SLOVENSKI STANDARD
SIST EN 14434:2005

01-junij-2005

Table za pisanje za vzgojno-izobraževalne ustanove - Ergonomske, tehnične in varnostne zahteve ter preskusne metode

Writing boards for educational institutions - Ergonomic, technical and safety requirements and their test methods

Wandtafeln für Bildungseinrichtungen - Ergonomische, technische und sicherheitstechnische Anforderungen und Prüfverfahren

Tableaux pour établissements d'enseignement - Exigences ergonomiques, techniques et de sécurité et méthodes d'essai correspondantes

Ta slovenski standard je istoveten z: **EN 14434:2004**

ICS:

03.180	Vzgoja in izobraževanje	Education
13.180	Ergonomija	Ergonomics
97.140	Pohištvo	Furniture

SIST EN 14434:2005 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14434

December 2004

ICS 03.180; 13.180; 97.140

English version

Writing boards for educational institutions - Ergonomic, technical and safety requirements and their test methods

Tableaux pour établissements d'enseignement - Exigences ergonomiques, techniques et de sécurité et méthodes d'essai correspondantes

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Ref. No. EN 14434:2004: E

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Foreword

This document (EN 14434:2004) has been prepared by Technical Committee CEN/TC 207 “Furniture”, the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by June 2005, and conflicting national standards shall be withdrawn at the latest by June 2005.

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

1 Scope

This document specifies ergonomic, technical and safety requirements for wall mounted and free-standing writing boards for use in rooms for educational and training purposes, e.g. classrooms, lecture theatres for schools, universities etc.

It is intended to prevent serious injury through normal functional use, as well as misuse that might reasonably be expected to occur.

This document applies to units after installation. Safety depending on the structure of the building is not included, e.g. the strength of wall mounted boards includes only the board and its parts. The wall and the wall attachment are not included.

Requirements concerning electrical safety are not included.

Annex A (normative) includes an assessment scale for the ability to write and erase.

Annex B (informative) includes terminology for display writing boards.

2 Normative references

The following referenced documents are indispensable for the application 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 438-2:1991, *Decorative high-pressure laminates (HPL) – Sheets based on thermosetting resins – Part 2: Determination of properties (ISO 4586-2:1988, modified)*

EN 1023-3, *Office furniture – Screens – Part 3: Test methods*

3 Terms and definitions

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

3.1
board attachment
element by which the board is attached to the rail (see Annex B, Figure B.20)

3.2
chalkboard
writing board with a writing surface to be used for chalk

3.3
fixed board
board or assembly of boards fixed by various means (see Annex B, Figures B.2, B.3 and B.4)

3.4
fixing element
joint by which the rail is mounted to the wall

3.5
flip chart
one-sided board placed or fixed on an easel or a rail with the facility to attach a paper pad (see Annex B, Figure B.16)

3.6
horizontally sliding board
board with or without wing with only horizontal board movements in the same plane, manually or power operated

3.7
map holder
permanent system at the upper part of the board allowing maps, charts or other documents to be temporarily hung in place (see Annex B, Figure 18)

3.8
mobile board
board or assembly of boards, which may be moved on the floor from one place to another (see Annex B, Figures B.5, B.6 and B.7)

3.9
overall frame
outer frame or structure allowing movement of a sliding board

3.10
pivoting board
two-sided board articulated on its horizontal or vertical axis and standing on braced feet, with or without castors (see Annex B, Figures B.5, B.6)

3.11
rail based board/system
board hanging and/or sliding on horizontally wall mounted rails (see Annex B, Figure B.20)

3.12
roller board (revolving surface board)
assembly with top and bottom horizontal rollers allowing a continuous loop of flexible writing surface to be revolved between rollers. These boards may be wall mounted or mobile (see Annex B, Figure B.17)

3.13
sash board
assembly of one or two-sided boards sliding vertically, independent of each other and individually counter-balanced (see Annex B, Figure B.10)

3.14
sliding board
board with horizontal and/or vertical movements in the same plane, manually or power operated. It does not include a railed-based system (see Annex B, Figures B.9, B.10, B.11, B.12 and B.13)

3.15
tilting board
manually or power-operated inclinable one-sided board articulated on its lower horizontal edge, e.g. screens for overhead projectors (see Annex B,Figure B.11)

3.16
to and fro system
assembly of one- or two-sided boards sliding vertically, counter-balancing each other in all positions (see Annex B, Figure B.9).

