BRITISH STANDARD

BS EN 14434:2010

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

ICS 03.180; 13.180; 97.140

National foreword

This British Standard is the UK implementation of EN 14434:2010. It supersedes BS EN 14434:2004 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee FW/0/4, Educational Furniture.

A list of organizations represented on this committee can be obtained on request to its secretary.

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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

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

This European Standard was approved by CEN on 12 December 2009.

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Foreword

This document (EN 14434:2010) 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of an identical text or by endorsement, at the latest by July 2010, and conflicting national standards shall be withdrawn at the latest by July 2010.

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This document supersedes EN 14434:2004.

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1 Scope

This European Standard 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.

Annex C (informative) includes significant technical differences between this document and EN 14434:2004.

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 438-2:2005, *High-pressure decorative laminates (HPL) — Sheets based on thermosetting resins (usually called Laminates) — Part 2: Determination of properties*

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

NOTE 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

NOTE See Annex B, Figures B.1, 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

NOTE 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

NOTE See Annex B, Figure B.18.

3.8
mobile board
board or assembly of boards, which may be moved on the floor from one place to another

NOTE 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

NOTE See Annex B, Figures B.5 and B.6.

3.11
rail based board/system
board hanging and/or sliding on horizontally wall mounted rails

NOTE 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

NOTE 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

NOTE 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

NOTE 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

NOTE 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

NOTE 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

NOTE 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

NOTE 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

NOTE 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

NOTE 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

NOTE 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 7.5. 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 438-2:2005, Clause 11, 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

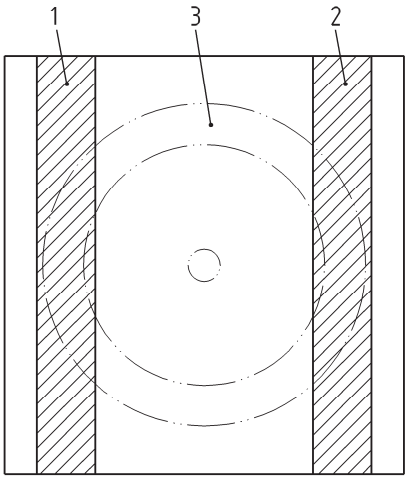
By using a pen (5.4), two parallel straight lines shall be made over the abraded area (Figure 1).

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 438-2:2005, 26.7.

Dry cleaning shall be carried out with paper tissue.

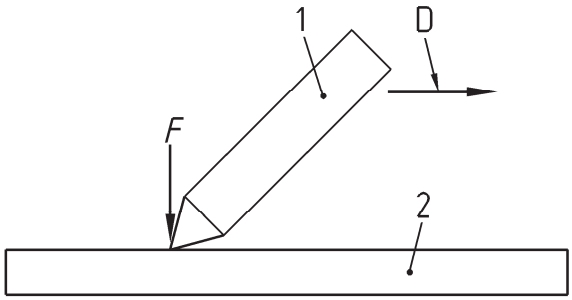
Wet cleaning shall be carried out with water based window cleaner containing alcohol and surfactants.



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
F Vertical force

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 438-2:2005, Clause 25.

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
Rating	Rating 1	Rating 2, 3 and 4	Rating 5

7.4 Staining tests and requirements

7.4.1 Testing

Testing shall be carried out according to EN 438-2:2005, Clause 26 using the following liquids:

a) acetone (analytical grade);

b) ethanol (analytical grade);

c) ball pen ink;

d) fountain pen ink;

e) permanent marker ink;

f) stain or paint removers based on organic solvents;

g) alkaline based cleaning agents (to 10 % concentration with water).

7.4.2 Requirements for each staining liquid

Table 3 — Staining requirements for whiteboards

Requirement level	Level 1	Level 2	Level 3
Assessment	2	4	5

7.5 Colour degradation test and requirements

7.5.1 Testing

Testing shall be carried out according to EN 438-2:2005, Clause 27.

Assessment shall be carried out with both grey scale and blue scale.

7.5.2 Requirements

Table 4 — Colour degradation requirements for whiteboards

Requirement level	Level 1	Level 2	Level 3
Blue scale	I = 6	I = 6	I = 6
Grey scale	I < 4	4 ≤ I < 5	I ≥ 5

8 Surface tests and requirements for chalkboards

8.1 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 8.2 to 8.6. Test samples shall have the same constitution as the board to be tested, unless otherwise specified.

