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Wood Information Sheet

WIS 2/3-56

Subject: Timber - general
Revised: November 2012

CE marking: implications for timber products

The European Union (EU) requires that construction products across all of its member states carry a common mark to show they meet a harmonised European standard and may be easily identified as being 'fit for purpose'. This mark is intended to remove any technical barriers to trade and promote the free movement of products within the EU.

Until recently, British manufacturers were allowed to apply CE marking on a voluntary basis. However, the *Construction Products Regulation* (CPR) [1], published in April 2011, made CE marking compulsory for many construction products in the UK, including timber products.

According to the TRADA Construction Briefing *The European Construction Products Regulation* (CPR) [2], all manufacturers, distributors and importers of products that have a 'harmonised standard' must have completed CE marking by 1 July 2013. Otherwise, the 'enforcing authority' (Trading Standards in the UK) can withdraw those products from the market and in some cases even prosecute the trader.

This Wood Information Sheet (WIS) is an overview of CE marking, with signposts to more detailed sources that are listed at the end.

Contents

Figure 1: CE marked plywood

Key points

- The Construction Products Regulation makes it compulsory for all construction products in the EU which fall under the scope of a harmonised standard to carry a CE mark.
- Going forward, the only document a manufacturer can CE mark to is either a harmonised standard or a European Technical Assessment (ETA).
- Harmonised European standards (hEN), are produced by the European Committee for Standardisation (CEN); and European Technical Assessments are produced by a Technical Assessment Body (TAB) such as BM TRADA.
- The harmonised standard or European Technical Assessment denotes an Assessment and Verification of Constancy of Performance (AVCP) level.
- The AVCP level determines what tasks are necessary and whether the manufacturer or a 'Notified Body' must take responsibility for them.
- AVCP tasks include factory production control (FPC), initial type testing (ITT), ongoing testing and any certification and surveillance.

Background

European standards that are adopted for use in the UK begin their life with the European Committee for Standardisation (CEN, which stands for *Comité Européen de Normalisation*). A CEN standard starts with the prefix EN, such as EN 1234. Under European law, every member state of the EU is obliged to adopt EN standards. In the UK, EN 1234 becomes BS EN 1234 when published by the British Standards Institute (BSI). A 'harmonised standard' is a special EN (hEN) containing an 'Annex ZA', which enables a product that complies with that EN to be CE marked.

Harmonised standards, when first published for use, have a co-existence period where the conflicting national standard can still be used. However, when this co-existence period expires, the national standard is withdrawn and the product must then show compliance with the European standard and hence, CPR. In all EU member states, the only way to show compliance with the CPR is by applying the CE mark.

The CPR sets out seven 'Basic Works Requirements':

- mechanical resistance and stability
- safety in case of fire
- hygiene, health and environment
- safety and accessibility in use
- protection against noise
- energy, economy and heat retention
- sustainable use of natural resources.

Important

The CE mark (from the French, Conformité Européen) indicates that essential health and safety requirements have been met. It is NOT a statement of quality; it is simply 'a fitness for purpose' mark which allows the enforcing authority to remove unsafe products from the market when appropriate cases are reported to them.

A manufacturer or their legally appointed representative in the EU can be liable to a fine or a prison sentence if their product is found not to comply with the requirements of the CPR. It is worth noting that all CE-marked products shall have a Declaration of Performance (DoP) drawn up by the manufacturer, which, along with the requirements of the technical specification used, allows them legally to place the CE mark on the product, and then put the CE-marked product on the construction market in any of the EU and EFTA member states. DoPs must be publicly available.

Procedure

Each harmonised standard or European Technical Assessment (ETA) sets an 'Assessment and Verification of Constancy of Performance' (AVCP) level, which in turn sets out the procedure that must be followed for CE marking. There are five levels of AVCP, ranging from Level 1+ (the most onerous, with major third-party product certification required) to Level 4, which requires only the manufacturer's involvement. As a general rule, highly safety-critical products will be allocated an AVCP of 1+ or 1, structural products in general will have an AVCP of 2+, products perhaps with only 1 safety critical aspect (such as fire performance) level 3, and non-safety critical products level 4.

