

English Version

## Timber structures - Product requirements for prefabricated structural members assembled with punched metal plate fasteners

Structure en bois - Exigences de produit relatives aux éléments de structures préfabriqués utilisant des connecteurs à plaque métallique emboutie

Holzbauwerke - Produktanforderungen an vorgefertigte tragende Bauteile mit Nagelplattenverbindungen

This European Standard was approved by CEN on 3 December 2009.

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## Foreword

This document (EN 14250:2010) has been prepared by Technical Committee CEN/TC 124 "Timber structures", the secretariat of which is held by SFS.

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of an identical text or by endorsement, at the latest by July 2010, and conflicting national standards shall be withdrawn at the latest by July 2010.

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 14250:2004.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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

## 1 Scope

This European Standard specifies material, product and documentation requirements for prefabricated structural members (e.g. trusses for roofs, walls and floors, frames, composite beams and girders) for use in buildings made from solid structural timber according to EN 14081-1 with or without finger joints assembled with punched metal plate fasteners.

This document is valid for trusses with lengths up to 35 m and for other prefabricated structural members with spans up to 12 m.

The standard also covers tests and/or calculation methods to carry out the evaluation of conformity, requirements for the marking of these members, and external conditions (service class 3 in accordance with EN 1995-1-1 or use classes 3, 4 and 5 in accordance with EN 335-1).

As regards resistance to biological organisms, this standard covers prefabricated structural members manufactured from either untreated timber or timber treated to improve its natural durability.

This standard does not cover prefabricated timber structural members intended to be used in constructions under predominantly dynamic loads (e.g. bridges) or for use in unprotected external conditions (i.e. use class 3 in accordance with EN 335-1).

Furthermore, it does not cover members treated to improve their fire performance.

## 2 Normative references

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

EN 335-1, *Durability of wood and wood-based products — Definition of use classes — Part 1: General*

EN 335-2, *Durability of wood and wood-based products — Definition of use classes — Part 2: Application to solid wood*

EN 336:2003, *Structural timber — Sizes, permitted deviations*

EN 350-2, *Durability of wood and wood-based products — Natural durability of solid wood — Part 2: Guide to natural durability and treatability of selected wood species of importance in Europe*

EN 844-3, *Round and sawn timber — Terminology — Part 3: General terms relating to sawn timber*

EN 844-9:1997, *Round and sawn timber — Terminology — Part 9: Terms relating to features of sawn timber*

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

EN 1990, *Eurocode — Basis of structural design*

EN 1991 (all parts), *Eurocode 1 — Actions on structures*

EN 1995-1-1, *Eurocode 5: Design of timber structures — Part 1-1: General — Common rules and rules for buildings*

EN 1995-1-2, *Eurocode 5: Design of timber structures — Part 1-2: General — Structural fire design*

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

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN 13501-2, *Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests, excluding ventilation services*

EN 13823, *Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item*

EN 14081-1, *Timber structures — Strength graded structural timber with rectangular cross section — Part 1: General requirements*

EN 14545, *Timber structures — Connectors — Requirements*

EN 15228, *Structural timber — Structural timber preservative treated against biological attack*

prEN 15497, *Finger jointed structural timber — Performance requirements and minimum production requirements*

EN ISO 9001:2008, *Quality management systems — Requirements (ISO 9001:2008)*

### 3 Terms and definitions

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

#### 3.1

##### **anchorage area**

surface area of timber occupied by the plate projections in any particular member

#### 3.2

##### **batch**

all the structural members produced according to the same specifications in one shift

#### 3.3

##### **dead knot**

knot that on the considered surface is intergrown with the surrounding wood for less than one quarter of the cross-sectional perimeter, as defined in EN 844-9:1997

#### 3.4

##### **effective thickness/width**

actual thickness/width as defined in EN 336:2003 minus any wane present on the edge being considered

#### 3.5

##### **internal bracing**

element to prevent lateral buckling of a compression member

#### 3.6

##### **live knot**

##### **intergrown knot**

knot that on the considered surface is intergrown with the surrounding wood for more than three quarters of the cross-sectional perimeter as defined in EN 844-9:1997

#### 3.7

##### **plate projection**

plate tooth, plate nail or burst used for the purpose of transferring forces between members

**3.8**

**punched metal plate fastener**

metal plate having integral projections punched out in one direction perpendicular to the base of the plate, being used to join two or more pieces of timber of the same thickness in the same plane

**4 Material requirements**

**4.1 Timber**

**4.1.1 Structural timber**

The following requirements shall apply:

- a) Structural timber shall be strength graded using grading standards and methods complying with EN 14081-1.
- b) In addition to the specified grade requirements, structural timber shall also meet the following criteria for geometrical defects, i.e. spring, bow, twist and cup as defined in EN 844-3 and measured in accordance with EN 1310:
  - 1) spring: 4 mm maximum per 2 m length;
  - 2) bow: 6 mm maximum per 2 m length;
  - 3) twist: 2 mm maximum per 25 mm width per 2 m length;
  - 4) cup: 2 mm maximum per 100 mm of face.

**4.1.2 Finger jointed timber**

Finger jointed timber shall meet the requirements of prEN 15497.

**4.1.3 Dimensional stability**

Timber complying with EN 14081-1 shall be deemed to satisfy requirements for performance of this characteristic. In addition preventive structural measures suitable for the protection from biological infestation with fungi and insects should be taken into account.

NOTE Dimensional stability of the member is given as the swelling and shrinkage of timber due to changes of its moisture content in perpendicular to grain and parallel to grain direction.