8.2 Ability to write on an unused chalkboard sample

8.2.1 Testing

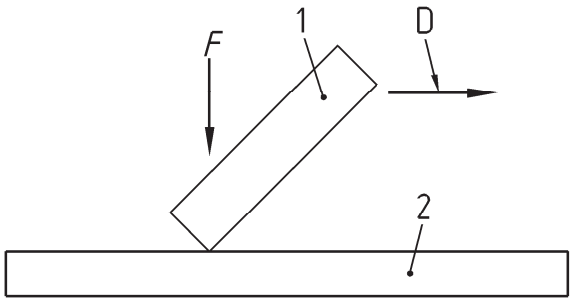
The ability to write on an unused chalkboard sample shall be tested by using chalk as described in 5.3.

8.2.2 Method of marking the surface

By using chalk (5.3), two parallel straight lines shall be made.

The chalk shall be fixed at 45° to the surface of the board with a vertical force F of 20 N acting on the chalk (Figure 3). The chalk shall be pulled along a straight line at a speed of (20 ± 2) mm/s.

Assessment of the test result shall be carried out using the assessment scale in Annex A.



Key

1 Chalk
2 Board sample
D Direction of marking
F Vertical force

Figure 3 — Marking the surface over the abrasion area

8.2.3 Requirement

The unused surface shall achieve at least assessment Level 3.

If the chalkboard is unable to achieve assessment Level 3, no further tests shall be carried out on the surface and the surface shall be considered to have failed to satisfy the requirements of this document.

NOTE It should be stated in the test report that the sample board is unsuitable for use as a chalkboard.

8.3 Ability to write on an abraded chalkboard sample

8.3.1 Testing

Testing shall be carried out according to EN 438-2:2005, Clause 11, using CS 10 grindstone.

Three samples shall be tested, one for 100 cycles, one for 250 cycles and one for 500 cycles.

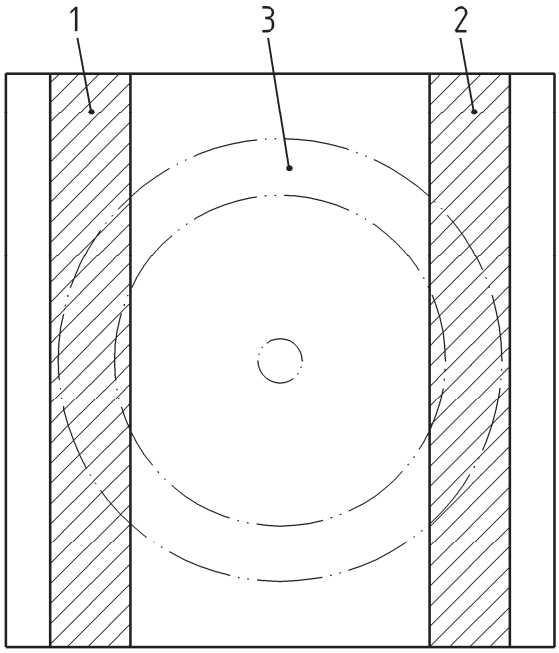
8.3.2 Method of marking the surface

Marking shall be carried out after testing according to 8.3.1:

Clean the samples. Dry cleaning shall be carried out with a dry piece of rag (piece of paper or cloth). Wet cleaning shall be carried out with water.

Two parallel straight lines shall be made over the abraded area (Figure 4) using the method specified in 8.2.2.

Assessment of the test results of the three samples shall be carried out using the assessment scale in Annex A.



Key

1 Chalk mark 1
2 Chalk mark 2
3 Abrasion area

Figure 4 — Marking the surface with chalk

8.3.3 Requirements

Table 5 — Ability to write requirements for chalkboards

Requirement level	**Level 1**	**Level 2**	**Level 3**
Abrasion cycles	100	250	500
Assessment	min. 3	min. 2	min. 2

8.4 Scratch test and requirements

8.4.1 Testing

Testing shall be carried out according to EN 438-2:2005, Clause 25.

