BS EN 572-2:2012

BSI Standards Publication

Glass in building — Basic soda lime silicate glass products

Part 2: Float glass

bsi.

...making excellence a habit.™

National foreword

This British Standard is the UK implementation of EN 572-2:2012. It supersedes BS EN 572-2:2004 which is withdrawn.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.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

ISBN 978 0 580 76524 7

ICS 81.040.20

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 July 2012.

Amendments issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 572-2

July 2012

ICS 81.040.20

Supersedes EN 572-2:2004

English Version

Glass in building - Basic soda lime silicate glass products - Part 2: Float glass

Verre dans la construction - Produits de base : verre de silicate sodo-calcique - Partie 2: Glace

Glas im Bauwesen - Basiserzeugnisse aus Kalk-Natronsilicatglas - Teil 2: Floatglas

This European Standard was approved by CEN on 11 May 2012.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword **3**

1 Scope **4**

2 Normative references **4**

3 Terms and definitions **4**

4 Dimensional requirements **5**
4.1 Thickness **5**
4.1.1 General **5**
4.1.2 Tolerances **6**
4.2 Length, width and squareness **6**

5 Quality requirements **7**
5.1 General **7**
5.2 Methods of observation and measurement **7**
5.2.1 Optical faults **7**
5.2.2 Visual faults **8**
5.3 Acceptance levels **9**
5.3.1 Optical faults **9**
5.3.2 Spot faults **9**

6 Designation **10**

Annex A (normative) **Method for measuring spot fault size (including halo)** **11**
A.1 Conditions of observation **11**
A.2 Measurement of the size of the spot fault including the halo **12**

Bibliography **14**

Foreword

This document (EN 572-2:2012) 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 572-2:2004.

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 572-2:2004. The main changes in this edition are:

a) an enlargement of the scope to oversize plates;,

b) a new method of determination of squareness;,

c) a new method of measurement for spot fault (including halo) and an adaptation of the related requirements.

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.

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

1 Scope

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

This European Standard applies only to float glass supplied in jumbo sizes (see Note 1), split sizes (see Note 2) and oversize plates (see Note 3).

NOTE 1 Jumbo sizes — PLF (plateau largeur de fabrication) — Bandmasse.

NOTE 2 Split sizes — DLF (dimension largeur de fabrication) — Geteilte Bandmasse.

NOTE 3 Oversize plates – these are plates where the nominal length, H, is greater than 6 000 mm. These plates are produced to special order.

EN 572-8 gives information on float glass in sizes (i.e. supplied and final cut sizes) other than those covered by this European Standard.

2 Normative references

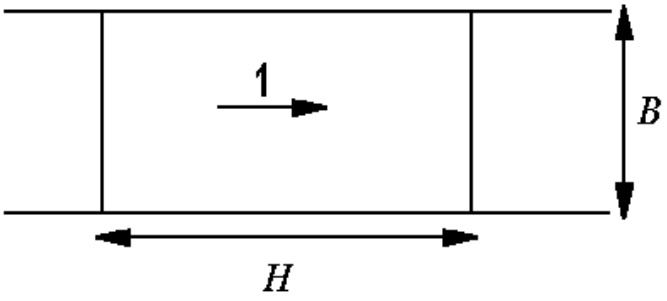
The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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



Key
1 direction of draw

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

3.2
jumbo sizes
glass delivered in the following sizes:

– nominal length H: 4 500 mm, 5 100 mm or 6 000 mm;

– nominal width B: 3 210 mm

Note 1 to entry: The usual width is 3 210 mm. Exceptional production requirements can cause this to be reduced but the nominal width is never less than 3 150 mm.

3.3
split sizes
glass delivered in the following size ranges:

– nominal length H: 1 000 mm to 2 550 mm;

– nominal width B: 3 210 mm

Note 1 to entry: The usual width is 3 210 mm. Exceptional production requirements can cause this to be reduced but the nominal width is never less than 3 150 mm.

3.4
optical fault
fault which leads to distortions in the appearance of objects observed through the glass

3.5
visual fault
fault which alters the visual quality of the glass

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

3.6
spot fault
nucleus which is generally accompanied by a halo of distorted glass

Note 1 to entry: Spot faults can be solid inclusions, bubbles, etc.

3.7
halo
area locally distorted, generally around a point defect

3.8
linear/extended faults
faults which can be on or in the glass, in the form of deposits, marks or scratches that occupy an extended length or area

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 1.

Table 1 — Tolerances on nominal thickness

Dimensions in millimetres

Nominal thickness	Tolerances
2	± 0,2
3	± 0,2
4	± 0,2
5	± 0,2
6	± 0,2
8	± 0,3
10	± 0,3
12	± 0,3
15	± 0,5
19	± 1,0
25	± 1,0

4.2 Length, width and squareness

The tolerances 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 2.

