between 8 mm and 12 mm, unless the depth of penetration is less than 10 mm. This requirement is fulfilled if there is no hazard present when tested in accordance with A.1.

5.4 Shear and compression points**5.4.1 Shear and compression points when setting up and folding**

Unless 5.4.2 or 5.4.3 are applicable, shear and compression points that are created only during setting up and folding are acceptable, because the user can be assumed to be in control of his/her movements and to be able to cease applying the force immediately upon experiencing pain.

The edges of parts moving relative to each other and creating shear and compression points shall be as specified in 5.2.

The shear and compression points for furniture intended for use in schools and kindergartens are contained in Annex B.

5.4.2 Shear and compression points under influence of powered mechanisms

With the exception of operation of doors, flaps and extension elements, there shall be no areas where the distance between two accessible parts moving relative to each other can be less than 25 mm, and more than 8 mm in any position during movement that could present a risk of injury to the user, created by parts of the furniture operated by powered mechanisms, e.g. electrical motors, mechanical springs and gas lifts.

This requirement is fulfilled if there is no hazard present when tested in accordance with A.2.1.

The shear and compression points for furniture intended for use in schools and kindergartens are contained in Annex B.

5.4.3 Shear and compression points during use

With the exception of operation of doors, flaps and extension elements including their hardware, there shall be no areas where the distance between two accessible parts moving relative to each other can be less than 18 mm, and more than 8 mm in any position that could present a risk of injury to the user, created by loads applied during normal use.

The loads defined within Table 2 are considered representative of normal use.

This requirement is fulfilled if there is no hazard present when tested in accordance with A.2.2.

The shear and compression points for furniture intended for use in schools and kindergartens are contained in Annex B.