



SLOVENSKI STANDARD

SIST EN 13150:2002

01-maj-2002

Delovni pulti za laboratorije - Mere, varnostne zahteve in preskusne metode

Workbenches for laboratories - Dimensions, safety requirements and test methods

Arbeits-tische für Laboratorien - Maße, Sicherheitsanforderungen und Prüfverfahren

Paillasses de laboratoire - Dimensions, spécification de sécurité et méthodes d'essai

Ta slovenski standard je istoveten z: **EN 13150:2001**

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ICS 71.040.10

English version

Workbenches for laboratories - Dimensions, safety requirements
and test methods

Paillasses de laboratoire - Dimensions, spécification de
sécurité et méthodes d'essai

Arbeitsische für Laboratorien - Maße,
Sicherheitsanforderungen und Prüfverfahren

This European Standard was approved by CEN on 16 April 2001.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 207 "Furniture", the secretariat of which is held by IBN.

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of an identical text or by endorsement, at the latest by November 2001, and conflicting national standards shall be withdrawn at the latest by November 2001.

This European Standard EN 13150 is applicable with date of publication (dop.) For workbenches for laboratories complying with a national standard before dop, this previous national standard may continue to apply for production and placing on the market until 2 years after dop. This standard does not apply to workbenches for laboratories, which have been put into service in the laboratory before 2 years after dop.

Annex A is normative. Annex B is informative.

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.

1 Scope

This European Standard specifies safety requirements and test methods for workbenches for laboratories including laboratory tables and gives recommendations for their dimensions.

This European Standard applies to workbenches, movable tables and workbench shelves designed for use in research, educational, quality control and similar laboratories.

This European Standard does not apply to workbenches for pupils in scientific class rooms of schools. It does not apply to workbenches for special purposes, e.g. for heavy diagnostic or processing machines.

It should be understood that fulfilling the requirements does not ensure that failure will not occur as a result of habitual misuse or after an excessively long period of service. The tests are designed to be applied to a stand-alone workbench that is fully assembled and ready for use.

Requirements and test methods related to the fire safety of workbenches and to the resistance of the work surface are not included in this European Standard.

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 (including amendments).

EN 527-1:2000, *Office furniture - Work tables and desks - Part 1: Dimensions*

EN 1730, *Domestic furniture - Tables - Test methods for determination of strength, durability and stability*

prEN 12600:1999, *Glass in building - Pendulum test - Impact test method for flat glass and performance requirements*

EN 61010-1, *Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements (IEC 61010-1:1990 + A1:1992, modified)*

ISO 48, *Rubber, vulcanized or thermoplastic – Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 2813, *Paints and varnishes - Determination of specular gloss of non-metallic paint films at 20°, 60° and 85°*

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3 Terms and definitions

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

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3.1

work surface height, h_1

vertical distance between the floor and the top of the work surface (see Figure 1)

3.2

overworkbench shelf height, h_2

vertical distance between the floor and the top of the shelf surface (see Figure 1)

3.3

bottom rail height, h_3

vertical distance between the floor and the lower part of bottom rail (see Figure 2)

3.4

overall depth, d_1

horizontal distance between the front and the rear edge of the workbench including possible service zones (see Figure 2)

3.5

clear work surface depth, d_2

horizontal distance between the front and the rear edge of the workbench excluding edges and possible service zones (see Figure 2)

3.6

overworkbench shelf depth, d_3

horizontal distance between the front and the rear edge of the overworkbench shelf (see Figure 2)

3.7

service zone depth, d_4

horizontal distance of overall depth d_1 minus clear work surface depth d_2 (see Figure 2)

3.8

static test

test consisting of heavy loads being applied a few times to ensure that the workbench has sufficient strength to perform its function under the highest levels of loading that might reasonably be expected to occur

3.9

impact test

test to assess the strength of the workbench under the rapid rates of loading that occasionally occur

3.10

fatigue test

test simulating the repeated application of loads or movement of components occurring during long-term use and assessing the durability of the workbench under such conditions

3.11

structure

load bearing parts of the workbench including the frame, top and legs

3.12

workbench

work surface with supporting structure and services as required

3.13

movable workbench or table

unit which is not fixed to the floor or wall nor has any service connections

NOTE This definition is for the purpose of the drop test only (see A.3.7).

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4 Recommended dimensions

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Other dimensions than those recommended in this clause 4 may be agreed between customer and manufacturer.

4.1 Heights

4.1.1 Work surface height

The nominal heights h_1 are listed in Table 1. In every case there should be an levelling range of minimum 20 mm. For seated work the relationship between seat height and work surface height is critical. The use of adjustable height seat is recommended.

Table 1 - Work surface heights

Type of workbench	Nominal heights h_1 in mm
Sitting	720
Standing ^{a)}	900
^{a)} or sitting on high chairs or stools	

4.1.2 Leg room

Minimum leg room under the workbench should be in accordance with clause 6 of EN 527-1:2000.

