BS EN 572-4:2012

BSI Standards Publication

Glass in building — Basic soda lime silicate glass products

Part 4: Drawn sheet glass

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National foreword

This British Standard is the UK implementation of EN 572-4:2012. It supersedes BS EN 572-4:2004 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/520/1, Basic and transformed glass products.

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

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Glass in building - Basic soda lime silicate glass products - Part 4: Drawn sheet glass

Verre dans la construction - Produits de base: verre de silicate sodo-calcique - Partie 4: Verre étiré

Glas im Bauwesen - Basiserzeugnisse aus Kalk-Natronsilicatglas - Teil 4: Gezogenes Flachglas

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 572-4:2012) has been prepared by Technical Committee CEN/TC 129 “Glass in building”, the secretariat of which is held by NBN.

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of an identical text or by endorsement, at the latest by January 2013, and conflicting national standards shall be withdrawn at the latest by January 2013.

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This document supersedes EN 572-4:2004.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This edition is a revision of EN 572-4:2004. The main change in this edition is a new method of determination of squareness.

This European Standard “*Glass in building — Basic soda lime silicate glass products*” consists of the following parts:

— Part 1: Definitions and general physical and mechanical properties;

— Part 2: Float glass;

— Part 3: Polished wired glass;

— Part 4: Drawn sheet glass;

— Part 5: Patterned glass;

— Part 6: Wired patterned glass;

— Part 7: Wired or unwired channel shaped glass;

— Part 8: Supplied and final cut sizes;

— Part 9: Evaluation of conformity/Product standard.

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1 Scope

This European Standard specifies dimensional and minimum quality requirements (in respect of optical and visual faults) for drawn sheet glass, as defined in EN 572-1:2012, for use in building.

This European Standard applies only to drawn sheet glass supplied in rectangular panes and in stock sizes.

EN 572-8 gives information on drawn sheet glass in sizes other than those covered by this European Standard.

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.

EN 572-1:2012, *Glass in building — Basic soda lime silicate glass products — Part 1: Definitions and general physical and mechanical properties*

3 Terms and definitions

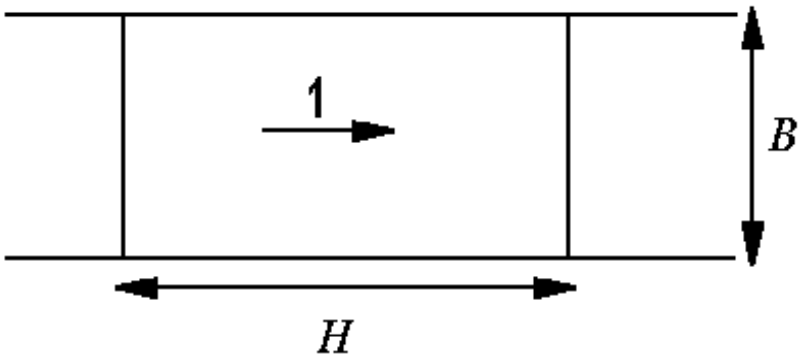
For the purposes of this document, the terms and definitions given in EN 572-1:2012 and the following apply.

3.1
new antique drawn sheet glass
glass produced by the drawn sheet process that has specific surface phenomena intentionally incorporated during the drawing process

3.2
drawn sheet glass for renovation
drawn sheet glass that has been allowed to develop defects, e.g. gaseous, solid inclusions and linear/extended faults, which are representative of historic drawn sheet production

3.3
drawn sheet glass
flat, transparent, clear or tinted soda-lime silicate glass obtained by continuous drawing, initially vertically, of a regular thickness and with the two surfaces fire polished containing a minimum number of visual faults

3.4
length, *H*, and width, *B*
defined with reference to the direction of draw of the glass ribbon as shown in Figure 1



Key
1 direction of draw

Figure 1 — Relationship between length, width and direction of draw

3.5
stock sizes
glass delivered in the sizes given in Table 1

Table 1 — Stock sizes

Dimensions in millimetres

	Nominal length *H*	**Nominal width *B***
New antique drawn sheet glass	1 200 to 2 160	1 450 to 2 160
Drawn sheet glass for renovation	1 200 to 2 160	1 450 to 2 160
Drawn sheet glass	1 600 to 2 160	2 440 to 2 880

3.6
optical fault
fault which leads to distortions in the appearance of objects observed through the glass

3.7
visual fault
fault which alters the visual quality of the glass

Note 1 to entry: Visual faults include spot faults and linear/extended faults.

3.8
spot fault
fault which can be on or in the glass, in the form of gaseous inclusion, solid inclusion, mark or deposit of small size

3.9
gaseous inclusion
fault which consist generally of an elongated bubble of gas

3.10
linear/extended fault
fault which can be on or in the glass, in the form of deposits, marks or scratches that occupy an extended length or area

3.11
concentration, c
sum of the lengths of gaseous inclusions > 1,0 mm in any circle of 400 mm diameter

4 Dimensional requirements

4.1 Thickness

4.1.1 General

The actual thickness shall be the average of four measurements, taken to the nearest 0,01 mm, one taken at the centre of each side. Measurement shall be by means of an instrument of the calliper micrometer type.

4.1.2 Tolerances

The actual thickness rounded to the nearest 0,1 mm shall not vary from the nominal thickness by more than the tolerances shown in Table 2.