All levels of AVCP need factory production control (FPC) and initial type testing (ITT), but 'who does what' differs for each level. Certain tasks fall to the manufacturer and others to a 'Notified Body' (a test laboratory such as TRADA Technology, inspection body, or certification body such as BM TRADA Certification) that has been designated by a Member State as technically competent to undertake independent third-party assessments. It is termed 'Notified' because the body is notified to the EC by accredited sources within the Member States for defined activities.

Table 1: Requirements for CE marking for each AVCP level

AVCP level	1+	1	2+	3	4
Manufacturer tasks:					
Factory production control	X	X	X	X	X
Further testing of samples taken at factory according to prescribed test plan	X	X	X		
Initial type testing			X		X
Notified Body tasks:					
Initial type testing	X	X		X	
Certification of factory production control	X	X	X		
Surveillance of factory production control	X	X	X		
Audit testing of samples	X				

CE marking is the responsibility of the person placing the CE mark on the product, even when the involvement of a Notified Body is required by the AVCP level.

Timber products with harmonised standards

The first harmonised standard to be published for timber products was *BS EN 13986 Wood-based panels for use in construction* [3] in 2002 (subsequently revised in 2004), allowing CE marking of wood-based panels.

Table 2: Timber products with harmonised standards

Timber product	Harmonised standard	AVCP level
Cross-laminated timber	BS EN 16351 Timber structures. Cross laminated timber. Requirements (draft for public comment)	1
Finger-jointed structural timber	BS EN 15497 Structural finger jointed solid timber. Performance requirements and minimum production requirements (draft for public comment)	1
Fire doors	BS EN 16034 Pedestrian doorsets, industrial, commercial, garage doors and windows. Product standard, performance characteristics. Fire resistance and/or smoke control characteristics (draft for public comment)	1
Glued laminated timber	BS EN 14080:2005 Timber structures. Glued laminated timber. Requirements	1
Windows and external pedestrian doorsets without resistance to fire and/or smoke leakage characteristics	BS EN 14351-1:2006+A1:2010 Windows and doors. Product standard, performance characteristics. Windows and external pedestrian doorsets without resistance to fire and/or smoke leakage characteristics	3
Prefabricated wall, floor and roof elements	BS EN 14732-1 Timber structures. Prefabricated wall, floor and roof elements. Part 1. Product requirements (draft for public comment)	1
Solid wood panelling and cladding	BS EN 14915:2006 Solid wood panelling and cladding. Characteristics, evaluation of conformity and marking	1, 3, 4
Strength graded structural timber with rectangular cross section VSG and MSG	BS EN 14081-1:2005+A1:2011 Timber structures. Strength graded structural timber with rectangular cross section. General requirements BS EN 14081-2:2010 Timber structures. Strength graded structural timber with rectangular cross section. Machine grading. Additional requirements for initial type testing BS EN 14081-3:2012 Timber structures. Strength graded structural timber with rectangular cross section. Machine grading; additional requirements for factory production control	2+
Structural laminated veneer lumber (LVL)	BS EN 14374:2004 Timber structures. Structural laminated veneer lumber. Requirements	1
Strength-graded structural timber with round cross section	prEN 14544. Timber structures. Strength graded structural timber with round cross-section. Requirements (draft for public comment)	1, 2+
Timber connectors	BS EN 14545:2008 Timber structures. Connectors. Requirements	3
Timber dowel-type fasteners	BS EN 14592:2008 Timber structures. Dowel-type fasteners. Requirements	3
Wood-based panels	BS EN 13986:2004 Wood-based panels for use in construction. Characteristics, evaluation of conformity and marking	1, 2+, 3, 4
Wood flooring	BS EN 14342:2005+A1:2008 Wood flooring. Characteristics, evaluation of conformity and marking	3, 4
Wood poles for overhead lines	BS EN 14229:2010 Structural timber. Wood poles for overhead lines	2+
Roof trusses made with punched metal plate fasteners	BS EN 14250:2010 Timber structures. Product requirements for prefabricated structural members assembled with punched metal plate fasteners	2+