**4.1.4 Reaction to fire**

The class of reaction to fire performance of the structural timber used for the prefabricated member (including the additional classification on smoke production and flaming droplets/particles, if any) shall be determined and declared according to EN 13501-1:

- a) either without the need for further testing (CWFT), as given in Table 1<sup>1)</sup>, if the timber is proved to meet the requirements of the class given therein for timber without preservative treatment as well as for preservative treated timber when the preservative treatment does not result, when dry, in an addition in the analytical zone of the treated timber of more than 2 % by mass of organic material; or

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1) This table is the same as given in the Decision of the Commission 2003/43/EC of 2003-01-17 (see OJEU L 13 of 2003-01-18), as amended firstly by 2003/593/EC of 2003-08-07 (see OJEU L 201 of 2003-08-08), secondly by 2006/673/EC of 2006-10-05 (see OJEU L 276 of 2006-10-07) and thirdly by 2007/348/EC of 2007-05-15 (see OJEU L 131 of 2007-05-23), and corrected by the Corrigendum (see OJEU L 33 of 2003-02-08).

- b) based on testing of the timber according to the standards referred to in EN 13501-1, when the timber does not meet the requirements of Table 1 or where a higher classification than the one in a) is sought.

When option b) is applied and where required by the test method, the structural member shall be mounted and fixed in a manner representative of its intended end use.

When tested according to EN 13823, the timber shall be mounted in accordance with the following:

- c) the whole area of both wings in the SBI apparatus shall be covered with timber pieces mounted edge to edge (butt jointed), without jointing or bonding and orientated horizontally or vertically, supported by
- d) timber battens, minimum 40 mm × 40 mm, fixed to the test backing boards at 400 mm to 600 mm centres horizontally or vertically (perpendicular to the orientation of the timber pieces).

**Table 1 – Structural timber considered as classified without the need for further testing (CWFT)**

Product <sup>a</sup>	Product details	Minimum mean density <sup>c</sup> kg/m <sup>3</sup>	Minimum overall thickness mm	Class <sup>b</sup> (excluding floorings)
Structural timber	Visual and machine graded structural timber with rectangular cross-sections shaped by sawing, planning or other methods	350	22	D-s2, d0
<p><sup>a</sup> Applies to all species covered by the product standards.</p> <p><sup>b</sup> Class as provided for in Table 1 of the Annex to Decision 2000/147/EC.</p> <p><sup>c</sup> Conditioned according to EN 13238.</p>				

#### 4.1.5 Resistance to biological organisms

##### 4.1.5.1 Timber without preservative treatment

The timber shall have adequate natural durability in accordance with EN 350-2 for the intended use class as defined in EN 335-1 and EN 335-2 and the durability class shall be declared.

##### 4.1.5.2 Timber with preservative treatment

If preservative treated timber is used, the durability class, type of preservative, critical retention value and penetration class in accordance with EN 15228 shall be declared.

#### 4.2 Punched metal plate fasteners

The fasteners used for prefabricated timber structural members shall comply with EN 14545.

In addition, if the timber is preservative treated against biological organisms, the fasteners treatment against corrosion shall be compatible with the preservative used.

NOTE When timber is treated with substances which cause corrosion (e.g. copper salts or organic substances) connectors made of austenitic stainless steel or galvanized (Z275 or Z350) can be used in use classes 1 and 2.

## 5 Prefabricated member requirements

### 5.1 Mechanical resistance

#### 5.1.1 General

The mechanical resistance shall be determined and declared in terms of:

- load-bearing capacity; and
- stiffness (declared normally as deflection for a specified load/unit load).

Influence of preservative treatment on mechanical resistance shall be assessed according to EN 15228.

#### 5.1.2 Determination and declaration

The mechanical resistance (i.e. load-bearing capacity and stiffness) of the prefabricated structural member shall be determined and declared according to one of the following methods:

- a) Method 1: By reference to dated drawings of the structural member with information on the geometrical data and reference to the material properties of the structural components and punched metal plate fasteners used, necessary to calculate characteristic load-bearing capacities and stiffness according to method(s) valid in the Member State of the intended use of this structural member.

NOTE 1 This method is assumed to reflect Method 1 in Guidance Paper L. By this method the characteristic mechanical resistance is indirectly declared. It may be relevant for a structural member manufactured according to the manufacturer's specification and put on the market, e.g. on the retailer shelves, without necessarily knowing the works where the member is going to be used.

- b) Method 2: Directly, by calculating the characteristic values or design values for the load-bearing capacities and stiffness of the structural member according to the method(s) given in EN 1995-1-1 with possibly reference to the used sets of National Determined Parameters (NDPs), if any, valid in the Member State of the intended use of the structural member.

NOTE 2 This method is assumed to reflect Method 2 in Guidance Paper L. By this method the characteristic mechanical resistance is directly declared. It may be relevant for a structural member manufactured according to the manufacturer's specification and put on the market without necessarily knowing the works where the member is going to be used, e.g. for catalogue products, like trussed beams.

- c) Method 3a: By declaring compliance with the given production documents of the structural member, together with the information on the purchaser and the party responsible for the structural design of the member.

NOTE 3 This method is assumed to reflect Method 3a in Guidance Paper L. By this method the characteristic mechanical resistance is indirectly declared. It may be relevant for a structural member made to measure according to the purchaser's order.

- d) Method 3b: By declaring compliance with a given structural design specification of the structural member produced and held by the manufacturer showing that the member is able to resist all the relevant actions affecting it in the ultimate limit state and satisfies specified serviceability requirements in a specific part of works. Structural design specification of the member is based on information (e.g. actions and deflection limits) from a specific part of works according to the design requirements in the Member State of its intended use (EN 1990, EN 1991 and EN 1995-1-1), with possibly reference to the relevant National Annexes defining the National Determined Parameters/method(s) valid in the Member State of the intended use of the structural member.

