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WOODINFORMATION

CE marking:
Implications for timber products

The legal basis

In 1985 a "New Approach to technical harmonisation" was introduced through the European Commission (EC) resolution 85/C136/01. Under this resolution a list of "New Approach Directives" was formulated for a number of product family headings. One of these was the Construction Products Directive (CPD) (currently under review). Others cover a wide range of products including electrical goods, the safety of children's toys, packaging and packaging waste etc.

The CPD was transposed into UK law as the Construction Products Regulations 1991 and the subsequent Construction Products (Amendment) Regulations 1994 (CPR). The CPD differs from other Directives, such as those covering machinery or toys, in that it applies technical specifications to the finished works into which construction products are to be used, rather than directly to the products themselves. This is because construction products on their own have no implication for general safety and well being. It is only when they are incorporated into works that their performance becomes important.

The CPD sets out six Essential Requirements with which all structures subject to regulation must comply:

- Mechanical resistance and stability
- Safety in case of fire
- Hygiene, health and environment
- Safety in use
- Protection against noise
- Energy, economy and heat retention.

In 1988, the European Commission (EC) asked the European Committee for Standardisation (CEN) to prepare families of standards that defined requirements to determine the suitability of construction products for use under the CPD. These new European Standards reference test methods, product and performance specifications and factory production control requirements. For each product type these are all brought together in a single document known as a 'Harmonised Standard'.

Once a Harmonised Standard is published, all products covered by that standard sold for permanent use in construction works (building, civil engineering, highways etc), anywhere in the EU, must comply with the CPD. In all member states, apart from the UK, Ireland and Sweden, the only way to show compliance is by applying the CE mark. Whilst the three 'opt out' countries have said that applying the CE mark is not mandatory, compliance with the CPD is.

It is important to understand, however, that the CE mark (from the French, 'Conformité Européan') is intended to promote the free movement of products within the EU by showing 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 inspecting authority to remove unsafe products from the market when appropriate cases are reported to them.

Manufacturers who wish to apply the CE mark to a product for which no harmonised standard exists, and for which the EC has not issued a mandate for a harmonised standard, and considers that such a standard cannot yet be developed, can apply for a European Technical Approval (ETA).

There are two routes to obtaining an ETA. The first is by following an ETA Guideline, known as an ETAG. These are produced following a mandate from the EC to the European Organisation for Technical Approvals (EOTA) where there are numerous similar products, but not enough to warrant a harmonised standard. For unique products, a different route is taken: a Common Understanding of Assessment Procedure (CUAP) is produced by an ETA Issuing Body, normally at the request of a manufacturer or group of manufacturers, and adopted by EOTA.

Under the CPD, there are designated tasks for both the manufacturer and a Notified Body. These tasks vary depending on the attestation level of the product.

A Notified Body is an organisation which has been designated by a Member State as technically competent to undertake independent third party assessments. It may be a testing laboratory, an inspection body or a certification body. It is termed "Notified" because the body is notified to the EC by accredited sources within the Member States for defined activities.

The technical specification will give each product an 'Attestation of Conformity' or AoC level. This is basically the "who does what" to allow CE marking. The AoC level is determined by the potential consequence to the works of failure of the product, system, or kit. Within each AoC level some tasks are undertaken by the manufacturer and some by a Notified Body. There are 6 levels, ranging from Level 1+, the most onerous with major third party product certification required; to Level 4, the least onerous with only a manufacturer's involvement. All levels need factory production control (fpc) and initial type testing (ITT).

The six levels and the degree of involvement of a Notified Body are:

1+ product certification with audit testing by a Notified Body
1 product certification without audit testing by a Notified Body
2+ fpc certification with continuous surveillance by a Notified Body
2 fpc certification without surveillance by a Notified Body
3 some or all aspects of the initial type testing by a Notified Body
4 manufacturers' tasks only.

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 AoC level.

All 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 CPD.

In the UK, the CPR states that all products used for construction purposes must meet the essential requirements of the CPD and that CE marked products will meet these requirements. CE marking is not the only way to demonstrate compliance with the CPR, but for the purposes of this information sheet it is the route discussed. For details on the other routes, the Approved Document to Regulation 7 (England and Wales) should be read. For Scotland, the details are in Regulation 8 of The Scottish Building Standards Technical Handbooks and for Northern Ireland, in the 'materials and workmanship' section of the Introduction to the Technical Booklets.

The CPR also states that if there are grounds for suspicion of the validity of the CE mark then 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.

A manufacturer or his legally appointed representative in the EU can be liable to a fine or a prison sentence if his product is found not to comply with the requirements of the relevant Directives.

It is worth noting that all CE marked products shall have a declaration of conformity 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 the CE marked product into the construction market in any of the EU and EFTA member states.

Timber products: CE marking

For timber products, the first Harmonised Standard to be published was *EN 13986: 2002 Wood-based panels for use in construction – Characteristics, evaluation of conformity and marking*, now superseded by *EN 13986: 2004*.

