

BS 8605-1:2014



BSI Standards Publication

External timber cladding

Part 1: Method of specifying

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Published by BSI Standards Limited 2014

ISBN 978 0 580 81760 1

ICS 79.080

The following BSI references relate to the work on this document:

Committee reference B/543

Draft for comment 14/30277336 DC

Publication history

First published December 2014

Amendments issued since publication

Date	Text affected
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Foreword

Publishing information

This part of BS 8605 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 December 2014. It was prepared by Panel B/543/-/2, *External timber cladding*, under the authority of Technical Committee B/543, *Round and sawn timber*. A list of organizations represented on this committee can be obtained on request to its secretary.

Relationship with other publications

BS 8605 is published in two parts:

- Part 1: *Method of specifying*; and
- Part 2: *Code of practice for design and installation*.

Some types of external timber cladding are covered by harmonized European Standards BS EN 14915 or BS EN 13986. This British Standard offers suppliers and designers additional information relevant to the UK's climate and construction practices.

Use of this document

It has been assumed in the preparation of this part of BS 8605 that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

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

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

Introduction

External timber cladding assemblies can comprise several types of timber or wood-based components and can be used in a variety of ways. This complexity can cause difficulties when specifying because:

- suppliers need to know what performance characteristics are important and which of these should be declared in product documentation;
- designers need to know what performance characteristics need to be taken into account and which should form part of a cladding specification.

Several factors need to be considered when determining which performance characteristics should be specified. These vary depending upon the type of timber cladding: boards, for example, involve different considerations from shingles. There is, however, no single source of information that suppliers and designers can use when preparing product documentation or specifications.

- External timber cladding made of boards or wood-based panels is within the scope of harmonized standards BS EN 14915 and BS EN 13986, respectively. This means that where a characteristic is covered by one of these standards, manufacturers need to document their products in accordance with that standard. Some provisions only apply in specific circumstances. There is no harmonized standard for shingles and shakes.
- Neither harmonized standard covers all of the performance requirements that apply to external timber cladding. Some additional requirements are given in product standards BS EN 14519, BS EN 14951 and BS EN 15146, although not all criteria are covered.

Accordingly, this standard complements the harmonized standards and product standards for external timber cladding by:

- listing the main performance requirements that might be applicable to external timber cladding in the UK;
- specifying requirements for areas that are outside the scope of harmonized standards; and
- giving guidance on requirements that are covered by BS EN 14915 or BS EN 13986.

As a method of specifying, this part of BS 8605 gives verifiable performance characteristics, which can be controlled by product manufacturers and distributors. Issues, such as cavity ventilation, that become applicable during design and installation are addressed in BS 8605-2.

1 Scope

This part of BS 8605 describes methods of specifying the characteristics of external timber cladding products from which selection has to be made and for which values might have to be agreed between the purchaser and manufacturer.

This part of BS 8605 complements harmonized standards BS EN 14915 and BS EN 13986. It lists all performance requirements that might apply to external timber cladding in the UK and provides a method of specifying those requirements that are outside the scope of those standards, but which are relevant to the UK's climate and construction practices.

This part of BS 8605 specifies characteristics of components at the time they are transferred to the purchaser. It is intended for use by specifiers of external timber cladding components.

NOTE 1 Suppliers can refer to this British Standard for guidance when manufacturing external timber cladding components and preparing technical documentation.

This part of BS 8605 applies to external timber cladding designed to function as a rainscreen. The types of external timber cladding components covered by this standard are boards, shingles and shakes, and wood-based panels. Requirements are listed separately for each of these product types.

NOTE 2 BS 8605-2 gives guidance for designers of external timber cladding assemblies and installers of such products on site. It also gives guidance on the selection of other components in the external timber cladding assembly. These include, for example, cavity barriers, breather membranes, fasteners and flashings.

This part of BS 8605 does not apply to components to be used as non-rainscreen cladding, roofing, solar shading, pressure equalized cladding, double skin facades, curtain walling or any kind of wall covering intended solely for interior use. Nor does it apply to cladding made of composite materials such as fibre cement board or wood-plastic composites.