NOTE 4 This method is assumed to reflect Method 3b in Guidance Paper L. By this method the characteristic mechanical resistance is indirectly declared. It may be relevant for a structural member made to measure according to the structural design specification prepared by the manufacturer when the works where the member will be used is known.

## 5.2 Reaction to fire

Reaction to fire performance shall be as those of the material (timber) according to 4.1.4.

NOTE It is assumed that metal plate fasteners do not influence the reaction to fire performance of the assembled component.

## 5.3 Fire resistance

Where required, the fire resistance performance shall be declared according to EN 13501-2, after being:

- a) tested in end-use condition in accordance with test standards given in EN 13501-2; or
- b) calculated according to EN 1995-1-1 and EN 1995-1-2.

## 5.4 Other member characteristics

### 5.4.1 Timber sizes and tolerances

Size tolerances of the structural member shall as a minimum be in accordance with tolerance class 2 given in EN 336:2003.

Timber sizes shall be not less than:

- thickness (width), all members: 35 mm;
- depth, external (chord) members: 68 mm;
- depth, internal (web or diagonal) members: 58 mm.

The effective thickness, as defined in 3.4, of the outer face of any chord member shall not be less than 35 mm.

Any damage due to handling of the structural member shall be prevented:

- either by applying EN 1995-1-1; or
- by using the following minimum thickness requirement " $b$ ", in millimetres (mm), for the members:

$$b = \frac{1,8 l^2}{f_{m,k}}$$

where

$l$  is the overall length of the member, in metres (m);

$f_{m,k}$  is the characteristic bending strength of the member, in Newtons per square millimetre (N/mm<sup>2</sup>).

NOTE Attention should be drawn on the influence of thickness of structural members on their out-of-plane behaviour. This aspect should be addressed in the design, especially when the structural members are subject to high loads.

### 5.4.2 Wane

Wane shall not occur within the area of any jointing device or within support areas of the prefabricated timber structural member.

### 5.4.3 Joint gaps

Within the area of the fastener, the average gap between two adjacent parts of the prefabricated timber structural members at the time of fabrication shall not exceed 1,5 mm.

#### **5.4.4 Moisture content**

The maximum moisture content of the timber and of timber wedges, if any, at the time of fabrication of the prefabricated timber structural member shall not exceed 22 %. The moisture content shall be estimated in accordance with EN 13183-2 using a calibrated electric resistance moisture meter.

#### **5.4.5 Dimensional accuracy of member**

The overall horizontal and vertical dimensions of the structural member shall not deviate from the specified dimensions by more than:

- dimensions up to and including 10 m:  $\pm 10$  mm;
- dimensions more than 10 m:  $\pm 1$  mm/m.

The dimensional variation between members within the same batch shall not differ by more than 10 mm.

#### **5.4.6 Dimensional stability**

If required, swelling and shrinkage of prefabricated structural members shall be calculated according to EN 1995-1-1, using the material properties given in 4.1.3.

**NOTE** Dimensional stability of the member is given as the swelling and shrinkage of timber due to changes of its moisture content in perpendicular to grain and parallel to grain direction.

#### **5.4.7 Camber**

At the time of fabrication of the timber structural member, camber shall be within a tolerance of 25 % of the camber specified in the design.

#### **5.4.8 Live knots**

Live knots shall be permitted within the anchorage area of the prefabricated timber structural member, provided that the plate projections are satisfactorily embedded without visible distortion of the fasteners or splitting of the timber outside the knot.

#### **5.4.9 Dead knots, knot holes or fissures**

Where a dead knot, knot hole, or fissure occurs within the anchorage area of the prefabricated timber structural member, the area of effective plate projections, disregarding those in the dead knot, knot hole or on the line of the fissure shall be in accordance with that specified in the design. Fissures which do not extend more than 50 mm from the tooth, burst or plate nail which apparently caused them, shall be disregarded.

#### **5.4.10 Fastener positioning**

Fasteners used for the prefabricated timber structural member shall not be misplaced by more than the amount considered in the structural design and not more than 10 mm in any direction in relation to the design position.

#### **5.4.11 Fastener embedment**

The plate projections of the fastener shall be inserted perpendicular to the embedment surface of the timber and the plate surface shall be free of distortion. Any gap between the timber surface and the underside of a punched metal plate fastener shall not exceed 1 mm and shall not occur over more than 25 % of the anchorage area in any prefabricated timber structural member in any joint.

### 5.4.12 Protruding fasteners

Punched metal plate fasteners shall not protrude outside the outer edges of the prefabricated timber structural member. The lower edge of fasteners intended to be located over a point of support shall be at least 3 mm from the lower edge of the member in contact with the support.

NOTE It is important that consideration is given to masking of protruding corners of fasteners, particularly those that protrude into walk spaces or other areas permitting access.

## 6 Product documents

### 6.1 General

Adequate drawings and written instructions shall be provided with the prefabricated members relating to their transport, handling, storage, erection, positioning and internal bracing, together with any fixing details necessary to construct compound or multi-part structures.

### 6.2 Drawings and structural design information

#### 6.2.1 Drawings

The drawings of the prefabricated timber structural member shall as a minimum contain:

- the main dimensions and tolerance classes;
- the cross section sizes and strength grades of the timber components;
- the punched metal plate type, size, orientation and position on each joint;
- the punched metal plate fastener assembly tolerance;
- precamber, if any;
- connections to be done on the building site including other fastener types and sizes;
- position of supports and minimum support lengths;
- the requirements on bracing of compressed components;
- notation of points suitable for hanging to crane;
- spacing of members;
- treatment with timber preservatives against biological attack and durability class.