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

8.4.2 Requirements

Table 6 — Scratch requirements for chalkboards

Requirement level	Level 1	Level 2	Level 3
Rating	-	rating 1	rating 2 and over

8.5 Staining tests and requirements

8.5.1 Testing

Testing shall be carried out according to EN 438-2:2005, Clause 26, using the following liquids:

a) acetone (analytical grade);

b) ethanol (analytical grade);

c) ball pen ink;

d) fountain pen ink;

e) stain or paint removers based on organic solvents;

f) alkaline based cleaning agents (to 10 % concentration with water).

8.5.2 Requirements for each staining liquid

Table 7 — Staining requirements for chalkboards

Requirement level	Level 1	Level 2	Level 3
Assessment	2	4	5

8.6 Colour degradation test and requirements

8.6.1 Testing

Testing shall be carried out according to EN 438-2:2005, Clause 27.

Assessment shall be carried out with both grey scale and blue scale.

8.6.2 Requirements

Table 8 — Colour degradation requirements for chalkboards

Requirement level	Level 1	Level 2	Level 3
Blue scale	$l = 6$	$l = 6$	$l = 6$
Grey scale	$l < 4$	$4 \leq l < 5$	$l \geq 5$

9 Structural tests and requirements

9.1 Vertical static load tests and requirements

9.1.1 Vertical downwards static load for rail based systems and horizontally sliding boards

Apply a load of 750 N to the board at two positions on the rails as follows:

a) for one hour in line with the board attachment and one fixing element on the rail, followed by

b) for one hour in line with the board attachment and in the middle between two fixing elements on the rail.

If it is not possible to apply the load to a sliding board, the load may be applied to the overall frame.

During and after the test no part of the rail, fixing element, board or attachment shall become loose or fail to function as intended.

A permanent deflection of more than 0,5 % of the free span between two fixing elements shall constitute a failure.

9.1.2 Vertical downwards static load for winged boards and pivoting boards

This test is only applicable to winged boards and pivoting boards, which are fitted with vertical pivots.

Mobile boards shall be fixed to the floor to prevent overturning.

Pivoting boards shall be fixed to prevent rotation of the board.

Wings shall be opened 90° to the main board.

Apply a load of 750 N for one hour at a point 100 mm from the outer edge of the wing or of the pivoting board.

During and after testing no part of the fixing element, board or attachment shall become loose or fail to function as intended.

9.1.3 Vertical downwards static load for all prominent parts

This test is applicable to prominent parts, e.g. hooks, trays and map holders of all types of boards.

Apply a load of 250 N for one hour at the point most likely to cause failure.

After the test, no part shall become loose or fail to function as intended.

9.1.4 Vertical upwards static load

This test is only applicable to rail based systems.

Tilting boards shall be locked in the least favourable position.

Apply a vertical upwards load of 200 N to the board at the point most likely to detach the board.

During testing, the board shall not become detached and there shall be no structural damage.

9.2 Durability of moving elements

9.2.1 Rail based systems

All moving elements shall be operated 15 000 cycles over a distance of at least the width of the element. The test may be carried out by any suitable device with a sinusoidal motion.

Tilting boards shall be tilted to the most forward position, but no more than 25° from the vertical.

Wings shall be fixed at 90° to the main board.

Flip charts of the rail based system shall be tested with an additional load of 20 N attached to the centre of gravity of the board.

The maximum speed shall be 350 mm/s at no more than six cycles per minute.

One cycle consists of one to and fro movement.

The operating forces after the test shall be measured and they shall not exceed the figures given in 10.2 and 10.3.

9.2.2 Boards with rotating parts

This test is not applicable to tilting boards.

Roller board brake mechanisms shall be disengaged before testing.

All boards shall be operated for 15 000 cycles. The test may be carried out by any suitable device with a sinusoidal motion. The frequency shall be no more than six cycles per minute.

For roller boards, one cycle is a complete revolution of the writing surface.

All other rotating elements shall be operated over an angle of 120°. One cycle consists of one to and fro movement.

During and after the test, no part shall become loose or fail to function as intended.

The operating forces after the test shall be measured and they shall not exceed the figures given in 10.2 and 10.3.

9.2.3 Sliding boards with transmission elements

This test applies to all boards working with counterweight or counterforce systems, e.g. masses or springs.

The test may be carried out by any suitable device with a sinusoidal motion. The maximum speed shall be 350 mm/s at no more than six cycles per minute.

Moving elements shall be operated for 25 000 cycles. The length of travel shall be from one end stop to the other without overriding the stops.