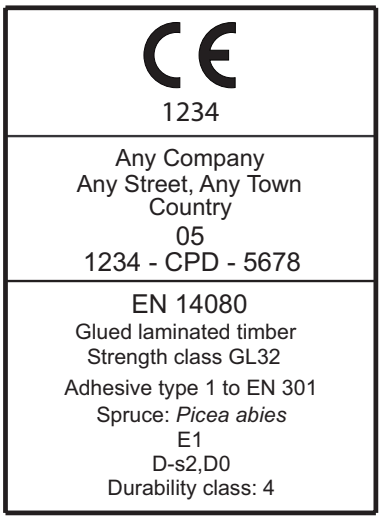

Figure 2: Example of CE marks on glued laminated timber (glulam)

Example: CE marking for wood-based panels

EN 13986 requires that a manufacturer makes a declaration of performance covering wood-based panels. In the case of wood-based panels, this declaration, amongst other things, has to relate to the performance characteristics of the panels as set out in EN 13986 for that panel type.

The following table demonstrates how the tests within EN 13986 cover the Basic Works Requirements relevant to wood-based panels. Not all tests will necessarily need to be carried out as it is always the end use of the panel within the works which will determine the exact test requirements. With wood-based panels, there is a set of core tests which need to be carried out; then there are additional tests which may be carried out, depending on the specific end use of the panel. Details of the tests which are required for different structural end uses can be found in TRADA Technology's *Wood Information Sheet 2/3-57: Specifying wood based panels for structural use* [4].

Table 3: Basic Works Requirements (BWR)

Basic Works Requirement 1: Mechanical resistance and stability	
Requirements of BWR1	EN 13986 Performance characteristics
The construction works must be designed and built in such a way that the loading that is liable to act on the structure during its construction and ultimate use, will not lead: • to the collapse of the whole or part of the works to major deformation to an inadmissible degree • to damage to other parts of the works or to fittings or installed equipment as a result of major deformation of the load-bearing construction, or to damage by an event that is disproportionate to the original cause.	**Structural applications – all conditions** *(Tables 1, 2, 3 and 7)* Bending strength and modulus of elasticity tension strength and modulus of elasticity compression strength and modulus of elasticity panel shear strength and modulus of elasticity planar shear strength and modulus of elasticity static point load strength and modulus of elasticity bonding quality / internal bond
	Non-structural applications – all conditions *(Ref Tables 4, 5 and 6)*
The values and the permissible tolerances for these performance characteristics appear in the individual product standards for each of the panel types and in the harmonised standard. It is these values that are used by the manufacturer in labelling and certification.	

Basic Works Requirement 2: Safety in case of fire	
Requirements of BWR2	EN 13986 Performance characteristics
The works must be designed and built in such a way that in the event of an outbreak of fire: • the load bearing capacity of the construction can be assumed for a specific period of time so that occupants can leave the works in time • the generation and spread of fire and smoke within the works are limited • the spread of fire to neighbouring works is limited • the safety of rescue teams is taken into consideration.	**Structural and non-structural applications – all conditions** *(Tables 1, 2, 3, 4, 5, 6 and 7)* Reaction to fire
Within EN 13986, Table 8 gives the Reaction to Fire Classes for panel products as defined in EN 13501-1: Fire classification of construction products and building elements – Classification using test data from reaction to fire tests. Here the various panel product types have undergone testing and evaluation resulting in their fire classification being pre-determined.	