#### 6.2.2 Structural design documentation

When the structural design of the prefabricated member is covered (i.e. Method 2 or 3b) the following information shall be provided in addition to the drawing of the member:

- a) Method 2:
  - 1) the design codes that have been used to verify the design (EN 1995-1-1);
  - 2) the design software used, if any, unambiguously identified;
  - 3) designer responsible for the structural design of the member;

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- 4) material values necessary as input for calculation;
- 5) safety factors and other NDPs, if any, used in the calculation;
- 6) calculation results.

### b) Method 3b:

- 1) the design codes that have been used to verify the design (EN 1995-1-1);
- 2) the place of use of the member;
- 3) the design software used, if any, unambiguously identified;
- 4) designer responsible for the structural design of the member;
- 5) all the actions (loads) imposed on the member;
- 6) requirements for the serviceability limit states (i.e. deflection limits);
- 7) material values necessary as input for calculation;
- 8) safety factors and other NDPs, if any, used in the calculation;
- 9) calculation results.

## 7 Evaluation of conformity

### 7.1 General

The conformity of a prefabricated timber structural member with the requirements of this European Standard and with the stated values shall be demonstrated by:

- a) initial type testing;
- b) factory production control by the manufacturer, including member assessment.

For the purposes of testing, the manufacturer's members may be grouped into families, where it is considered that the results for one or more characteristics from any one member within the family are representative for the same characteristics for all the members within that same family.

### 7.2 Initial type testing

#### 7.2.1 General

An initial type test is the complete set of tests or other procedures, in respect of the characteristics to be assessed, determining the performance of samples of member representative (see Notes 1 and 2 hereafter) of the product type.

NOTE 1 For prefabricated structural members assembled with punched metal plate fasteners a product range may be introduced to simplify the ITT (ITC) and FPC. The product range may cover similar members with different cross sections and spans (e.g. trusses for saddle roof or trusses with constant height).

NOTE 2 Typical products are controlled for made-to-measure prefabricated structural members assembled with punched metal plate fasteners. Typical products represent the members produced and designed using the same methods. If these methods are changed, then additional typical product is needed.

Initial type testing shall be performed to show conformity with this standard for prefabricated structural members being put onto the market:

- at the beginning of the production of a prefabricated structural members design;
- at the beginning of a new or modified method of production or when the raw materials or the supplier of components are changed.

In case of the initial type testing of prefabricated structural members for which type testing in accordance with this standard was already performed, the initial type testing may be reduced, if:

- it has been established that the performance characteristics compared with the already tested prefabricated structural members have not been affected; or
- it is in accordance with the rules for families and/or direct or extended application of test results.

Where components are used, whose characteristics have already been determined, by the component manufacturer, on the basis of conformity with other technical specifications, these characteristics need not be reassessed provided that the components' performance or method of assessment remain the same, that the characteristics of the component are suitable for the intended end use of the prefabricated structural member, and insofar as the manufacturing process does not have a detrimental affect on the determined characteristics.

Products or components CE marked in accordance with appropriate harmonised European specifications, used in the production of the structural member, may be presumed to have the performances stated with the CE marking, although this does not replace the responsibility of the manufacturer of the prefabricated structural member to ensure that the member complies with the additional requirements given in this standard and its components have the necessary performance values to meet the design.

All characteristics in Clauses 4 and 5 shall be subject to initial type testing of the member where relevant.

### **7.2.2 Use of previously existing data**

Tests previously performed on the same members in accordance with the provisions of this standard (i.e. same characteristic(s), test method, sampling procedure, system of attestation of conformity, etc.) may be taken into account for the purpose of ITT.

### **7.2.3 "Deemed to satisfy" provisions and use of reference tabulated data**

In those cases where conformity with this standard is based on classified without the need for further testing (CWFT) the initial type testing shall be limited to the verification of whether the members meet the requirements to use those values, classes or levels, unless better values, classes or levels are being claimed.

### **7.2.4 ITT reports**

The results of the ITT (including ITC) shall be recorded in a "report". The report shall at least include the following information:

- a) manufacturer and manufacturing plant;
- b) identification of the member in accordance with this European Standard;
- c) information about:
  - 1) sampling;
  - 2) date of verification;
  - 3) involved personnel;

- 4) applied calculation methods;
- d) identification of the organisation and personnel executing the verification;
- e) place and date;
- f) the results of the verification, including analysis of these, when relevant;
- g) place and date of the delivery of the report.

The ITT report shall comply with the relevant clauses of this European Standard.

### **7.3 Factory production control (FPC)**

#### **7.3.1 General**

The manufacturer shall establish, document and maintain an FPC system to ensure that the members placed on the market conform to the declared performance characteristics. The FPC system shall consist of written procedures (works' manual), regular inspections and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the member. Records shall remain legible, readily identifiable and retrievable.

An FPC system conforming with the requirements of EN ISO 9001:2008 and made specific to the requirements of this standard shall be considered to satisfy the above requirements.

The results of inspections, tests or assessments requiring action shall be recorded, as shall any action taken. The action to be taken, when control values or criteria are not met, shall be recorded and retained for the period specified in the manufacturer's FPC procedures.

#### **7.3.2 FPC requirements for all manufacturers**

The manufacturer shall establish procedures to ensure that the production tolerances allow for the prefabricated structural member's performances to be in conformity with the declared values, derived from initial type testing.

The manufacturer shall record the results of the tests specified above. These records shall at least include the following information:

- identification of the member tested;
- the date of sampling and testing;
- the test methods performed;
- the test results.