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.

Standards publications

BS 8605-2, *External timber cladding – Part 2: Code of practice for design and installation*¹⁾

BS EN 301, *Adhesives, phenolic and aminoplastic, for load-bearing timber structures – Classification and performance requirements*

BS EN 350-1, *Durability of wood and wood-based products – Natural durability of solid wood – Part 1: Guide to the principles of testing and classification of the natural durability of wood*

BS 476 (all parts), *Fire tests on building materials and structures*

BS EN 635-2, *Plywood – Classification by surface appearance – Part 2: Hardwood*

BS EN 635-3, *Plywood – Classification by surface appearance – Part 3: Softwood*

BS EN 927-1, *Paints and varnishes – Coating materials and coating systems for exterior wood – Part 1: Classification and selection*

BS EN 927-2, *Paints and varnishes – Coating materials and coating systems for exterior wood – Part 2: Performance specification*

BS EN 1310, *Round and sawn timber – Method of measurement of features*

BS EN 13183-1, *Moisture content of a piece of sawn timber – Part 1: Determination by oven dry method*

BS EN 13183-2, *Moisture content of a piece of sawn timber – Part 2: Estimation by electrical resistance method*

BS EN 13183-3, *Moisture content of a piece of sawn timber – Part 3: Estimation by capacitance method*

BS EN 13307-1, *Timber blanks and semi-finished profiles for non-structural uses – Part 1: Requirements*

¹⁾ In preparation.

BS EN 13501-1:2007+A1:2009, *Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests*

BS EN 13556, *Round and sawn timber – Nomenclature of timbers used in Europe*

BS EN 13647, *Wood flooring and wood panelling and cladding – Determination of geometrical characteristics*

BS EN 13986:2004, *Wood-based panels for use in construction – Characteristics, evaluation of conformity and marking*

BS EN 14519, *Solid softwood panelling and cladding – Softwood machined profiles with tongue and groove*

BS EN 14915, *Solid wood panelling and cladding – Characteristics, evaluation of conformity and marking*

BS EN 14951, *Solid hardwood panelling and cladding – Machined profiles elements*

BS EN 15146, *Solid softwood panelling and cladding – Machined profiles without tongue and groove*

BS EN ISO 2808, *Paints and varnishes – Determination of film thickness*

ISO 13061-2, *Physical and mechanical properties of wood – Test methods for small clear specimen – Part 2: Determination of density for physical and mechanical tests*

PAS 2021, *Exercising due diligence in establishing the legal origin of timber and timber products – Guide to Regulation (EU) No 995/2010*

Other publications

[N1] WOOD PROTECTION ASSOCIATION. *WPA manual: Industrial wood preservation, specification and practice*, 2nd edition. Castleford: WPA, 2012.

3 Terms and definitions

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

3.1 air barrier

layer of the construction that provides the primary resistance to the passage of air through the wall

[SOURCE: BS 8298-1:2010, 3.1]

NOTE 1 The air barrier is part of the backing wall and is normally located near the inner face of the building envelope. In new buildings, it is typically a dedicated air-impervious layer (e.g. a vapour control layer). In existing buildings, it is generally a non-dedicated layer comprising the air-impervious components that are already fitted around the inner face of the building envelope.

NOTE 2 The permeability of the air barrier can affect wind suction on the cladding. See BS 8605-2 for guidance.

3.2 arris

line of intersection of two faces or a face and an edge

[SOURCE: BS 844-3:1995 3.19]

NOTE 1 The term applies to internal and external corners of components.

NOTE 2 Sharp arrises can reduce the service life of coating systems.

3.3 biodeterioration

spoilage of appearance and/or loss of strength properties caused by biological agents

[SOURCE: BS EN 1001-2:2005, 1.5]

3.4 bow

lengthwise curvature of a piece of sawn timber normal to the face

[SOURCE: ISO 24294:2013, 5.34.1]

3.5 breather layer

layer of a construction that is designed to resist the passage of liquid water from one part of a construction to another, whilst permitting the passage of water vapour in either direction

[SOURCE: BS 8298-1:2010, 3.8]

NOTE 1 The breather layer does not function as the air barrier (see 3.1).