Basic Works Requirement 3: Hygiene, Health and Environment	
Requirements of BWR3	EN 13986 Performance characteristics
The construction works must be designed and built in such a way that it will not be a threat to the hygiene or health of the occupants or neighbours, in particular as a result of any of the following: • the emission of toxic gases or the presence of hazardous particles or gases in the air • pollution or poisoning of the water or soil • water vapour permeability and moisture content resulting in the presence of damp in parts of the works or on the surfaces within the works.	**Structural and non-structural applications – all conditions** *(Tables 1, 2, 3, 4, 5, 6 and 7)* Release of formaldehyde Pentachlorophenol (PCP) content Water vapour resistance factors
In essence this requirement covers indoor air quality and the interior environment from the aspect of dampness (see also Durability below). For indoor air quality it is the release of formaldehyde gas from panel products that is of concern. Annex B of EN 13986 classifies panel products as being either E1 (the lower level) or E2 with regard to the release of formaldehyde. With regard to the PCP content, most panels normally contain less than 5 ppm, but if the panel contains raw materials that include PCP, then the panel must be tested and if found to contain higher quantities than 5 ppm the panel must be marked accordingly. The water vapour resistance of panel products is related in the standard to panel type and to a minimum mean density level. Panels may also the have to meet the water vapour resistance factors for wet and dry cup test.	

Basic Works Requirement 4: Safety and Accessibility in use	
Requirements of BWR4	EN 13986 Performance characteristics
The construction works must be built in such a way that it does not present unacceptable risks of accidents in service, such as: • slipping • falling • collision • burns • electrocution • injury from explosion.	**Structural applications – all conditions** *(Tables 1, 2, 3 and 7)* Tests for impact resistance for structural use only.

Basic Works Requirement 5: Protection against noise	
Requirements of BWR5	EN 13986 Performance characteristics
The construction works must be designed and built in such a way that noise perceived by the occupants or people nearby is kept to a level that will not threaten their health and will allow them to sleep, rest and work in satisfactory conditions.	**Structural and non-structural applications – all conditions** *(Tables 1, 2, 3, 4, 5, 6 and 7)* Airborne sound insulation Sound absorption
These two requirements relate to the component or to the final structure and, therefore, are not relevant to the panel itself. As a consequence, airborne sound insulation and sound absorption are only determined when necessary using respectively the designated formula and the sound absorption coefficients listed in EN 13986.	

Basic Works Requirement 6: Energy, Economy and Heat Retention	
Requirements of BWR6	EN 13986 Performance characteristics
The works and its heating, cooling and ventilation installations must be designed and built in such a way that the amount of energy required is low, taking the climatic conditions of the location and the occupants into consideration.	**Structural and non-structural applications – all conditions** *(Tables 1, 2, 3, 4, 5, 6 and 7)* Thermal conductivity
Thermal conductivity is only determined for uses subject to thermal insulation requirements. It may be calculated or declared from pre-tested results printed in the standard.	

Basic Works Requirement 7: Sustainable use of Natural Resources	
Requirements of BWR7	EN 13986 Performance characteristics
The construction works must be designed, built and demolished in such a way that the use of natural resources is sustainable and in particular ensure the following: • reuse or recyclability of the construction works, their materials and parts after demolition • durability of the construction works • use of environmentally compatible raw and secondary materials in the construction works.	As 'Basic Works Requirement 7' is new, EN 13986 has not been updated as yet to include this.

Additional Requirement: Durability	
Durability	EN 13986 Performance characteristics
The ability of a panel to maintain its required performance over time under the influence of foreseeable actions. Subject to normal maintenance, a panel shall enable properly designed and executed works to fulfil the Essential Requirements for an economically reasonable period of time, ie the working life of the panel.	**Structural applications – all conditions** *(Tables 1, 2, 3 and 7)* Swelling in thickness Moisture resistance Mechanical durability Biological durability
	Non-structural applications – all conditions *(Tables 4, 5 and 6)* Bending strength (ageing) Swelling in thickness Moisture resistance Biological durability
Durability is dependent on the intended use of the panel and its service conditions. Tests covering internal bond, thickness swelling, glue bond quality and bending strength under cyclic conditions are all used either individually or in some combination to determine the moisture resistance of the various panel types. The test requirements are laid down in the product standards for each panel type. Mechanical durability can either be determined by test or be declared against tables of results from pre-tested panels. The biological durability is taken from specified classes given in other European standards.	