#### **7.3.3 Manufacturer-specific FPC system requirements**

##### **7.3.3.1 Personnel**

The responsibility, authority and the relationship between personnel that manages, performs or verifies work affecting member conformity, shall be defined. This applies in particular to personnel that need to initiate actions preventing product non-conformities from occurring, actions in case of non-conformities and to identify and register member conformity problems. Personnel performing work affecting member conformity shall be competent on the basis of appropriate education, training, skills and experience for which records shall be maintained.

### 7.3.3.2 Equipment

All weighing, measuring and testing equipment necessary to achieve, or produce evidence of, conformity shall be calibrated or verified and regularly inspected according to documented procedures, frequencies and criteria. Control of monitoring and measuring devices shall comply with the appropriate clause of EN ISO 9001:2008.

All equipment used in the manufacturing process shall be regularly inspected and maintained to ensure use, wear or failure does not cause inconsistency in the manufacturing process. Inspections and maintenance shall be carried out and recorded in accordance with the manufacturer's written procedures and the records retained for the period defined in the manufacturer's FPC procedures.

### 7.3.3.3 Mechanical resistance

Calculations and input data, which have to be verified in the framework of the conformity assessment for the purpose of the member's mechanical resistance under FPC (in particular for the initial inspection of the factory and the FPC and continuous surveillance, assessment and approval of the FPC), shall be as indicated in Annex A.

### 7.3.3.4 Raw materials and components

The specifications of all incoming raw materials and components used for the production of the member shall be documented, as shall the inspection scheme for ensuring their conformity.

In case supplied components are used, the attestation of conformity level of the component shall be at least that given in the appropriate harmonised technical specification for that component. If this is not the case, the inspection scheme shall be adequate to demonstrate their suitability.

When following the reaction to fire CWFT-procedure the minimum requirements for timber are ensured by prescribing timber density and measuring timber sizes. Minimum density and size requirements shall be fulfilled in addition to ITT also during FPC.

### 7.3.3.5 In-process control

The manufacturer shall plan and carry out production under controlled conditions. Compliance with EN ISO 9001:2008, 7.5.1 and 7.5.2, shall be deemed to satisfy the requirements of this subclause.

### 7.3.3.6 Traceability and marking

Individual members, member batches or packages shall be identifiable and traceable with regard to their production origin. The manufacturer shall have written procedures ensuring that processes related to affixing traceability codes and/or markings are inspected regularly. Compliance with EN ISO 9001:2008, 7.5.3, shall be deemed to satisfy the requirements of this subclause.

### 7.3.3.7 Non-conforming members

The manufacturer shall have written procedures which specify how non-conforming members shall be dealt with. Any such events shall be recorded as they occur and these records shall be kept for the period defined in the manufacturer's written procedures. Compliance with EN ISO 9001:2008, 8.3, shall be deemed to satisfy the requirements of this subclause.

### 7.3.3.8 Corrective action

The manufacturer shall have documented procedures that instigate action to eliminate the cause of non-conformities in order to prevent recurrence. Compliance with EN ISO 9001:2008, 8.5.2, shall be deemed to satisfy the requirements of this subclause.

#### **7.3.3.9 Handling, storage and packaging**

The manufacturer shall have procedures providing methods of member handling and shall provide suitable storage areas preventing damage or deterioration.

#### **7.3.4 Short-term control**

The following shall be regularly controlled once per production day or once per production shift or once per order, whichever is the most frequent:

- a) before/at cutting:
  - 1) timber grade (see 4.1.1, a));
  - 2) timber sizes (see 5.4.1);
  - 3) reaction to fire class conditions (see 4.1.4);
  - 4) geometrical defects (see 4.1.1, b));
  - 5) moisture content (see 5.4.4);
  - 6) resistance to biological organisms, if any (see 4.1.5);
- b) at beginning of assembly:
  - 1) fastener type, thickness and size (see 4.2);
  - 2) fastener positioning, orientation and installation (see 5.4.10, 5.4.11 and 5.4.12);
  - 3) joint gap (see 5.4.3);
  - 4) wane and knots within the anchorage zone (see 5.4.2 and 5.4.8);
  - 5) dimensional accuracy (see 5.4.5 and 5.4.7).

#### **7.3.5 Medium-term control**

In addition to the items mentioned in 7.3.4, the following shall be regularly controlled once per week for one batch (chosen at random) per production line:

- the dimensional variations (see 5.4.5);
- the availability of drawings and other documents (see Clause 6).

#### **7.3.6 Control of measuring and testing equipment**

All measuring and testing equipment shall be calibrated and inspected according to documented procedures, frequencies and criteria.

#### **7.3.7 Records**

The following records shall be kept at least ten years:

- a) for each batch:
  - 1) job number and purchaser's name;
  - 2) production date and shift;

- 3) production drawings showing timber quality and sizes, fastener type, sizes and positioning, wood protection (if any), the overall horizontal and vertical dimensions, and camber and the location of support and bracing (if any);
  - 4) results of control in accordance with 7.3.4 and 7.3.5;
- b) for the equipment: results of calibration in accordance with 7.3.6.

## **7.4 Initial inspection of the factory and of the factory production control**

### **7.4.1 Information to be supplied**

Full details of the manufacturer's factory production control system shall be made available. In the case of a new factory, information on the factory production control and the equipment to be used to produce the members shall be provided.