One cycle consists of one to and fro movement.

During and after the test, no part shall become loose or fail to function as intended.

In case of pulley systems as transmission elements, the ratio between the diameter of the pulley and the diameter of the cable shall not be less than 20 to 1.

The operating forces after the test shall be measured and they shall not exceed the figures given in 10.2 and 10.3.

9.2.4 Power operated sliding boards

Moving elements shall be operated for 25 000 cycles respecting the manufacturer's instructions regarding intermittence time. In cases where the intermittence time is not specified by the manufacturer, the resting time shall be equal to the movement time.

The length of travel shall be from one end stop to the other without overriding the stops.

One cycle consists of one to and fro movement.

During and after the test, no part shall become loose or fail to function as intended.

9.3 Test of rigidity

This test is only applicable to mobile boards.

Fix the board to the floor in a normal position of use.

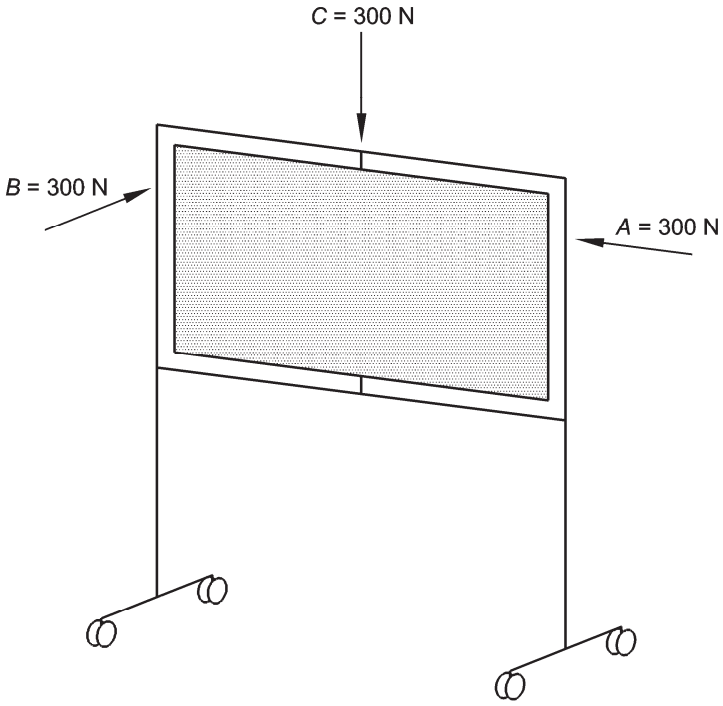
Apply (to the frame) three loads (A, B and C) of 300 N for 1 000 cycles, two horizontally and one vertically downwards (Figure 5). The loads shall be maintained for (2 ± 1) s. In the absence of a frame, the loads may be applied to the board.

The horizontal load (A) shall be applied in the plane of the board at a point 100 mm below the upper edge or 1 300 mm above the floor, whichever is the lower.

The other horizontal load (B) shall be applied perpendicularly to the plane of the board at a point 100 mm below the upper edge or 1 300 mm above the floor, whichever is the lower.

Pivoting boards shall be locked in the upright position before the test.

The vertical downwards load (C) shall be applied in the plane of the board at the middle of the length of the board.



Key

A, B Horizontal loads

C Vertical downwards load

Figure 5 — Test of rigidity

The load application sequence shall be A, C for 1 000 cycles and then B for 1 000 cycles.

During and after the test, no part shall become loose or fail to function as intended.

At the beginning and after the test, the horizontal movement (under load) at the load application points A and B shall not exceed 2 % of their height of the board.

9.4 Test of stops

This test is only applicable to manually operated sliding boards.

The board shall be slammed ten times against the stop with a slam velocity of 0,5 m/s.

If the stops are of different design/construction, both shall be tested.

During and after the test, there shall be no structural damage and no part shall become loose or fail to function as intended.

9.5 Surface deflection

Apply a load of 50 N through a loading pad, 50 mm in diameter with a flat surface, perpendicularly to the surface of the board on the most adverse position.

Measure the deflection under load at the load application point.

The deflection shall not be more than 5 mm.

10 Ergonomic requirements

10.1 Position of controls and handles

Any switches or similar devices, which are to be used to operate the boards, shall be placed at a height between 750 mm and 1 200 mm from the floor.