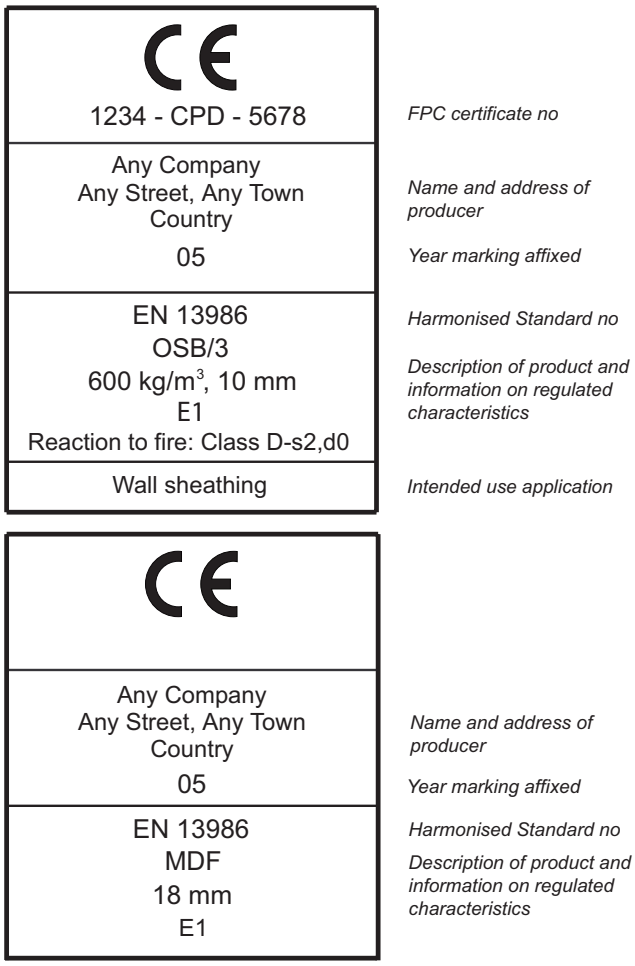

Figure 3 Examples of CE marks on panels: OSB for wall sheathing and non-structural MDF

There is no certificate number on the non-structural CE mark as there has been no Notified Body involvement.

Important

Where a CE marked panel is treated with a fire retardant, the process and the resulting 'new' panel will need to be re-tested and re-certified for its new properties with the involvement of a Notified Body. However this may not be a full re-test of all the properties if it can be proven that the original properties have not been changed by the treatment.

Exceptions

Unique products

Certain construction products may be exempt from CE marking under particular circumstances. This applies only to custom-made products manufactured on site, as in heritage/conservation or bespoke projects. For instance, if a joiner creates a single window in a listed building to match the other windows, this would not require CE marking.

ETAs/EADs

Where no harmonised standard exists for a product but a manufacturer wishes to voluntarily apply CE marking, there is a process that can be followed in order to apply the mark. Previously this was done via European Technical Approval (ETA) by following certain guidelines (ETAGs). This system has been replaced and now relies on first creating guidelines called European Assessment Documents (EADs) following a request from a manufacturer. These then allow a European Technical Assessment (ETA) to be conducted. So this is a similar procedure but with the addition of strict timescales – which is described in Annex II of the CPR. Existing ETAGs will be converted to EADs and eventually all ETAs need to be converted to European Technical Assessments.

Timber-related products currently covered by ETAGs/EADs which may appear with CE marks include:

- timber frame building kits
- prefabricated stair kits
- I-beams
- log-building kits
- three-dimensional nailing plates
- light composite wood-based beams and columns
- prefabricated wood-based loadbearing stressed skin panels.