NOTE 2 The breather layer comprises a breather membrane or other product having similar performance.

3.6 cavity

air layer within a building envelope located between the external cladding and inner components such as the breather layer

NOTE Cavities can be unventilated, slightly ventilated or ventilated as defined in BS EN ISO 6946. Not all cavity types are suitable for use with external timber cladding. See BS 8605-2 for further information.

3.7 cavity barrier

construction provided to close a concealed space against penetration of smoke or flame, or provided to restrict the movement of smoke or flame within such a space

[SOURCE: BS 8298-1:2010, 3.11]

3.8 cladding

external covering to a structure

[SOURCE: BS 8298-1:2010, 3.12]

3.9 cleft timber

timber brought to approximately the required cross-section by cleaving along the grain

3.10 closed jointed

external timber cladding that, after installation, has overlapping or force fitted joints between each component

3.11 coating system

combination of coating materials, which are to be applied or have been applied to the face of a joinery part

[SOURCE: BS EN 14220:2006, 3.7]

3.12 concealed face

face of a joinery part which, after installation of the joinery is completed, is permanently concealed by other parts of the joinery product, or by other parts or other elements, including materials such as veneer, plastic or metal

[SOURCE: BS EN 14220:2006, 3.2]

NOTE Application of a surface coating does not constitute concealment.

3.13 counter batten

vertical support batten fixed to the building's structure and carrying a horizontal support batten

3.14 cup

curvature of a piece of sawn timber across the width of the face

[SOURCE: ISO 24294:2013, 5.34.3]

3.15 equilibrium moisture content

moisture content at which wood neither gains nor loses moisture to the surrounding air

[SOURCE: BS EN 1995-1-1:2004+A1:2008, 1.5.2.2]

NOTE The equilibrium moisture content is on based upon temperature and relative humidity. It is used to characterize the moisture content that timber attains in stable atmospheric conditions (e.g. inside buildings). It has limited relevance in conditions where timber is exposed to frequent or sustained rainfall.

3.16 external timber cladding

timber or wood-based materials used as cladding

NOTE External timber cladding is used in many parts of the world and several methods have been developed in response to different climates. The most important difference is whether the cladding is mounted directly on a building's structure or is separated from it by a cavity to form a rainscreen.

3.17 external timber cladding assembly

all components that go to make up external timber cladding, its support assembly and associated items

NOTE The assembly could include, for example, cladding, support battens, breather membrane, fasteners, cavity barriers, flashings and vermin mesh.

3.18 extractives

compounds present in timber which are extraneous to its structure and can be extracted using water or organic solvents

NOTE Extractives include compounds that are essential to the tree's metabolic activities and others that help prevent attack by wood destroying organisms. The latter types of compound are mainly found in heartwood.

3.19 fibre saturation point (FSP)

state of a piece of timber when the cell walls are saturated with moisture but no moisture exists in the cell cavities

[SOURCE: BS EN 1001-2:2005, 1.15]

NOTE In most temperate timber species the FSP occurs at a moisture content of approximately 27% to 32%; tropical timbers tend to have a FSP between 19% and 26%.

3.20 fungal decay

biodeterioration caused by fungi

[SOURCE: BS EN 844-12:2001, 12.45]

3.21 grade

established classification of timber and wood-based panels according to quality or performance

[SOURCE: BS 6100-8:2007, 08 17012]

3.22 green timber

timber that has not been dried to or below the fibre saturation point

[SOURCE: BS EN 1001-2:2005, 1.18]

3.23 hardwood

wood of trees of the botanical group dicotyledons

[SOURCE: BS EN 1001-2:2005, 1.20]

NOTE The term "hardwood" is historical and does not imply that timber from these species is necessarily harder than from a softwood species, nor should it be assumed that all hardwood species have a high natural durability.