### **7.4.2 Initial inspection**

In the case of a new factory an initial inspection of the factory and of the factory production control shall be carried out. The initial inspection shall:

- a) confirm that the factory production control manual complies with the requirements of 7.3;
- a) assess that the production equipment is in accordance with the factory production control manual and in relation to providing the ability to meet the requirements of this European Standard;
- b) assess that the laboratory equipment is in accordance with the factory production control manual and is suitable for factory production control;
- c) confirm that the production is performed under the supervision of an adequate organisation.

### **7.4.3 Reports**

In the event that an initial inspection is carried out, a report as specified in 7.5.3 shall be prepared.

## **7.5 Continuous surveillance, assessment and acceptance of the factory production control**

### **7.5.1 Inspection tasks**

The tasks of the inspections are the surveillance, assessment and acceptance of the factory production control. Any major change in the factory production control manual shall be reported by the manufacturer within one month of its implementation.

It shall be verified that factory production control complies with the requirements of 7.3.

### **7.5.2 Frequency of inspections**

Inspections shall be carried out at least once per year.

### **7.5.3 Reports**

Following each inspection a report shall be prepared and sent to the manufacturer.

The manufacturer shall, if appropriate, make corrective actions following the receipt of the report.

## **8 Marking**

Each prefabricated member shall be clearly and indelibly marked with the following information:

- a) identification of the manufacturer;
- b) job and batch identification;
- c) reference to this standard (i.e. EN 14250).

Additionally, the following shall be given either on the member or in an accompanying document:

- d) the location of support areas and any points at which internal bracing is required according to the design;
- e) if the member is not preservative treated, use class in accordance with EN 335-1 and EN 335-2;
- f) if the member is preservative treated, use class in accordance with EN 335-1 and EN 335-2, type of preservative, critical retention value and penetration class in accordance with EN 15228.

The marking on the member shall be placed in a common way so that it can be used as a reference for installation.

**NOTE** Where ZA.3 covers the same information as this clause, the requirements of this clause are met.

## Annex A (normative)

### Additional requirements for factory production control (FPC)

#### A.1 Method 1

Regarding the initial inspection of the factory and of the FPC and continuous surveillance, assessment and approval of the FPC, the manufacturer's permanent internal control of production shall be evaluated, in particular with regard to documented procedures for the selection of representative samples according to the provisions of this European Standard and controlling geometrical data of the member and material properties. The conditions of manufacturing the product range shall be checked whether they allow the indications, made as information accompanying the marking, to comply with the provisions of this European Standard.

#### A.2 Method 2

Part of the initial inspection of the factory shall be also a verification that manufacturer's ITC, which has undertaken, is in accordance with the provisions of this European Standard.

Furthermore, regarding the initial inspection of the factory and the FPC and continuous surveillance, assessment and approval of the FPC shall be evaluated whether the production system enables the achievement of the required characteristics and the effective operation of FPC. In addition to checking, whether the ITC has been performed for each product range and whether the method and the calculation process are documented, when the FPC includes calculation of the mechanical properties for the manufactured members, the verification shall be made to show that a documented FPC system, in accordance with this European Standard, is established, used and maintained, which ensures:

- a) the correct selection of representative samples from the product range;
- b) for each product range manufactured, the correct determination of member and material properties necessary as input for calculations;
- c) adequate equipment and competent personnel to perform correct calculations;
- d) that the calculations have been performed, that its basis (e.g. safety factors used) is correct, and the method, process and results used as a basis for performance declarations are adequately documented and registered;
- e) that, in the case of electronic processing and reporting, only sufficiently documented and validated software and properly functioning computer equipment are used, and adequate measures of data protection and integrity are in place.

Regarding the continuous surveillance, assessment and approval of FPC, a verification (with an appropriate frequency of inspection as specified in 7.5.2) shall be made showing that the documentation regarding the calculation method is still valid (regardless whether modified or not). In addition, the continued use and maintenance of a documented FPC system, in accordance with this European Standard, shall be checked to ensure the parameters given in the previous paragraph, i.e. a) to e).

#### A.3 Method 3a

Regarding the initial inspection of the factory and of the FPC and continuous surveillance, assessment and approval of the FPC, the manufacturer's permanent internal control of production shall be evaluated, in particular with regard to documented procedures for the selection of representative samples according to the

provisions of this European Standard and controlling geometrical data of member and material properties. The conditions of manufacturing the typical product shall be checked whether they allow the indications, made as information accompanying the marking, to comply with the provisions of this European Standard.

#### **A.4 Method 3b**

Part of the initial inspection of the factory shall be also a verification that manufacturer's ITC, which has undertaken, is in accordance with the provisions of this European Standard.

Furthermore, regarding the initial inspection of the factory and of the FPC and continuous surveillance, assessment and approval of the FPC shall be evaluated whether the production system enables the achievement of the required characteristics and the effective operation of FPC. In addition to checking, whether the ITC has been performed for a typical product and whether the method and the calculation process are documented, when the FPC includes calculation of the mechanical properties for the manufactured members (samples), the verification shall be made to show that a documented FPC system, in accordance with this European Standard, is established, used and maintained, which ensures:

- a) the correct selection of representative samples;
- b) the correct determination of member and material properties necessary as input for calculations;
- c) adequate equipment and competent personnel to perform correct calculations;
- d) that the calculations have been performed, that its basis (e.g. safety factors used) is correct, and the method, process and results used as a basis for performance declarations are adequately documented and registered;
- e) that, in the case of electronic processing and reporting, only sufficiently documented and validated software and properly functioning computer equipment are used, and adequate measures of data protection and integrity are in place.

Regarding the continuous surveillance, assessment and approval of FPC, a verification (with an appropriate frequency as specified in this European Standard) shall be made that the documentation regarding the calculation method is still valid (regardless whether modified or not). In addition, the continued use and maintenance of a documented FPC system, in accordance with this European Standard, shall be checked to ensure the parameters given in the previous paragraph, i.e. a) to e).