Similar products

There are certain exceptions to the requirements for initial type testing (ITT) under the CPR, such as using another manufacturer's data for a similar product or using a kit which contains previously tested components. This allows manufacturers to share testing costs, in theory.

Micro-enterprises

To reduce the financial burden on small manufacturers, those that have fewer than ten employees and less than €2 million turnover are allowed to do simpler versions of type testing. For example, with a product of AVCP level 3, it is possible for micro-enterprises to downgrade to level 4 and conduct ITT under their responsibility.

Implications

'Economic operators' at each stage of the supply chain (manufacturers, distributors, importers and 'authorised representatives') must be able to recognise and understand the CE mark and the information it imparts. If a merchant or distributor is asked for a specific product for a specific end use, it is his legal responsibility to supply a product which is fit for that purpose. This shared obligation ensures that information is passed all along the supply chain, from the product's source to its end user.

Manufacturers may appoint authorised representatives with a written mandate. This transfers the responsibility for keeping the Declaration of Performance and showing it to the local authorities if necessary. This system is useful if the manufacturer is outside the EU. Importers of products from outside the UK are obliged to display their contact details on the product and ensure the manufacturer has done everything necessary for CE marking, testing the product themselves if necessary. Distributors, likewise, are held responsible at the same level as manufacturers.

Manufacturers must:

- be aware of any harmonised standards that apply to their product
- keep DoPs for ten years after the construction product has been placed on the market
- keep a register of all complaints about a product and any product recalls
- pass on all relevant information to importers/distributors
- provide instructions and safety information in the language of the member state in which the product is being sold
- ensure the product maintains its conformity with the DoP after storage/distribution and take immediate action if at any time the product does not comply
- provide all relevant documentation if asked by an enforcing authority.

The CPR states that if there are grounds for suspicion of the validity of the CE mark, this can be reported by anyone to the relevant enforcement agency. In England, Wales and Scotland, Trading Standards officers are responsible for enforcement. In Northern Ireland, the task falls to the Environmental Health Authority, and in the Republic of Ireland, to the Health and Safety Authority.

The CPR no longer requires the CE mark to be changed every year. The first year CE marking was applied to that particular product can remain in the stamp for the duration of the product.

References

1. Construction Products Regulation 305/2011/EU, Official Journal of the European Union, 2011
2. The European Construction Products Regulation (CPR) - An overview and Comparison with the Construction Products Directive, TRADA Construction Briefing, TRADA Technology, August 2012
3. BS EN 13986:2004 Wood-based panels for use in construction – Characteristics, evaluation of conformity and marking
4. WIS 2/3-57 Specifying wood-based panels for structural use, TRADA Technology, 2005

Further reading

The European Construction Products Regulation (CPR): An overview and comparison with the Construction Products Directive, TRADA Technology, available at www.trada.co.uk

Nando (New Approach Notified and Designated Organisations) at ec.europa.eu/enterprise/newapproach/nando/

European Committee for Standardisation (CEN) at www.cen.eu/cen/

British Standards Institution (BSI) at www.bsigroup.com

Construction Products Association (CPA) at www.constructionproducts.org.uk

About TRADA

The Timber Research and Development Association (TRADA) is an internationally recognised centre of excellence on the specification and use of timber and wood products.

TRADA is a company limited by guarantee and not-for-profit membership-based organisation. TRADA's origins go back over 75 years and its name is synonymous with independence and authority. Its position in the industry is unique with a diverse membership encompassing companies and individuals from around the world and across the entire wood supply chain, from producers, merchants and manufacturers, to architects, engineers and end users.

Our aim

To provide members with the highest quality information on timber and wood products to enable them to maximise the benefits that timber can provide.

What we do

We seek to achieve this aim through active and on-going programmes of information and research. Information is provided through our website, an extensive collection of printed materials and our training courses.

Research is largely driven by the desire to update and improve our information so that it continues to meet our members' needs in the future.

TRADA Technology is contracted by the Timber Research and Development Association to prepare and publish all Wood Information Sheets.

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