3.24 heartwood

inner zone of wood that, in the growing tree, has ceased to contain living cells or to conduct sap

[SOURCE: BS EN 350-1:1994, 3.3]

3.25 insect attack

biodeterioration caused by insects

[SOURCE: BS EN 844-12:2001, 12.46]

3.26 knot

portion of a branch embedded in wood

[SOURCE: BS EN 844-8:1997, 8.1]

3.27 longitudinal shrinkage

shrinkage of timber in a direction parallel to the fibres

[SOURCE: BS EN 844-12:2001, 12.15]

3.28 modified wood

wood or wood-based product whose properties have been altered by a wood modification process

NOTE For the purposes of this British Standard, modified wood comprises wood that has been modified across the entire cross section of the component. Components that have been subject to "envelope treatments" or have untreated zones (e.g. heartwood) are not within the scope of this standard.

3.29 moisture content

mass of moisture in wood expressed as a percentage of its oven-dry mass

[SOURCE: BS EN 1001-2:2005, 1.27]

3.30 movement

dimensional changes that take place when timber, which has been dried to a moisture content below the FSP, is subjected to changes in atmospheric conditions

NOTE Movement tends to be linear with moisture within a moisture content range of 5% to 20%.

3.31 movement class

classification of timber species according to their movement values

NOTE Movement classes give an approximate ranking of the dimensional stability of timber species but cannot be used to accurately predict the range of dimensional change in external timber cladding. This is because, firstly, the moisture content of timber cladding is often above 20% and, secondly, knots and other features of timber can have a greater influence on distortion than the movement class.

3.32 movement gap

gap provided between adjacent cladding components to accommodate the anticipated movement

3.33 natural durability

inherent resistance of wood to attack by wood-destroying organisms

[SOURCE: BS EN 1001-2:2005, 3.1]

NOTE Only heartwood may be classified as durability class 1 to class 4.

3.34 open jointed

external timber cladding that, after installation, has clear longitudinal gaps between each component

3.35 preservative treatment

treatment with wood preservative to improve the resistance of wood to biodeterioration

[SOURCE: BS EN 1001-2:2005, 4.66]

3.36 pressure equalization

method of sealing and compartmenting the wall that enables the rapid minimization of differential air pressure between cold facade cavities or glazing rebates and the external air

[SOURCE: BS EN 13119:2007, 2.19]

NOTE Pressure equalization (also known as pressure difference moderation) is mainly associated with non-porous cladding materials such as a sheet metal. This is because moisture penetrates porous cladding materials, such as brick or timber, even if full pressure equalization is achieved. In the case of external timber cladding this moisture has to be removed by drainage and vertical through-ventilation of the cavity. Pressure difference moderation is ineffective in these circumstances.

3.37 purchaser

owner of the building works

NOTE The purchaser could be represented by a consultant (e.g. architect) or agent.