4.1.3 Overworkbench shelves

For workbenches with a depth ≥ 600 mm, the maximum height h_2 of the highest reagent shelf combined with the workbench should be 1750 mm (see Figure 1).

4.1.4 Bottom rails

If there are bottom rails, the height h_3 (see Figure 2) should be minimum 150 mm.

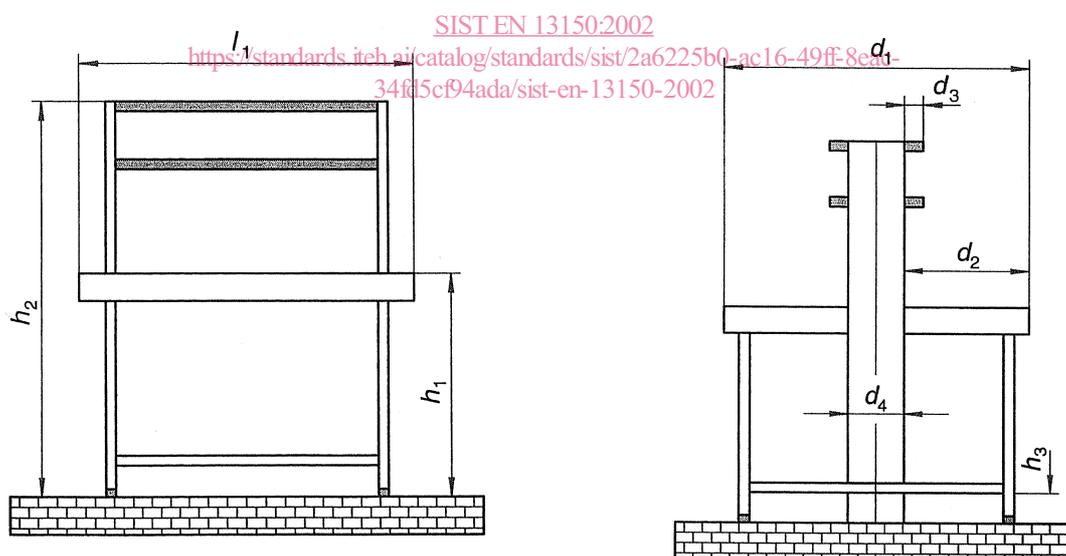
4.2 Depths

4.2.1 Overall depth

The recommended depths are listed in Table 2.

Table 2 - Depths

Part of workbench	Depth in mm
Clear work surface d_2	600 to 900
Service zone d_4	50 to 400
Overworkbench shelves d_3	max. 150 for reagents; min. 150 for equipment
Overall depth d_1	Clear work surface plus possible service zone



NOTE Drawings are examples only.

Figure 1 - Front view of a workbench

Figure 2 - Side view of two workbenches back-to-back

4.2.2 Clear work surface depth

The clear work surface depth d_2 should be minimum 600 mm and maximum 900 mm (see Figure 2).

4.2.3 Service zone depth

The depth of the service zone d_4 should be minimum 50 mm and maximum 400 mm (see Figure 2).

4.2.4 Depth of overworkbench shelving

The depth of overworkbench shelving d_3 should be maximum of 150 mm for reagents and minimum 150 mm for equipment (see Figure 2).

4.3 Length

The length l_1 should be in multiples of 300 mm with preferred dimensions of 600 mm up to 1800 mm (see Figure 1).

5 General safety requirements

Workbenches shall be manufactured so as to minimise injuries and damage to the human body or parts of the body during normal working conditions. Components or parts of the workbench with which the user may come into contact during intended use shall not have burrs, sharp edges or sharp corners and points.

Workbenches shall be manufactured from materials which are resistant to the mechanical, chemical and thermal requirements of the intended use of the workbench. Any vertical glass component greater than or equal to 0,06 m² shall comply with prEN 12600:1999 type 4B or 4C.

The width of accessible apertures (excluding drawers and doors and their associated fittings but including the gap between handles and other parts of the structure) shall always be either less than 8 mm or more than 25 mm. Handles shall not incorporate recesses in which substances may accumulate. Accessible open ends and feet of tubular components shall be capped or otherwise closed.

Work surfaces specifically designed to retain liquids shall be provided with retaining edges on all sides so that the retention capacity is min. 5 litres per square metre of work surface.

Any joints and work surfaces shall be made using materials to give a surface which will not crack, retain dirt or foreign matter or absorbs liquid. When required by the intended use, special care shall be taken to ensure that the growth of harmful pathogenic agents will not be promoted or sustained.

A retaining strip of min. 30 mm height shall be provided on the rear edges and open ends of overworkbench shelves unless they abut a wall. When the work requires it, a separation shield shall be provided between two opposite work surfaces.

6 Specific requirements

6.1 Stability

A free standing workbench shall not overturn when tested in accordance with 6.3.