Table 2 — Limit on the difference between diagonals

Dimensions in millimetres

Nominal glass thickness, d	Limit on the difference between diagonals			
	Jumbo sizes	Splits		
		$(H, B) \leq 1\,500$	$1\,500 < (H, B) \leq 3\,000$	$(H, B) > 3\,000$
2, 3, 4, 5, 6	10	3	4	5
8, 10, 12	10	4	5	6
15, 19, 25	10	5	6	8

For oversize plates, the manufacturer shall be consulted for tolerances on dimensions and on the difference between diagonals.

5 Quality requirements

5.1 General

One quality level is considered in this European Standard. This is determined by the evaluation of optical and visual faults.

The manufacturer(s) shall be consulted if higher levels of quality are required.

5.2 Methods of observation and measurement

5.2.1 Optical faults

A screen bearing an assembly of black and white stripes (zebra) is observed through the glass to be examined.

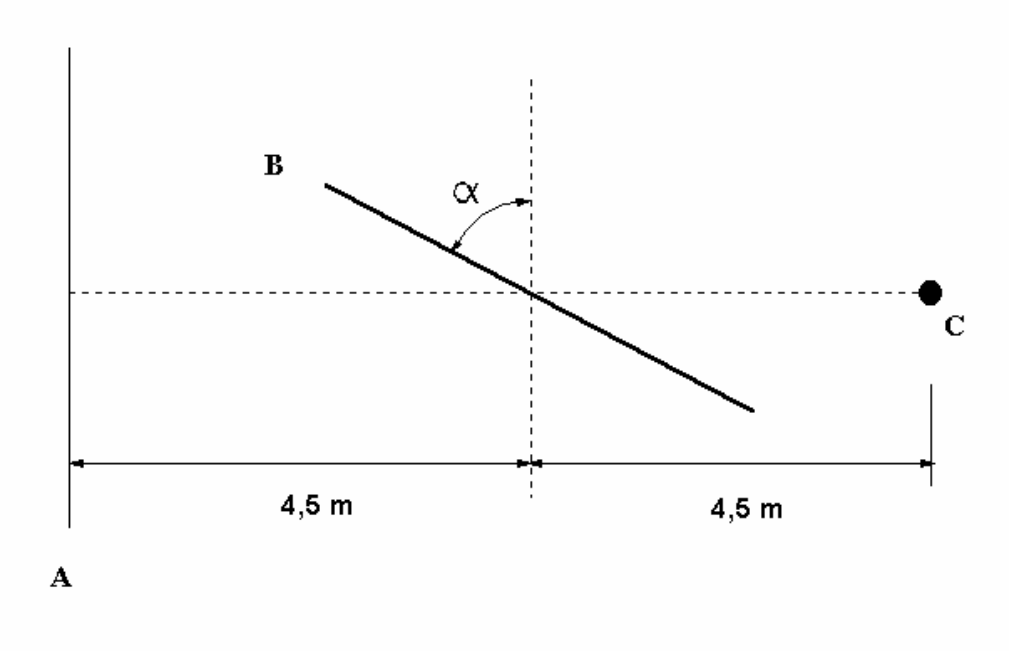
The usual size of screen is between 1 500 mm $\times$ 1 150 mm and 2 500 mm $\times$ 2 000 mm. It consists of a translucent white background with parallel black stripes, 25 mm wide and 25 mm apart, inclined at 45°.

The screen is uniformly lit from behind with white daylight fluorescent tubes. The illuminance of the screen measured 1 m from it shall be between 400 lx and 1 200 lx. The measurement shall be taken at a point on a line normal to the centre of the screen. The walls of the test room should be painted with a dark non-reflective paint having a diffuse reflection $\leq$ 0,10.

The glass to be examined shall be held vertically in a support frame. The centre of the glass shall be at a distance of 4,5 m from the screen and on a line normal to the centre of the screen. The glass shall be capable of being rotated around a vertical axis. The glass shall be held with the direction of draw of the glass vertical. Appropriate critical viewing angles, α, formed by the glass and the screen should be indicated (see Figure 2). The observer stands still at a distance of 9 m from the centre of the screen on a line passing through the axis of rotation.

The glass being examined is rotated from an angle α = 90° until there is no longer any distortions of the lines on the screen. The angle, α (see Figure 2), at which this occurred is noted.

The glass sample taken, with a length, H, between 300 mm and 500 mm and a width, B, of 3 210 mm, is split into four. This gives samples of a width of approximately 800 mm. The distortion is measured in zone D and zone d as shown in Figure 3.