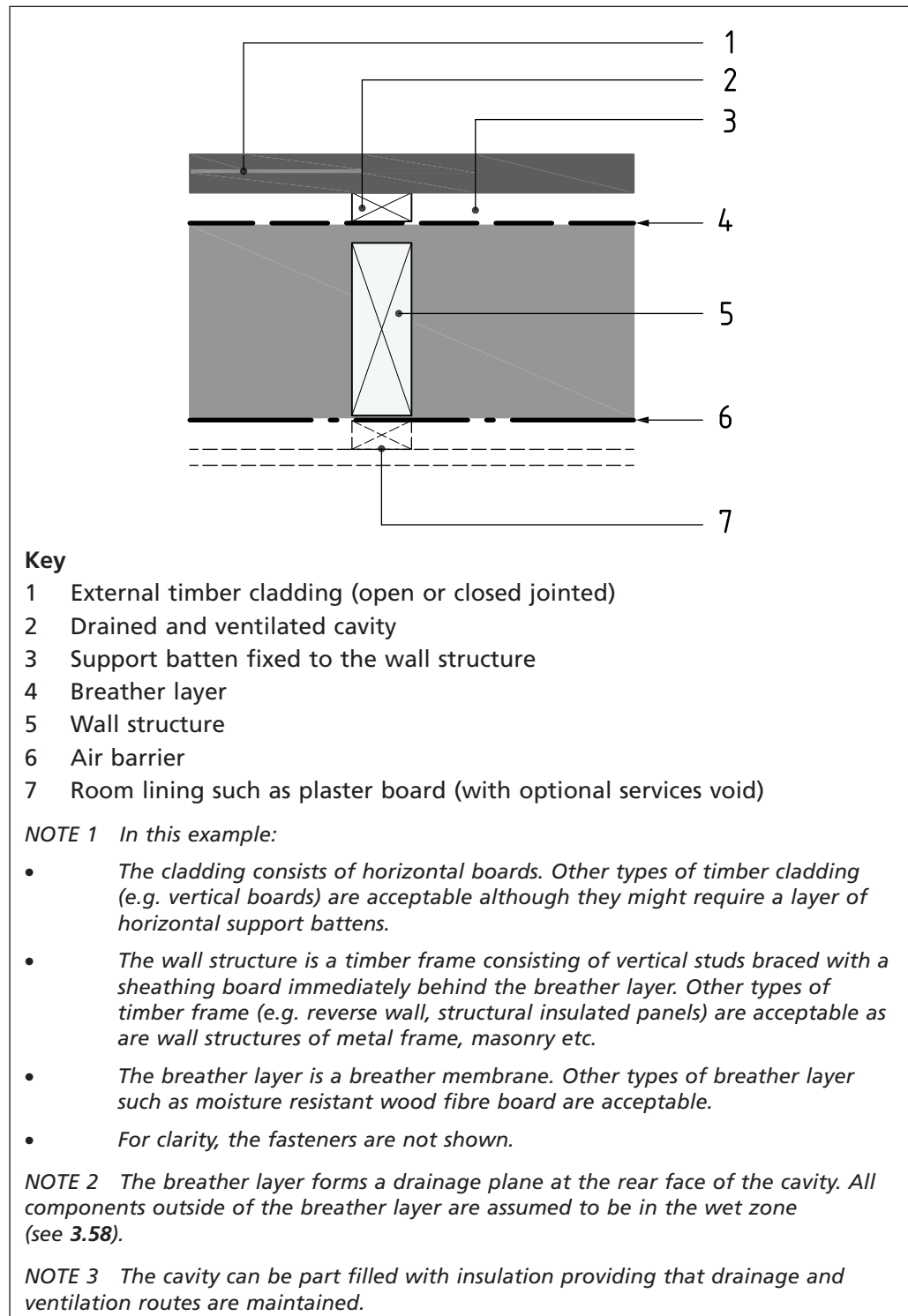
3.38 rainscreen

external cladding assembly comprising a layered construction where the cladding is separated from the wall structure by a drained and ventilated cavity

NOTE 1 See Figure 1 for an example of a typical build-up of a timber-clad rainscreen wall.

NOTE 2 In temperate oceanic climates, such as the UK, a cavity is generally used between the cladding and structure of occupied buildings to prevent wind-driven rain penetrating the building envelope. The cladding acts to screen out most rain, but it is accepted that some moisture might enter the cavity, from where it is channelled back to the building's exterior through drainage and ventilation. The degree of ventilation required varies according to the materials used. Timber needs more ventilation than cladding made of inorganic materials. Accordingly, the construction detailing and terminology used with timber rainscreens differ from those formed from other materials. Timber rainscreen cladding can be closed jointed or open jointed. External timber cladding on framed buildings that are not insulated (e.g. barns, steeples, workshops) is able to dry to the interior of the building and so might not need a ventilated cavity. Occupied buildings are often constructed in this way in relatively warm or dry climates. BS 8605-2 gives guidance on cavity drainage and ventilation.