The following products can also be CE marked via harmonised standards:

- Roof trusses made with punched metal plate fasteners: *EN 14250*
- Wood flooring: *EN 14342*
- Structural laminated veneer lumber (LVL): *EN 14374*.

- Strength graded structural timber: *EN 14081-1* - co-existence period until 01/09/2007
- Solid wood panelling and cladding: *EN 14915* - co-existence period until 10/06/2008
- Glued laminated timber: *EN 14080* - co-existence period until 01/04/2009.

Harmonised Standards for other timber products are in preparation including:

- Pedestrian doors and windows
- Wood poles for overhead lines
- Structural timber with round cross section
- Prefabricated wall, floor and roof elements
- Finger jointed structural timber
- Timber connectors
- Non-fire internal doors
- Fire doors.

A number of timber and timber related products are currently covered by ETAGs and may appear with CE marks. These 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.

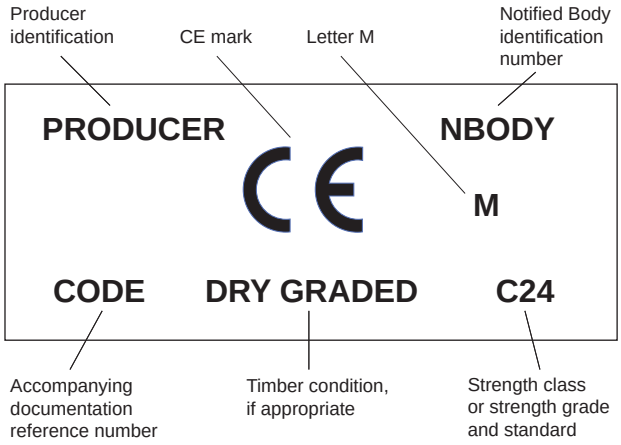
Example of CE marks on glued laminated timber (glulam) and trussed rafters

CE 1234	*ID of Certification Body*
Any Company Any Street, Any Town Country 05 1234 - CPD - 5678	*Name and address of producer* *Year marking affixed* *FPC certificate no*
EN 14080 Glued laminated timber Strength class GL32 Adhesive type 1 to EN 301 Spruce: *Picea abies* E1 D-s2,D0 Durability class: 4	*Harmonised Standard no* *Description of product and information on regulated characteristics*

CE 1234	*ID of Certification Body*
Company, Any Street, Any Town Country 05 1234 - CPD - 5678	*Name and address of producer* *Year marking affixed* *FPC certificate no*
EN 14250 Prefabricated structural member assembled with punched metal plate fasteners	*Harmonised Standard no* *Description of product*

Note: this is the mark which would appear on the trussed rafter itself. There is also a requirement for strength and stiffness values, reaction to fire class and details of any applied treatment to be in the accompanying commercial documents.

Example of CE grade mark with minimum information for untreated machine graded structural timber



Note: this is the mark which would appear on the timber itself. There is also a requirement for strength and stiffness values, reaction to fire class and details of any applied treatment to be in the accompanying commercial documents.

Example: CE marked wood-based panels

The most straightforward way for a manufacturer to demonstrate compliance with the CPD is to apply the CE mark to their panels. The route for this is by following EN 13986: 2004 which covers solid wood panels, plywoods, laminated veneer lumber (LVL), oriented strand board (OSB), particleboard, cement bonded particleboards and fibreboards.

Note: A manufacturer may add supplementary information separately from the CE mark, provided that it is kept distinct from the CE marking information and in such a way that the CE marking cannot be considered to apply to it.

EN 13986 requires that a manufacturer makes a declaration of conformity covering his 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 and not directly to the CPD Essential Requirements. However, the wood-based panels must allow the structure into which they are to be permanently incorporated to satisfy the Essential Requirements and this is demonstrated by relating particular performance characteristics to the appropriate Essential Requirement.

The following tables demonstrate how the Essential Requirements relevant for wood-based panels are covered by the tests within EN 13986. 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 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 *Wood Information Sheet 2/3 - 57 Specifying wood based panels for structural use*.

ESSENTIAL REQUIREMENT 1:- Mechanical Resistance & Stability	
Requirements of ER1	**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 (Ref Tables 1, 2, 3, 7)** *Bending strength & Modulus of Elasticity* *Tension strength & Modulus of Elasticity* *Compression strength & Modulus of Elasticity* *Panel shear strength & Modulus of Elasticity* *Planar shear strength & Modulus of Elasticity* *Static point load strength & Modulus of Elasticity* *Bonding quality / Internal bond*
	Non-structural Applications– All Conditions (Ref Tables 4, 5 & 6) *Bonding quality / Internal bond*
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.	

ESSENTIAL REQUIREMENT 2:- Safety in case of fire	
Requirements of ER2	**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 & Non-structural Applications - All conditions (Ref Tables 1, 2, 3, 4, 5, 6, & 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.	