3.17
transmission element
any means to transmit a movement such as to and fro, or sash

3.18
tray
ledge placed at the lower part of the board upon which writing implements may be placed (see Annex B, Figure B.18)

3.19
vertically and horizontally sliding board
board with or without wing with vertical and horizontal movements in the same plane, manually or power operated

3.20
vertically sliding board
board with or without wing, with only vertical movements in the same plane, manually or power operated (see Annex B, Figures B.9, B.10, B.11, B.12 and B.13)

3.21
whiteboard
writing board with a writing surface of a light colour to be used for dry marker pen

3.22
wall mounted board
one-sided board fixed to the wall (see Annex B, Figure B.1)

3.23
wing
two-sided board mounted on a vertically hinged system

3.24
winged board
assembly comprising a one-sided board and one or more wings. Double-board, triple-board and book-leaf are examples of winged boards (see Annex B, Figures B.2, B.3 and B.4)

3.25
writing board
board with one or more writing surfaces for the display of information

3.26
writing surface
surface for the display of information by means of writing and/or by other methods. The surface is erasable and re-usable

4 General test conditions

4.1 Preliminary preparation

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

All boards shall be tested as delivered. If of knock-down type, it shall be assembled according to the instructions supplied with the board. If the board can be assembled or combined in different ways, the most adverse combination shall be used for each test. The same is valid for units that can be combined with other units or components.

The tests shall be carried out in indoor conditions, but if during a test the temperature is outside the range of 15 °C to 25 °C, the maximum and/or minimum temperature shall be recorded in the test report.

Tighten any assembly fittings before testing. Further retightening shall not take place unless it is specifically required by the manufacturer.

4.2 Tolerances

Unless otherwise stated the following tolerances apply:

Masses: ± 0,5 % of the nominal mass;

Dimensions: ± 1,0 mm of the nominal dimension;

Angles: ± 2° of the nominal angle;

Forces: ± 5 % of the nominal force.

4.3 Test installation

For the structural tests in Clause 9, the board shall be installed according to the manufacturer's instructions.

Wall mounted boards shall be mounted to a structure sufficiently strong and stiff to eliminate the possibility of it affecting the results of the tests. The mounting of the structure shall be representative of the service installation.

Where the manner of mounting is ambiguously defined, the manner of mounting shall be recorded in the test report.

5 Test equipment

5.1 **Floor surface**, rigid, horizontal and flat.

5.2 **Wall surface**, rigid, vertical and flat.

5.3 **Chalk**, two types of white chalk:

a) made from calcium carbonate;

b) made from calcium sulphate.

5.4 **Pen**, red alcohol base, acrylic tipped dry marker.

6 General safety requirements

6.1 All boards

No part of the board shall constitute a risk of injury to the user during normal use. The board shall be such that damages to clothing and soiling are avoided during normal use.

All accessible edges and corners shall be rounded or chamfered and shall have no burrs. Hollow ends shall be capped or otherwise closed.

In order to avoid shearing and pinching, the distance between parts moving relative to each other shall have safety distances, which shall always be less than 8 mm or more than 25 mm in any position during movement.

a) Shear and pinching points, which are held apart by rubber or plastic buffers are exempt from this requirement provided that the gap produced by the buffer is at least 25 mm.

b) For winged boards, the gap between two parts of the board is exempt from this requirement.

c) For vertically sliding boards (sash boards, to and fro boards), where there is a risk of entrapment, the requirement is applicable except between the boards. The gap between the boards shall be at least 25 mm.

NOTE For c) gaps of 50 mm or more are recommended.

For vertically sliding boards (sash boards, to and fro boards), there shall be at least 120 mm from the floor to the board if no front protection is provided.

It shall not be possible to remove detachable parts inclusive end caps without the use of a tool.

No part attached to the rail system shall be detached unintentionally.

Counterweight mechanisms shall not be accessible during normal use.

It shall not be possible to operate controls inadvertently or accidentally.

If castors are provided as means of mobility, at least half of them shall be lockable.

6.2 Stability of mobile boards

This requirement is only applicable to mobile boards.

The board shall not overturn when tested according to EN 1023-3.