Figure 1 Typical build-up of a timber-clad rainscreen wall (plan section)

**3.39 reaction to fire**

response of a product in contributing by its own decomposition to a fire to which it is exposed, under specified conditions

[SOURCE: BS EN 13501-1:2007+A1:2009, 3.1.15]

- 3.40 sapwood**
outer zone of wood that, in the growing tree, contains living cells and conducts sap
[SOURCE: BS EN 1001-2:2005, 1.37]
NOTE Sapwood is frequently paler than heartwood although it is not always clearly differentiated.
- 3.41 shake**
relatively small cladding component made of cleft timber and laid in overlapping layers similar to tiles
- 3.42 shingle**
relatively small cladding component made of sawn timber and laid in overlapping layers similar to tiles
- 3.43 shrinkage**
initial decrease in dimension of a piece of timber as it first dries below FSP
NOTE 1 Longitudinal shrinkage is minimal and so usually ignored. Shrinkage is not directly related to movement.
NOTE 2 Shrinkage values are useful in estimating the approximate dimensional allowances necessary when green timber is used as cladding. An additional allowance might be needed to take account of losses due to distortion.
- 3.44 softwood**
wood, whether soft or not, of trees of the order Gymnospermae
[SOURCE: BS EN 1001-2:2005, 1.38]
NOTE 1 Most commercial timbers of this group belong to the botanical class Coniferae (conifers).
NOTE 2 The term "softwood" is historical and does not imply that timber from these species is necessarily softer than from a hardwood species, nor should it be assumed that all softwood species have a low natural durability.
- 3.45 spring**
lengthwise curvature of a piece of sawn timber normal to the edge
[SOURCE: ISO 24294:2013, 5.34.2]
- 3.46 supplier**
manufacturer or distributor
- 3.47 support batten**
timber component, of a section, grade and durability suitable for supporting external timber cladding
NOTE The term includes battens (which are used horizontally or diagonally) and counter battens (which are only used vertically).
- 3.48 surface finish**
timber surface that has been shaped to final size, profile and texture
NOTE Shaping is usually by a mechanical process such as sawing, planing or brushing, although cleft timber is also used.
- 3.49 treatability**
the ease with which a wood can be penetrated by a liquid (for example, a wood preservative)
[SOURCE: BS EN 350-2:1994, 3.4]

- 3.50 twist**
lengthwise spiral distortion of a piece of sawn timber
[SOURCE: ISO 24294:2013, 5.34.4]
- 3.51 use class**
moisture exposure situation of the wood element in use
NOTE 1 Guidance on use classes can be found in BS EN 335.
NOTE 2 The use class system classifies the risk of biodeterioration of timber in different moisture exposure situations. It does not relate to the effect of moisture upon timber's strength, deformation or corrosion risk. These issues are addressed through the service class system given in BS EN 1995-1-1. See BS 8605-2 for guidance.
NOTE 3 In older standards, the term "hazard class" was used instead of "use class".
- 3.52 use class 3**
situations in which the wood or wood-based product is above ground and exposed to the weather (particularly rain)
NOTE 1 In use class 3, the moisture content of timber is frequently at or above 20%.
NOTE 2 Calculations (e.g. of movement) based upon equilibrium moisture content are of limited relevance in use class 3 due to the frequent presence of a film of water on the timber surface.
- 3.53 vapour control layer**
layer comprising a material or coating with greater resistance to vapour transmission than the other layers of the wall and designed to control vapour movement through the wall
[SOURCE: BS EN 13119:2007, 2.34]
- 3.54 visible face**
face of a joinery part which, after installation of the joinery is completed, is not permanently concealed or semi-concealed
[SOURCE: BS EN 942:2007, 3.4]
NOTE Application of a coating system does not constitute concealment.
- 3.55 wall**
part of a building envelope where the mean slope is no more than 15° from the vertical
NOTE The wall can slope inwards or outwards.
- 3.56 wane**
original rounded surface of a log, with or without bark, on any face or edge of sawn timber
[SOURCE: BS EN 844-3:1995, 3.6]
- 3.57 warp**
distortion of a piece of timber in the process of conversion, and/or drying and/or storage
[SOURCE: BS EN 1001-2:2005, 1.52]

3.58 wet zone

part of the rainscreen system that can be assumed to be exposed to rainfall, either directly or as a result of water flowing through joints and gaps in the system

[SOURCE: BS 8298-1:2010, 3.37.1]

NOTE 1 It is usually possible to identify one layer of the construction as being the watertight layer. All parts of the construction outside this layer can be assumed to be in the wet zone.

NOTE 2 In the case of external timber cladding in the UK, the watertight layer is generally the breather layer.