Any handles or similar devices, which are to be used to pull or push horizontally shall be placed at a height between 900 mm and 1 200 mm from the floor.

Any handles or similar devices, which are to be used to pull or push vertically shall be placed at a height between 600 mm and 2 000 mm from the floor.

NOTE It is recommended that, whenever possible, such handles should be placed at a height between 750 mm and 1 800 mm from the floor.

10.2 Operating forces

The maximum operating forces required for those parts of the board that are designed to be operated by fingers, hands or feet shall not exceed:

a) operating by using a finger: 5 N;

b) operating by using a hand: 105 N;

c) operating by using a foot: 300 N;

d) operating by turning a knob: 1,9 Nm.

10.3 Requirements for moving forces

Testing shall be carried out on a flat, smooth and horizontal steel plate.

Castors shall be set at 180° to the direction of pulling/pushing.

Using a suitable force measuring device, a starting force shall gradually be applied to the handle until the board starts to move. Repeat five times.

The highest force measured shall be reported as the starting force.

The starting forces shall be measured in the following directions:

a) in the forward direction;

b) in the rearwards direction;

c) in the direction that begins to turn the board.

The maximum forces required for moving the board shall be:

d) the starting force: 160 N;

e) the force required to keep the board moving: 85 N.

11 Test report

The test report shall include at least the following:

a) reference to this document;

b) details of the board tested and the name of the manufacturer;

c) manner of mounting, if applicable;

d) any defects observed before testing;

e) test results according to the applicable clauses;

f) details of any deviations from this document;

g) name and address of the test facility;

h) date of the tests.

12 Installation instructions

If a board needs to be assembled and/or installed, it shall be supplied with assembly and/or installation instructions.

The instructions shall be clear and concise and shall include illustrations to ensure correct assembly and/or installation.

The instructions shall include at least the following information in the language(s) of the country where the boards are sold:

a) warning of danger if incorrectly assembled and/or installed;

b) installation only to be carried out by a competent person;

c) need to check the suitability of the wall/ceiling and to check that the fastening devices will withstand the forces generated.

13 Product information

Product information shall be provided for all types of boards and shall include at least the following:

a) name and address of the manufacturer;

b) type of board;

c) surface properties according to Clause 7 (whiteboards) or Clause 8 (chalkboards) specifying the performance level for:

   1) 7.2/8.2/8.3 Ability to write and erase;

   2) 7.3/8.4 Resistance to scratching;

   3) 7.4/8.5 Resistance to staining by:

i) acetone (analytical grade);

ii) ethanol (analytical grade);

iii) ball pen ink;

iv) fountain pen ink;

v) permanent marker ink (whiteboards only);

vi) stain or paint removers based on organic solvents;

vii) alkaline based cleaning agents (to 10 % concentration with water);

4) 7.5/8.6 Resistance to colour degradation;

d) information regarding maintenance;

e) warnings;

f) following statement: "The surface properties are given as performance Levels 1, 2 or 3, where 3 is the highest".

Annex A
(normative)

Assessment scale for the ability to write - Five levels chalk scale

The following assessment scale shall be used for the assessment of the ability to write as specified in 8.3.2 and 8.3.3.

It shall be noted that if the scale is printed from the original file, it shall be done in true colour and at a resolution of at least 600 dots per inch (dpi).