Key

A screen
B glass sample
C observer

Figure 2 — Plan view showing set up of zebra test

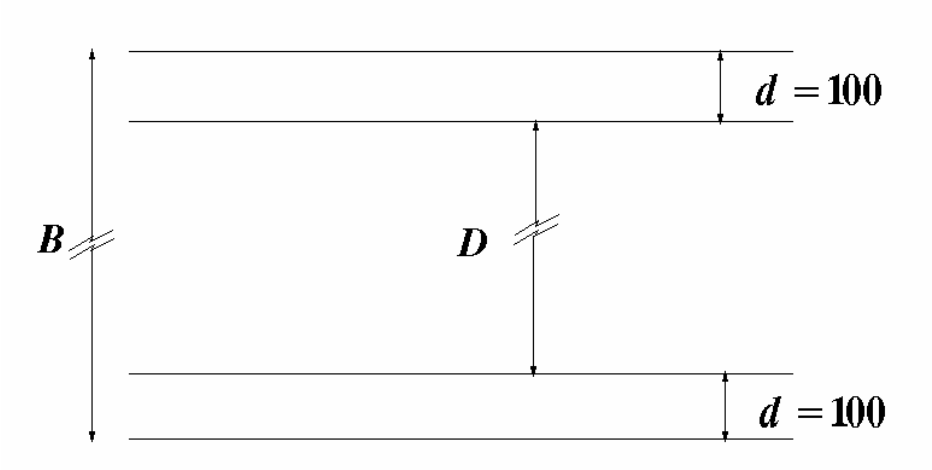


Figure 3 — Zones for the measurement of optical distortion

5.2.2 Visual faults

5.2.2.1 Spot faults

A spot fault consists of a nucleus generally accompanied by a halo. The categories of spot faults are defined by the maximum dimension of the spot fault, measured according to the method defined in Annex A. The

dimension of the spot fault is the dimension of the halo or, in case of absence of halo, the dimension of the nucleus.

Note the number of spot faults and the biggest dimension of the halo generated by the nucleus and relate to the four categories of spot faults as shown in Table 3.

Table 3 — Categories of spot faults

Dimensions in millimetres

Category	Dimension of spot fault
A	> 0,6 and ≤ 1,5
B	> 1,5 and ≤ 3,0
C	> 3,0 and ≤ 9,0
D	> 9,0

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 black screen (reflection coefficient between 0,2 and 0,4).

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

5.3.1 Optical faults

When viewed under the conditions of observation as described in 5.2.1, the angle, α, at which there is no disturbing distortion shall be not less than the appropriate critical viewing angle given in Table 4.

Table 4 — Critical viewing angles

Nominal glass thickness mm	Angle α in zone D degrees	Angle α in zone d degrees
2	45	40
3 and greater	50	45

5.3.2 Spot faults

5.3.2.1 Jumbo sizes

The allowable numbers of the categories of faults (see Table 3) are shown in Table 5.

Table 5 — Acceptance levels for spot faults in jumbo sizes

Category of fault	Average per pane	Maximum in any pane
A	any number	any number
B	3	5
C	0,6	1
D	0,05	1, but faults that cause breakage are not allowed
NOTE The word "average" is intended to indicate a cumulative average over at least 20 tons of glass.		

5.3.2.2 Split sizes

The allowable numbers of the categories of faults (see Table 3) are shown in Table 6.

Table 6 — Acceptance levels for spot faults in split sizes

Category of fault	Average per 20 m²	Maximum in any pane
A	any number	any number
B	3	2
C	0,6	1
D	0,05	1, but faults that cause breakage are not allowed
NOTE The word "average" is intended to indicate a cumulative average over at least 20 t of glass.		

For oversize plates, the manufacturer shall be consulted regarding the allowable number of faults.

5.3.3 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 tons.

6 Designation

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

— type,

— reference to this European Standard,

— tint (manufacturer's reference) or clear,

— nominal thickness, in mm,

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

— reference to this European Standard.

EXAMPLE Float glass clear, thickness 3 mm, length 6,00 m, width 3,21 m, intended for use in buildings, is designated as follows:

Float glass - EN 572-2 – clear, 3 mm, 6 000 mm × 3 210 mm

Annex A
(normative)

Method for measuring spot fault size (including halo)

A.1 Conditions of observation

The method for measuring spot fault size including halo is based on the projection technique, using a point source projector and a screen (see Figure A.1).