NOTE 3 In the case of porous cladding materials such as timber, moisture can flow into the cavity through the material itself even if all joints and gaps are closed. This is not a problem providing that the cladding assembly is resistant to moisture effects (e.g. biodeterioration) and is detailed for drainage and ventilation.

3.59 wood-based panel

solid wood panel, laminated veneer lumber (LVL), plywood, oriented strand board (OSB), resin-bonded particleboard, cement-bonded particleboard or fibreboard

[SOURCE: BS EN 13986:2004, 3.1]

3.60 wood density

mass of a unit volume of wood at a specified moisture content

3.61 wood destroying organisms

organisms (typically basidiomycete fungi, beetles and termites) which colonize wood and affect its structural integrity by using its components as food or shelter

3.62 wood disfiguring fungi

fungi causing blue stain or mould in service

NOTE Wood disfiguring fungi are mainly of practical concern in relation to aesthetic appearance. In the case of external timber cladding, the organisms can colonize uncoated timber where they are an important factor in weathering. They can also colonize some types of coating system.

3.63 wood modification

action of a chemical, physical or other process upon the material, in order to achieve a desired property enhancement during the service life of the material

NOTE 1 If the modification is intended for, or confers, improved resistance to biological attack, then the mode of action should, as far as can be determined, be non-biocidal.

NOTE 2 The most common processes are chemical modification and thermal modification.

3.64 wood preservative

active ingredient(s) or preparations containing active ingredient(s), in the form in which they are placed on the market, which are on the basis of the properties of their active ingredient(s), intended either to prevent wood-destroying or wood disfiguring organisms (fungi, insects and marine borers) from attacking wood and wood-based products, or to combat an attack by those organisms

[SOURCE: BS EN 1001-2:2005, 1.56]

4 General

The specifier shall ensure that all relevant requirements for the characteristics of external timber cladding components are included in the specification given to the supplier. Table 1 lists the characteristics that shall be specified for each type of product, as well as optional characteristics that might be required in some circumstances.

When preparing a specification, designers shall select the appropriate characteristics from Table 1. Test methods are given for each characteristic and shall be specified as appropriate.

NOTE 1 See BS EN 14915 and BS EN 13986 for requirements for CE marking. Annex A provides further information.

NOTE 2 A few criteria, such as weathering, are not included in Table 1 because they are unverifiable. Others are omitted because they are included as sub-categories within a listed characteristic. Requirements for preservative treatment, for example, are given within the clause for durability against biological attack.

Table 1 Performance requirements for external timber cladding and support battens

Characteristic	Boards	Shingles and shakes	Wood-based panels	Clause
Moisture content	M	O	O	5
Durability against biological attack	M	M	M	6
Species	M	M	O	7
Grade	M	M	O	8
Geometrical characteristics	M	M	M	9
Warp	M	O	O	10
Resistance to fixing	M	O	M	11
Dimensional stability	M	–	–	12
Reaction to fire	M	O	O	13
Resistance to deformation	O	–	O	14
Bonding quality	O	–	M	15
Coating system	O	–	O	16
Wood density	O	–	–	17
Hygrothermal performance	O	–	O	18
Release of dangerous substances	O	–	O	19
Moisture resistance	–	–	M	20
Airborne sound insulation	–	–	O	21

KEY M Mandatory O Optional

5 Moisture content

COMMENTARY ON Clause 5

The mean moisture content in the heartwood of all unmodified solid timber within an external cladding assembly in the UK is approximately 16% during dry weather, although during rain storms it can range up to a maximum near the FSP for the timber species concerned. The minimum moisture content of unmodified timber is around 10% irrespective of the species. The moisture content in external cladding components made of modified wood or wood-based panels depends upon the material. Modified woods, for example, can have a moisture content of between 3% and 25% when used as external cladding. Support battens are in the wet zone of the building envelope and so have a similar moisture content to the cladding. In this clause, moisture content values are expressed in accordance with BS EN 14298, wherever applicable. BS 8605-2 gives further guidance on moisture content.

5.1 General

Moisture content shall be agreed between the purchaser and supplier.