6.2 Strength and durability

The workbench shall show no failure which can affect safety when tested as specified in 6.3 and it shall still fulfil its function. Furthermore in the deflection of workbench shelves test (see A.3.4) there shall be no deflection greater than span/200 under load and no permanent deflection greater than span/1000 24 hours after unloading.

6.3 Sequence and conditions of safety testing

The sequence of safety testing and the test conditions shall be as specified in Table 3.

NOTE A list of optional test methods and suggested requirements is included in annex B.

Table 3 - Conditions for safety testing

Subclause	Test	Parameter	Value
A.3.1	Horizontal static load	Force in N	600
A.3.2	Vertical static load - main surface - ancillary surface	Force in N	2000 500
A.3.3	Sustained vertical load if required	kg/dm ²	1,25
A.3.4	Deflection of workbench shelves	kg/dm ²	1,25
A.3.5	Horizontal impact stability	Drop height in mm Mass in kg	40 50
A.3.6	Vertical load stability - without drawers - with drawers	Mass in kg	100 75
A.3.7	Drop	Drop height in mm	150

6.4 Surface reflection

The reflection of the work surface shall be stated by the manufacturer and shall be determined in accordance with ISO 2813 at 60 degrees.

6.5 Electrical safety

All the electrical features shall comply with the relevant requirements given in EN 61010-1.

NOTE Attention is drawn to relevant national regulations.

7 User information

A manual shall be supplied with workbenches for laboratories which covers at least the following items:

- a) description of the main constructional parts;
- b) installation instructions, if the workbench is not installed by the manufacturer;
- c) operating instructions;
- d) safety instructions;
- e) maintenance and cleaning instructions;

f) spare part list.

8 Marking and labelling

The following inscriptions shall be mounted at each workbench for laboratories at a suitable, visible place:

- a) name and/or trade mark of the manufacturer;
- b) unambiguous type designation;
- c) year or date of production.

The manufacturer may claim the conformance of the workbench with this European Standard by the inscription "EN 13150".

9 Test Report

The test report shall include at least the following:

- (a) the number of this European Standard;
- (b) details of the workbench tested;
- (c) details of any defects observed before the tests;
- (d) details of any defects observed after the tests;
- (e) the test result;
- (f) details of any deviation from the test procedures.

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Annex A
(normative)

Test methods for safety testing

A. 1 General test conditions

A. 1.1 Preliminary preparation

The tests shall be carried out in indoor conditions. When temperature is less than 15 °C or more than 25 °C this shall be recorded in the test report.

Before any of the tests are commenced, the workbench shall be old enough to ensure that it has developed its full strength. At least four weeks in normal indoor conditions shall have elapsed between manufacture and testing in the case of glued joints in timber and the like.

A. 1.2 Application of forces

The forces in strength tests shall be applied sufficiently slowly to ensure that dynamic effects are negligible. The forces in fatigue tests shall be applied sufficiently slowly to ensure that heating does not occur.

A. 1.3 Tolerances

For tolerances, unless otherwise stated all forces shall be measured to an uncertainty of $\pm 5\%$, all masses to an uncertainty of $\pm 0,5\%$ and all dimensions to an uncertainty of $\pm 1,0$ mm. The measurement of linear deformations shall have an uncertainty of $\pm 0,1$ mm.

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A. 2 Test apparatus

A. 2.1 Horizontal force application device capable of applying a gradually increasing horizontal force to the workbench at the height of its top. The device shall be capable of applying the force at the required angle of inclination to the horizontal and shall not hinder any free movement of the workbench.

A. 2.2 Vertical force application device capable of applying either a fixed vertical force, or a gradually increasing vertical force. The device shall not hinder any free movement of the workbench.

A. 2.3 Horizontal impact device (see Figure A.1), consisting of a basketball inflated to a pressure of $(74,5 \pm 5)$ kPa and attached by a network of elastic retaining straps to an annular seating. The ball mounting shall consist of a ring of timber (or timber derivative) having an outside diameter of 150 mm and an inside diameter of 90 mm. Its rear face shall be attached to the main body of the impactor and its front face shaped to fit the ball.

The main body of the impactor shall consist of a mass supported by cords or flexible wires 850 mm long so that the longitudinal axis of the ball, mounting ring and main body assembly shall remain horizontal when the support cords are displaced from the vertical. The main body of the impactor shall be of such a mass that the total mass of all moving parts, excluding the support cords shall be 50 kg.

A. 2.4 Floor, horizontal, flat and rigid with a smooth melamine surface. For the drop test (see A.3.7) a rubber mat 2 mm thick, with hardness (85 ± 5) IRHD according to ISO 48, on a concrete floor.

A. 2.5 Stops, to prevent the workbench from sliding but not from overturning. Stops shall not be higher than 12 mm except in cases where the design of the workbench necessitates the use of higher stops, where the lowest stop that will prevent the workbench from sliding shall be used.