ESSENTIAL REQUIREMENT 3:- Hygiene, Health and Environment	
Requirements of ER3	**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:	**Structural & Non-structural Applications – All conditions (Ref Tables 1, 2, 3, 4, 5, 6 & 7)**
- the emission of toxic gases or the presence of hazardous particles or gases in the air	*Release of formaldehyde*
- pollution or poisoning of the water or soil	*Pentachlorophenol (PCP) content*
- water vapour permeability and moisture content resulting in the presence of damp in parts of the works or on the surfaces within the works.	*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.	

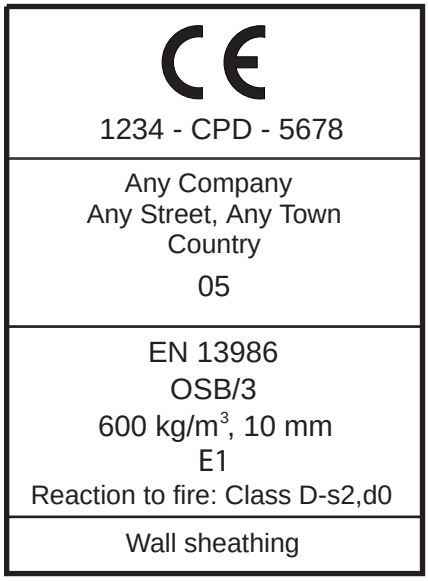
ESSENTIAL REQUIREMENT 4:- Safety in use	
Requirements of ER4	**EN 13986 Performance Characteristics**
The construction works must be built in such a way that it does not present unacceptable risks of accidents in service: *- such as slipping, falling, collision, burns, electrocution or injury from explosion.*	**Structural Applications – All conditions (Ref Tables 1,2,3 & 7)** *Tests for impact resistance for structural use only.*

ESSENTIAL REQUIREMENT 5:- Protection against noise	
Requirements of ER5	**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 (Ref Tables 1, 2, 3, 4, 5, 6 & 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.	

ESSENTIAL REQUIREMENT 6:- Energy, Economy and Heat Retention	
Requirements of ER6	**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 (Ref Tables 1, 2, 3, 4, 5, 6 & 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.	

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 (Ref Tables 1, 2, 3 & 7)** *Swelling in thickness* *Moisture resistance* *Mechanical durability* *Biological durability* **Non-structural Applications – All Conditions (Ref Tables 4, 5 & 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.	

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



FPC certificate no

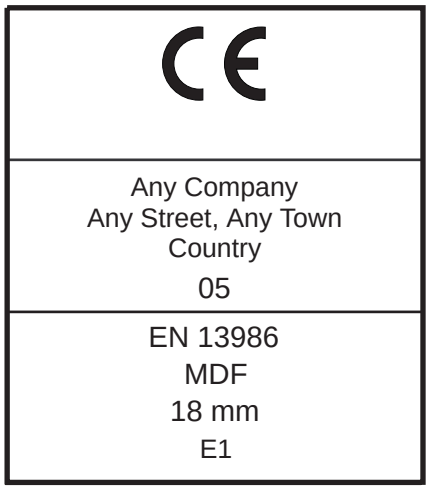
Name and address of producer

Year marking affixed

Harmonised Standard no

Description of product and information on regulated characteristics

Intended use application



Name and address of producer

Year marking affixed

Harmonised Standard no

Description of product and information on regulated characteristics

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

Implications of CE marking for suppliers and users

All importers, distributors and merchants must satisfy themselves that the panels they are placing on the market can prove their "fitness for purpose" and they must have, or be able to obtain, the supporting documentation and product information (declaration of conformity and technical file) should this be required by the enforcement agency. There also exists a duty of care to store, handle and transport the panels so that they do not lose their claim to compliance.

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.

Distributors at each stage of the supply chain 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.

References

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

BS EN 14080: 2005 Timber structures. Glued laminated timber. Requirements.

BS EN 14081-1: 2005. Timber structures. Strength graded structural timber with rectangular cross section. General requirements.

BS EN 14250: 2004. Timber structures. Product requirements for prefabricated structural members assembled with punched metal plate fasteners.

BS EN 14342: 2005 Wood flooring. Characteristics, evaluation of conformity and marking.

BS EN 14374: 2004 Timber structures. Structural laminated veneer lumber. Requirements.

BS EN 14915: 2006 Solid wood panelling and cladding. Characteristics, evaluation of conformity and marking.

Construction Products Regulations 1991. Statutory Instruments No 1620. ISBN 0110146204 HMSO. 1991.

Construction Products (Amendment) Regulations 1994. Statutory Instruments No 3051. ISBN 0110432916. HMSO. 1994.

TRADA Technology. Specifying wood-based panels for structural use. TRADA Wood Information Sheet Section 2/3 Sheet 57. 2005.

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