5.2 Moisture content of boards

One of the following moisture content requirements shall be specified, depending upon the nature of the timber.

- a) When measured in accordance with 5.5, the moisture content of boards (excluding those that are made of modified wood or are impregnated with preservatives or flame retardants) shall be $(16 \pm 4)\%$ unless otherwise agreed between the purchaser and supplier.

NOTE 1 This value is in accordance with BS EN 942.

NOTE 2 Green or part air dried timber can also be used as external cladding providing special provisions are made to accommodate its characteristics. See BS 8605-2 for guidance.

- b) When measured in accordance with 5.5, the moisture content of boards made of modified wood shall be $(5 \pm 3)\%$.
- c) Preservative treated boards shall be held until in a drip free condition.

NOTE 3 To prevent loss of treatment product to the environment, preservative treated wood should be held by the supplier until the wood surfaces are free of drips. For further information, see WPA manual: Industrial wood preservation, specification and practice [N1].

NOTE 4 It is not practical to specify a more precise moisture content for preservative treated timber. Although the surface of preservative treated timber might be relatively dry, its core moisture content should be assumed to be at least 22%.

NOTE 5 The flame retardant manufacturer might be able to advise on the moisture content of timber that has been treated with their product.

5.3 Moisture content of shingles and shakes

Preservative treated shingles and shakes shall be held until in a drip free condition.

NOTE 1 See 5.2, Notes 3 and 4.

NOTE 2 Some types of shingles and shakes might be supplied without preservative treatment (see 6.1.2). Such products should be assumed to be green.

5.4 Moisture content of wood-based panels

When measured in accordance with 5.5, the moisture content of wood-based panels shall be specified as $(5 \pm 3)\%$ unless otherwise agreed between the purchaser and supplier.

5.5 Moisture content measurement

The moisture content of solid timber (excluding modified wood and wood treated with a preservative or flame retardant) shall be measured with an electronic moisture meter in accordance with BS EN 13183-2 or BS EN 13183-3.

NOTE Electronic moisture content readings can be affected by some types of wood modification, wood preservative, flame retardant and glue.

In cases of dispute, the moisture content of timber shall be measured gravimetrically in accordance with BS EN 13183-1.

The moisture content of modified wood, timber containing preservatives or flame retardants, and wood-based panels shall be measured gravimetrically in accordance with BS EN 13183-1.

In the event of a dispute, moisture content sampling of timber components (excluding modified wood, wood-based panels and timber containing preservatives or flame retardants) shall conform to Annex B.

6 Durability against biological attack

COMMENTARY ON Clause 6

All of the external timber cladding assembly is classified as use class 3 in accordance with BS EN 335:2013. This means that timber is exposed to frequent wetting but is out of ground contact. The biodeteriorating organisms in use class 3 in the UK are fungi and insects; wood disfiguring fungi also occur.

The external timber cladding assembly should have sufficient natural or conferred durability for use class 3. This can be achieved by either:

- *selection of heartwood of appropriate natural durability (see 6.1);*
- *by using modified wood of appropriate durability (see 6.2); or*
- *appropriate preservative treatment (see 6.3).*

The level of natural or conferred durability should be appropriate for the desired service life. The risk and consequences of failure and ease of maintenance and replacement should be taken into account.

This clause only addresses natural durability and conferred durability. The other factors are addressed in BS 8605-2. Wood disfigurement is also addressed in BS 8605-2.

6.1 Natural durability

COMMENTARY ON 6.1

BS EN 350-2 gives natural durability classifications for most of the timber species that are available in Europe. It gives five classes of natural durability against fungi, ranging from 1 (very durable) to 5 (not durable). Sapwood of all species is assigned to durability class 5 and so the higher classes only apply to heartwood. The natural durability of some species varies in which case the timber should be assigned to the lowest durability class within its range. If a timber is not listed in BS EN 350-2, it should be tested in accordance with BS EN 350-1. For ease of reference, Annex C gives natural durability classes for most timber species currently used as external cladding in the UK in accordance with BS EN 350-2. Durability against insect attack involves a different classification but in external cladding timber in the UK this is less important than durability against fungal decay.