Table 2 — Allowable tolerances on nominal thickness

Dimensions in millimetres

Nominal thickness	Tolerances		
	New antique drawn sheet glass	Drawn sheet glass for renovation	Drawn sheet glass
2		± 0,2	± 0,2
2,8	± 0,3		
3		± 0,3	± 0,2
4	± 0,3	± 0,3	± 0,2
5		± 0,3	± 0,3
6	± 0,3	± 0,3	± 0,3
8		± 0,4	± 0,4
10			± 0,5
12			± 0,6

4.2 Length, width and squareness

The tolerances, t, on nominal dimensions length, H, and width, B, are ± 5 mm.

The limits of squareness are described by the difference between diagonals. Such limits are given in Table 3.

Table 3 — Limit on the difference between diagonals

Dimensions in millimetres

Nominal glass thickness	Limit on the difference between diagonals		
	Stock sizes		
	$(H, B) \leq 1\,500$	$1\,500 < (H, B) \leq 3\,000$	$(H, B) > 3\,000$
2, 2,8, 3, 4, 5 and 6	3	4	5
8, 10, 12	4	5	6

5 Quality requirements

5.1 General

Drawn sheet glass (3.3) is classified according to both optical and visual faults.

New antique sheet glass (3.1) and sheet glass for renovation (3.2) are classified according to their levels of visual faults.

5.2 Methods of observation and measurement

5.2.1 Optical faults of drawn sheet glass

A reticulated screen is observed through the pane of glass to be examined.

The screen should have approximately the same dimensions as the pane of glass to be examined. It should consist of a matt black background (reflection coefficient between 0,2 and 0,4) having a network of lines 10 mm thick of a colour contrasting clearly with the background. The network of lines should have the appearance of a wall of bricks whose size is 200 mm × 70 mm, each line offset by 100 mm from the lines above and below.

The lighting of the screen should correspond to diffuse natural or artificial daylight.

Place the pane of glass to be examined vertically 3 m from the screen. Arrange the point of observation 1 m from the glass, keeping the direction of observation perpendicular to the screen. Arrange the pane of glass to form an angle of 45° with the plane of the screen.

Place the pane of glass to be examined vertically 3 m from the screen. Arrange the point of observation 1 m from the glass, keeping the direction of observation perpendicular to the screen. Arrange the pane of glass to form an angle of 45° with the plane of the screen.

View the screen through the glass and note any disturbing distortions to the pattern.

5.2.2 Visual faults

5.2.2.1 Spot faults

Measure the largest dimension (diameter or length) of these faults with a micrometer with graduations in tenths of a millimetre.

Make note of the number, dimensions and concentration of spot faults.

5.2.2.2 Linear/extended faults

The glass pane to be examined is illuminated in conditions approximating to diffuse daylight and is observed in front of a matt grey screen.

Place the pane of glass to be examined vertically in front of the screen and parallel to it. Arrange the point of observation 2 m from the glass, keeping the direction of observation normal to the glass surface.

View the pane of glass, and note the presence of visually disturbing faults.

5.3 Acceptance levels

The acceptance levels are summarised in Tables 4 and 5:

Table 4 — Summary of acceptance levels for new antique drawn sheet glass and for drawn sheet glass for renovation

Faults	Acceptance criteria
OPTICAL	Not applicable
VISUAL	
1 Spot faults	
1.1 Gaseous inclusions • ≤ 5 mm • 5 mm ≤ 30 mm • > 30 mm	 Acceptable 2/m² Not acceptable
1.2 Solid spot faults • ≤ 2 mm • 2 mm ≤ 5 mm • > 5 mm	 1 per m² / 5 per m² if tinted 1 per m² Not acceptable
2 Linear/extended faults • ≤ 10 mm • 10 mm ≤ 50 mm • > 50 mm	 Acceptable 2/m² Not acceptable

Table 5 — Summary of acceptance levels for drawn sheet glass

Faults	Acceptance criteria
OPTICAL	No disturbing distortions in observation conditions given under 5.2.1
VISUAL	
1 Spot faults	
1.1 Gaseous inclusions ≤ 1 mm	Acceptable
1.2 Gaseous inclusions > 1 mm acceptable if	
• maximum length	≤ 6 mm
• sum of lengths/m²	≤ 26 mm
• maximum number/m²	6
1.3 Concentration, c	≤ 14 mm
1.4 Other spot faults ≤ 1 mm	1 per m²
1.5 Remark concerning all spot faults	In the case of a single fault per m², the maximum dimension may be increased by 25 %.
2 Linear/extended faults	The allowable number of faults is an average of 0,05 faults in 20 m² of glass related to at least 20 tonnes.

6 Designation

Sheet glass in compliance with this European Standard shall be designated respectively by

— type, according to the definitions (see Clause 3),

— reference to this European Standard,

— tint (manufacturer's reference) or clear,

— nominal thickness in mm,

— nominal length, H, and width, B, in mm.

EXAMPLE Drawn sheet glass, clear, thickness 3 mm, length 1,2 m, width 1,45 m, intended for renovation in buildings, is designated as follows:

Drawn sheet glass for renovation - EN 572-4 - clear, 3 mm, 1 200 mm x 1 450 mm

Bibliography

[1] EN 572-8, *Glass in building — Basic soda lime silicate glass products — Part 8: Supplied and final cut sizes*

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