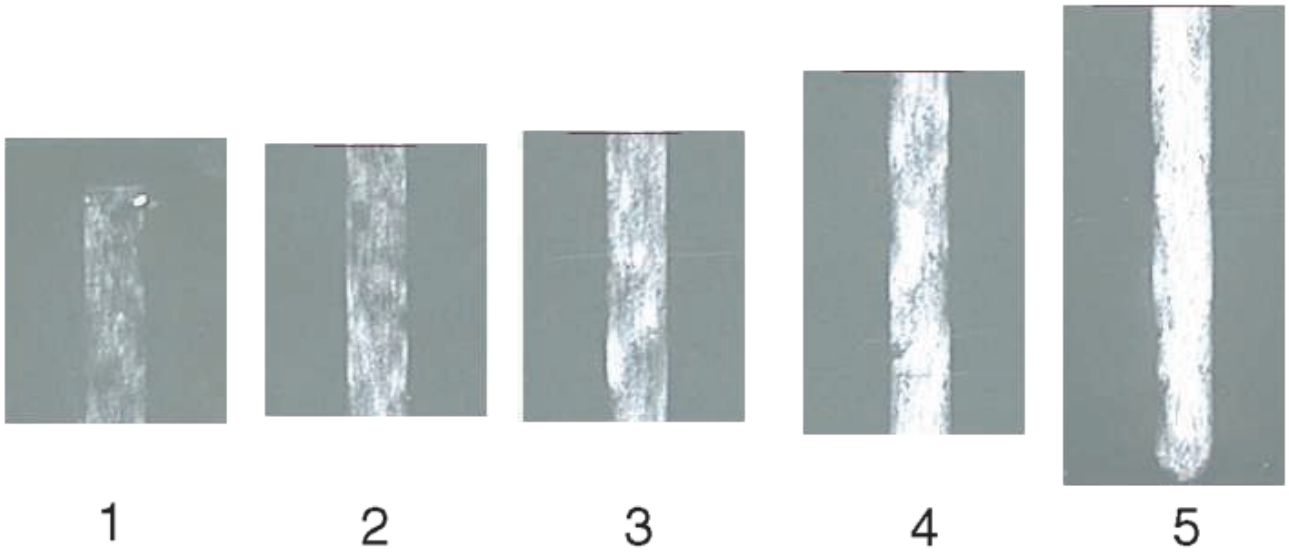


Figure A.1 — Assessment scale for the ability to write - Five levels chalk scale

Annex B
(informative)

Terminology

B.1 **Sides**, the total thickness of the board. (See Figure B.18.)

B.2 **Lineages**, print of lines of various patterns (cross-ruling, ruling, reference marks and so on) on the writing surface. (See Figure B.19.)

B.3 **Core**, the material behind the writing surface providing support. (See Figure B.18.)

B.4 **Stand**, construction, with or without castors, supporting the board.

B.5 **Easel**, supporting stand with one or more legs, telescopic or otherwise.

B.6 **Easel board**, one-sided or two-sided board placed or fixed on an easel.

B.7 **Partition board**, partition made of one or two-sided boards to be used as a separation device in working places. Partition boards can be used free standing or linked together. This includes screens used in an office environment.