## Annex ZA (informative)

### Clauses of this European standard addressing the provisions of the EU Constructions Products Directive

#### ZA.1 Scope and relevant characteristics

This European Standard has been prepared under Mandate M112 "Structural timber products and ancillaries" given to CEN by the European Commission and the European Free Trade Association.

The clauses of this European Standard shown in this annex meet the requirements of the mandate given under the EU Construction Products Directive (89/106/EEC).

Compliance with these clauses confers a presumption of fitness of the construction products covered by this annex for their intended uses indicated herein; reference shall be made to the information accompanying the CE marking.

**WARNING — Other requirements and other EU Directives not affecting the fitness for intended use may be applicable to the construction products falling within the scope of this European Standard.**

NOTE 1 In addition to any specific clauses relating to dangerous substances contained in this standard, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

NOTE 2 An informative database of European and national provisions on dangerous substances is available at the Construction web site on EUROPA (accessed through <http://ec.europa.eu/enterprise/construction/internal/dangsub/dangmain.htm>).

This annex establishes the conditions for the CE marking of prefabricated structural timber members using punched metal plate fasteners intended for uses in buildings.

The scope of this annex is defined by Table ZA.1, and is the same as Clause 1 of this standard.

Table ZA.1 – Relevant clauses

Essential characteristics		Requirement clauses in this standard	Levels and/or classes	Notes
<b>Construction products:</b> Prefabricated timber structural members using punched metal plate fasteners <sup>a</sup>				
<b>Intended uses:</b> In buildings (not in constructions under predominantly dynamic loads)				
<b>Mechanical resistance as load bearing capacity and stiffness or deflection</b> and covered under the following methods by:				
Method 1	- Geometrical data, and - Materials' (components') properties	5.1.2, a)	-	- See drawings, - See component's characteristics
Method 2	- Load-bearing capacity and - Stiffness or deflection	5.1.2, b)	-	- Calculated according to relevant design requirements, e.g. EN 1995-1-1 - Declared as characteristic or design values
Method 3a	- Reference to production drawings	5.1.2, c)	-	- Comply with the drawings, - Declared as "Pass" or "Fail"
Method 3b	- Load-bearing capacity and - Deflection	5.1.2, d)	-	- Calculated acc. to relevant design requirements, e.g. EN 1990, EN 1991 and EN 1995-1-1 - Declared as "Pass" or "Fail"
All methods	a) Component's characteristics, as:			
	- Structural timber	4.1.1		- Comply with EN 14081-1, and add. dimensional criteria - Expressed <sup>e</sup> as "Pass" or "Fail"
	- Finger jointed timber, and	4.1.2		- Comply with prEN 15497, - Expressed <sup>e</sup> as "Pass" or "Fail"
	- Punched metal plate fasteners, and	4.2		- Comply with EN 14545, - Expressed <sup>e</sup> as "Pass" or "Fail"
	b) Other member's characteristics	5.4 <sup>d</sup>		- Verified according to 5.4.1 to 5.4.12 <sup>o</sup> - Expressed <sup>e</sup> as "Pass" or "Fail"
<b>Dimensional stability</b> , as: shrinkage and swelling		5.4.6	-	Calculated according to EN 1995-1-1 <sup>e</sup>
<b>Reaction to fire</b> <sup>c</sup>		5.2	D-s2, d0 A1 to F	- CWFT according to Table 1, or - Tested and classified acc. to EN 13501-1
<b>Fire resistance</b> , where required		5.3	Acc. to EN 13501-2	Class declared acc. to EN 13501-2 after being: - Tested in acc. with standards given in EN 13501-2, or - Calculated acc. to EN 1995-1-1 and EN 1995-1-2
<b>Release of dangerous substances</b> <sup>b, c</sup>		-	-	
<b>Durability</b> <sup>c</sup> (i.e. resistance to biological organisms):				
- Without preservative treatment (i.e. natural), or		4.1.5.1		- Tested according to EN 350-2, - Declared as durability class
- After preservative treatment	- Timber, and	4.1.5.2		- Declared durability class, type of preservative and critical retention value and penetration class
	- Fasteners	4.2		- Verified according to EN 14545 - Declared as "Pass" or "Fail"
<sup>a</sup> Member not treated to improve the fire performance of the member. <sup>b</sup> See Notes 1 and 2 in ZA.1. <sup>c</sup> The performance of these characteristics may be affected by the preservative treatment of timber in accordance with EN 15228. <sup>d</sup> Except 5.4.6. <sup>e</sup> The performance of characteristics under 4.1.1, 4.1.2, 4.2 and 5.4 does not need to be explicitly declared in CE marking.				
NOTE Further information on the characteristics specified above is given in the relevant subclauses of ZA.3 for each of the method, together with the CE marking examples.				

The requirement on a certain characteristic is not applicable in those Member States (MSs) where there are no regulatory requirements on that characteristic for the intended use of the product. In this case, manufacturers placing their products on the market of these MSs are not obliged to determine nor declare the performance of their products with regard to this characteristic and the option "No performance determined" (NPD) in the information accompanying the CE marking (see ZA.3) may be used. The NPD option may not be used, however, where the characteristic is subject to a threshold level.

## ZA.2 Procedure for attestation of conformity of prefabricated structural timber members assembled with punched metal plate fasteners

### ZA.2.1 System of attestation of conformity

The system of attestation of conformity of prefabricated structural timber members assembled with punched metal plate fasteners, in accordance with the Decision of the Commission 97/176/EC of 1997-02-17 (see OJEU L73 of 1997-03-14), as amended by 2001/596/EC of 2001-01-08 (see OJEU L209 of 2001-08-02) and given in Annex III of the mandate for "Structural timber products and ancillaries", are shown in Table ZA.2 for the indicated intended uses.