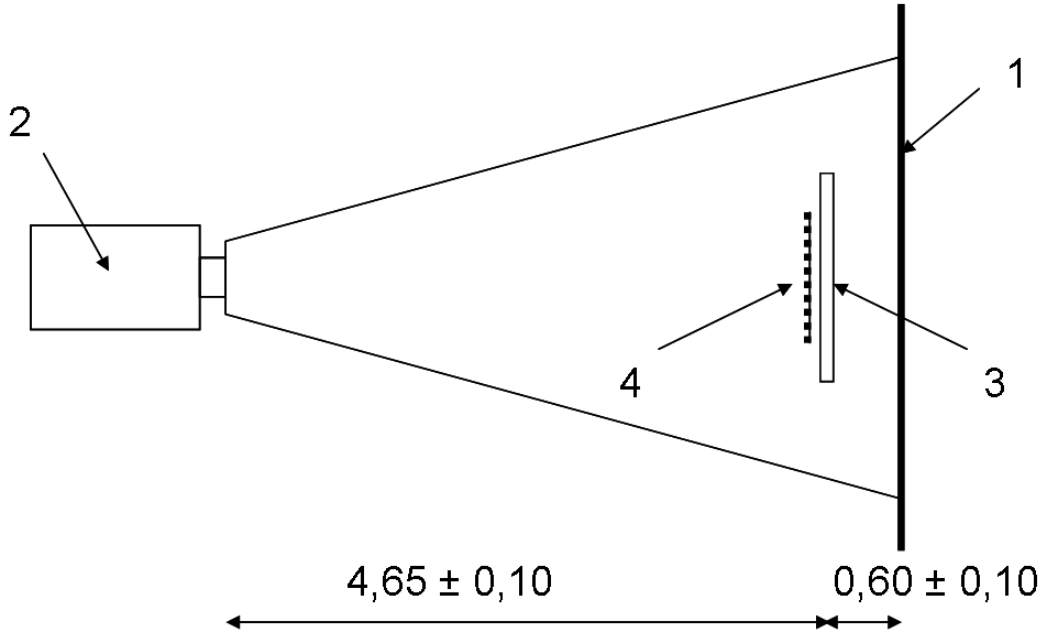
A projector with a lamp of the type OSRAM HBO 200 W[1)] is placed at (4 650 ± 100) mm from the projection screen.

The glass or sample containing the spot fault is placed at (600 ± 100) mm from a projection screen, in the light beam of the projector.

The sample is maintained parallel to the screen. The spot fault image (nucleus and halo) appears on the screen.

1) OSRAM Lamp HBO 200 W is the trade name of a product supplied by OSRAM. This information is given for the convenience of users of this European Standard and does not constitute an endorsement by CEN of the product named. Equivalent products may be used if they can be shown to lead to the same results.

Dimensions in metres



Key

1 screen
2 point source projector
3 glass sample with spot fault
4 distortion gauge

Figure A.1 – Method of observation of the sample

A.2 Measurement of the size of the spot fault including the halo

Place on the surface of the glass (where the spot fault is located) a distortion gauge (plastic transparent sheet on which circular black spots with different diameters from 0,6 mm to 9,0 mm are reproduced – see Figure A.2).

Search the circular spot covering the defect which conducts to the elimination of the spot fault image on the screen.

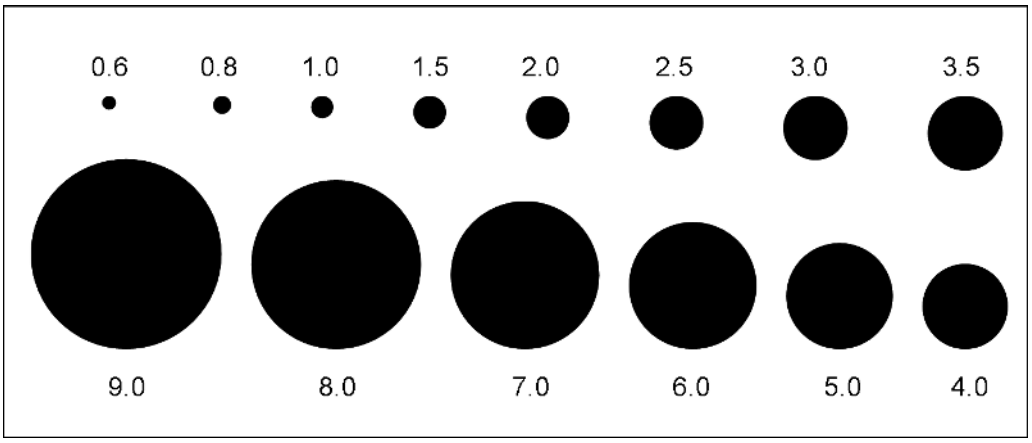


Figure A.2 — Example of distortion gauge with printed black spots

The spot fault size including halo is the diameter of this circular black spot.

NOTE 1 For greater accuracy, a calliper could be used instead of the plastic distortion gauge.

NOTE 2 Any other method that is better or equivalent may be used.

Bibliography

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

This page deliberately left blank

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards -based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email bsmusales@bsigroup.com.

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Copyright

Useful Contacts:

Customer Services
Tel: +44 845 086 9001
Email (orders): orders@bsigroup.com
Email (enquiries): cservices@bsigroup.com

Subscriptions
Tel: +44 845 086 9001
Email: subscriptions@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

bsi.

...making excellence a habit.™