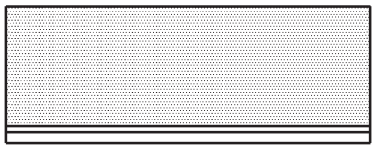


Figure B.1 — Fixed board - Wall-mounted board

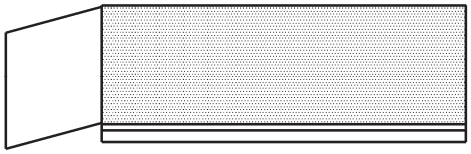


Figure B.2 — Fixed board - Double board

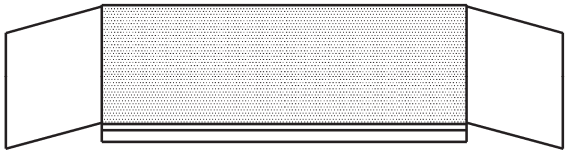


Figure B.3 — Fixed board - Triple board

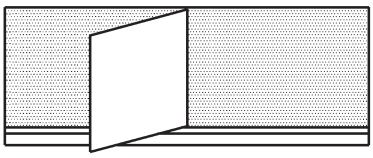


Figure B.4 — Fixed board - Book leaf

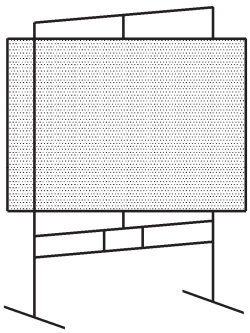


Figure B.5 — Mobile board - Vertical swivel board

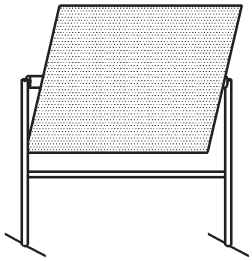


Figure B.6 — Mobile board - Horizontal swivel board

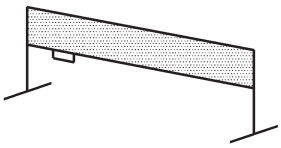


Figure B.7 — Mobile board - Drawing board

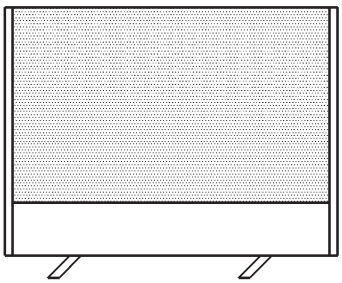


Figure B.8 — Partition board

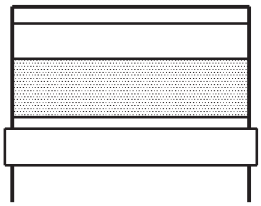


Figure B.9 — Vertical sliding board - To and fro

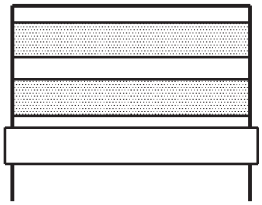


Figure B.10 — Vertical sliding board - Sash board

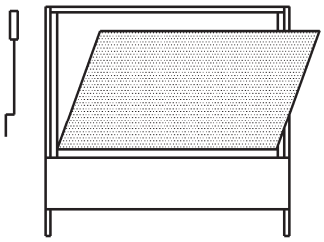


Figure B.11 — Vertical sliding board - Sash board (Ditto) - Equipped with an optional tilted canvas screen for projection