7 Surface tests and requirements for whiteboards

7.1 General

There are three performance levels specified in this Clause, Level 1, 2 and 3.

The minimum requirement for the writing surface is Level 1 (see also Clause 13).

The tests shall be carried out as specified in 7.2 to 7.6. Test samples shall have the same constitution as the board to be tested, unless otherwise specified.

7.2 Ability to write and erase

7.2.1 Testing

Testing shall be carried out according to EN 438-2:1991, Clause 6, using CS 10 grindstone.

Three samples shall be tested, one for 500 cycles, one for 1 000 cycles and one for 2 000 cycles.

7.2.2 Method of marking the surface

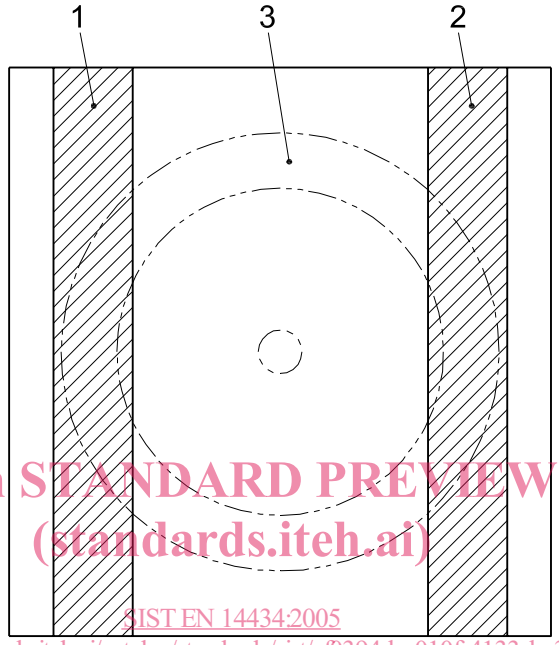
By using a pen (5.4), two parallel straight lines shall be made over the abraded area (Figure 1).

The pen shall be fixed at 45° to the surface of the board with a vertical force F of 20 N acting on the pen (Figure 2). The pen shall be pulled along a straight line at a speed of (20 ± 2) mm/s.

Assessment of the test result of the three samples shall be carried out after dry and wet cleaning as described in EN 438-2:1991, 15.6.

Dry cleaning shall be carried out with paper tissue.

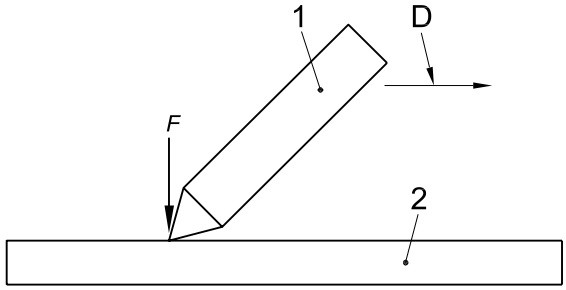
Wet cleaning shall be carried out with water based window cleaner containing alcohol and surfactants.



Key

1 Pen mark 1
2 Pen mark 2
3 Abrasion area

Figure 1 - Marking the surface over the abrasion area



Key

1 Pen
2 Board sample
D Direction of marking

Figure 2 — Marking the surface with a pen

7.2.3 Requirements

Table 1 — Ability to write and erase requirements for whiteboards

Requirement level	Level 1	Level 2	Level 3
Test cycles	500	1 000	2 000
Assessment after dry cleaning	min. 3	min. 3	min. 3
Assessment after wet cleaning	min. 5	min. 5	min. 5

7.3 Scratch test and requirements

7.3.1 Testing

Testing shall be carried out according to EN 438-2:1991, Clause 14.

In order to carry out the test as specified, flexible surface materials shall be glued onto a substrate.

7.3.2 Requirements

Table 2 — Scratch requirements for whiteboards

Requirement level	Level 1	Level 2	Level 3
Required force, F, in N	< 1	$1 \leq F < 7$	≥ 7

7.4 Impact test and requirements

7.4.1 Testing

Testing shall be carried out according to EN 438-2:1991, Clause 12.

7.4.2 Requirements

Table 3 — Impact requirements for whiteboards

Requirement level	Level 1	Level 2	Level 3
Drop height	350 mm	500 mm	750 mm
Indentation without cracks	Ø < 8 mm	Ø < 8 mm	Ø < 8 mm