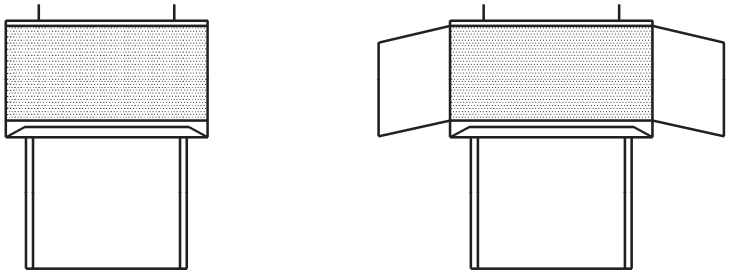


Figure B.12 — Vertical sliding board - Variable height boards

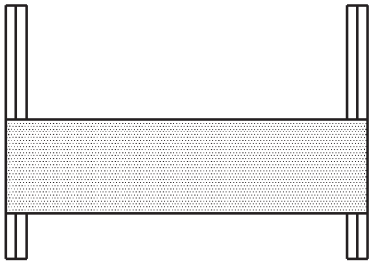


Figure B.13 — Vertical sliding board – Board on pylon

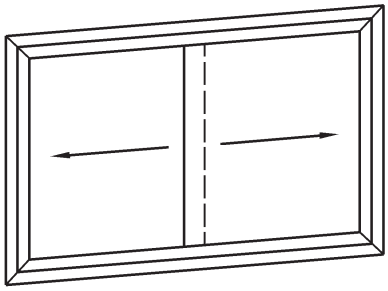


Figure B.14 — Horizontal sliding board

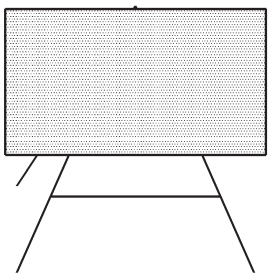


Figure B.15 — Easel board

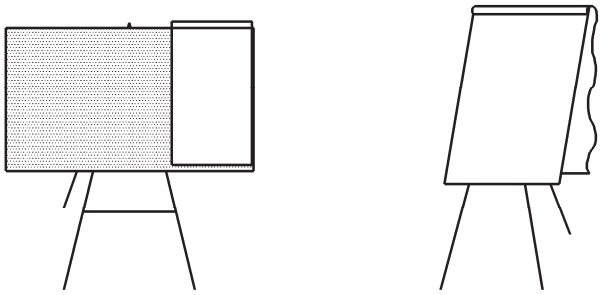


Figure B.16 — Flip chart - Easel mounted board equipped with a paper pad

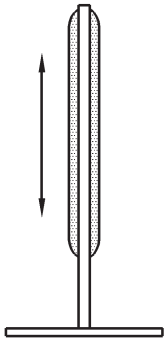
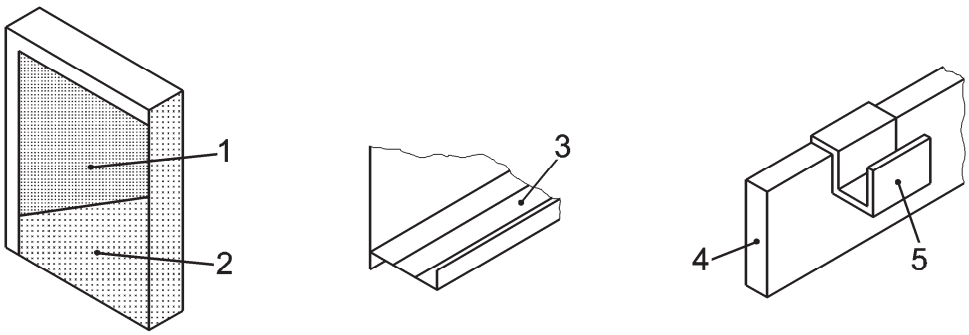


Figure B.17 — Roller board



Key

1 Writing surface
2 Counterface
3 Tray
4 Edge
5 Map holder

Figure B.18 — Sides

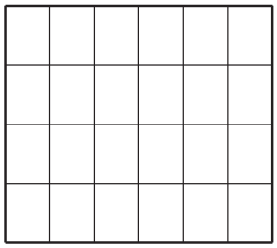
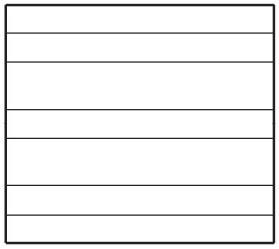
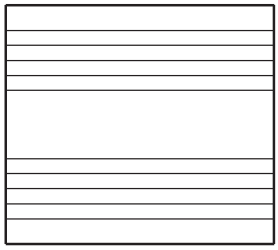
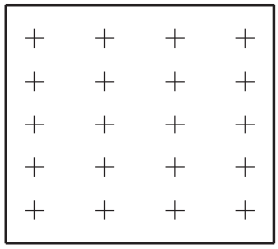
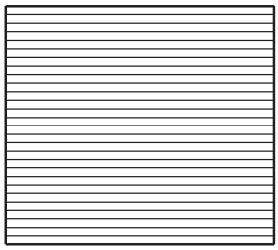
	**a) Cross-ruling (Squares)**
	**b) Nursery school**
	**c) Music lines pattern**
	**d) Cross-marked pattern**
	**e) Rulings**

Figure B.19 is continued over page

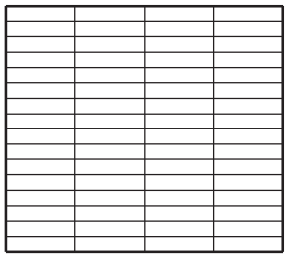
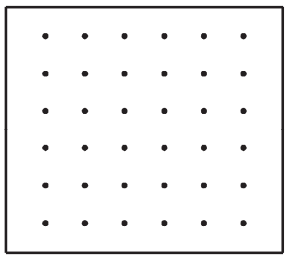
	**f) Seyes lines pattern**
	**g) Point marked pattern**

Figure B.19 — Lineages

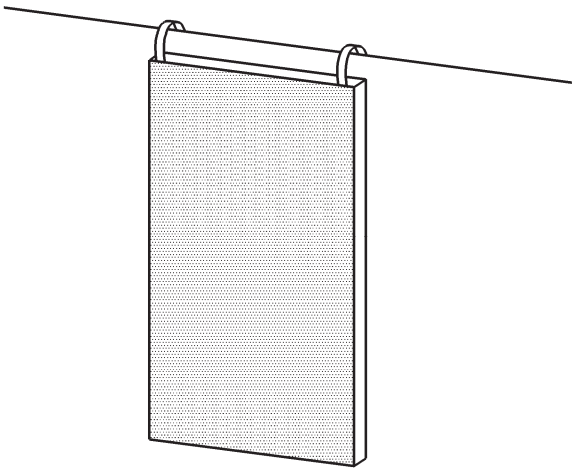


Figure B.20 — Rail based board/system

Annex C
(informative)

Significant technical changes in revised edition of this standard

Significant technical differences between this document and EN 14434:2004 are as follows:

a) deletion of impact test for whiteboards;

b) deletion of impact test for chalkboards.

BS EN
14434:2010

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