**Table ZA.2 – Systems of attestation of conformity**

Products	Intended use	Levels or classes	Attestation of conformity systems
<b>Solid structural timber products:</b>		(A1, A2, B, C) <sup>a</sup>	1
Prefabricated structural members assembled with punched metal plate fasteners	In buildings	(A1, A2, B, C) <sup>b</sup> , D, E (A1 to E) <sup>c</sup> , F	2+
System 1: See Directive 89/106/EEC (CPD) Annex III.2.(i), without audit testing of samples.			
System 2+: See Directive 89/106/EEC (CPD) Annex III.2.(ii), First possibility, including certification of the factory production control by a notified body on the basis of initial inspection of factory and of factory production control as well as of continuous surveillance, assessment and approval of factory production control.			
<p><sup>a</sup> Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material).</p> <p><sup>b</sup> Products/materials not covered by footnote <sup>a</sup>.</p> <p><sup>c</sup> Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Class A1 according to Commission Decision 96/603/EC).</p>			

**NOTE** The attestation of conformity system 1 given in the table above is not applicable for these members. It would only be applicable for those members, which are treated to improve their fire performance. Since this kind of members are excluded from the scope of this European Standard and consequently also from the scope of this annex, it would be confusing to apply system 1 to prefabricated members of this European Standard. Therefore, the subsequent provisions take this fact into account.

The attestation of conformity of the prefabricated timber structural members assembled with punched metal plate fasteners in Table ZA.1 shall be based on the evaluation of conformity procedures indicated in Table ZA.3 resulting from application of the clauses of this European Standard indicated therein.

**Table ZA.3 – Assignment of evaluation of conformity tasks for prefabricated structural timber members assembled with punched metal plate fasteners under system 2+**

Tasks		Content of the task	Evaluation of conformity clauses to apply	
Tasks under the responsibility of the manufacturer	Factory production control (FPC)	Parameters related to all characteristics of Table ZA.1 relevant for the intended uses	7.3	
	Initial type testing (ITT) by a notified test laboratory	Reaction to fire	7.2	
	Initial type testing (ITT/ITC) by the manufacturer	All characteristics of Table ZA.1 relevant for the intended uses, except reaction to fire (see above)	7.2	
	Tasks under the responsibility of the notified body	Initial inspection of factory and of FPC	Parameters related to all characteristics of Table ZA.1 relevant for the intended uses	7.3 and Annex A <sup>a</sup>
		Continuous surveillance, assessment and approval of FPC	Parameters related to all characteristics of Table ZA.1 relevant for the intended uses, in particular: mechanical resistance and reaction to fire	7.3 and Annex A <sup>a</sup>
<sup>a</sup> Relevant only for the treatment of "Mechanical resistance".				

### ZA.2.2 EC certificate of conformity and EC declaration of conformity

When compliance with the conditions of this annex is achieved, the notified certification body shall draw up a certificate of conformity (i.e. EC certificate of conformity), which entitles the manufacturer to affix the CE marking. The certificate shall include:

- name, address and identification number of the notified certification body;
- name and address of the manufacturer, or his authorised representative established in the EEA, and place of production;

NOTE 1 The manufacturer may also be the person responsible for placing the product onto the EEA market, if he takes responsibility for CE marking.

- description of the member (type, identification, use, etc.);
- provisions to which the member conforms (i.e. Annex ZA of this EN);
- particular conditions applicable to the use of the member (e.g. provisions for use under certain conditions);
- the number of the EC certificate of conformity of the factory production control;
- conditions of validity of the certificate, where applicable;
- name of, and position held by, the person empowered to sign the certificate.

In addition, the manufacturer shall draw up and retain a declaration of conformity (i.e. EC declaration of conformity) including the following:

- name and address of the manufacturer, or his authorised representative established in the EEA;
- name and address of the notified certification body;
- description of the member (type, identification, use, etc.), and a copy of the information accompanying the CE marking;

NOTE 2 Where some of the information required for the declaration is already given in the CE marking, it does not need to be repeated.

- provisions to which the member conforms (i.e. Annex ZA of this EN), and a reference to the ITT report(s) and factory production control records (if appropriate);
- particular conditions applicable to the use of the member (e.g. provisions for use under certain conditions);
- number of the accompanying EC certificate of conformity;
- name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or of his authorised representative.

The above mentioned declaration and certificate shall be presented in the language or languages accepted in the Member State(s) in which the member is intended to be used.

### **ZA.3 CE marking and labelling**

#### **ZA.3.1 General**

The manufacturer or his authorized representative established within the EEA is responsible for the affixing of the CE marking, which consists of the CE-marking symbol, as given by Directive 93/68/EEC, and the appropriate accompanying information.

#### **ZA.3.2 CE marking on the prefabricated structural member**

As for the CE marking affixed on the prefabricated structural member, the following information shall be given together with the CE marking symbol:

- a) identification number of the notified certification body;
- b) name or identifying mark of the manufacturer;

NOTE Registered address of the manufacturer may also be added.

- c) the last two digits of the year in which the marking was affixed;
- d) number of the EC certificate of conformity of the factory production control;
- e) reference to this European Standard and the year of its publication (i.e. EN 14250:2010);
- f) short description of the structural member and its intended use:
  - 1) generic name and its intended use: "Prefabricated structural timber member assembled with punched metal plate fasteners used in buildings" (relevant in ZA.3.3 provisions only);
  - 2) identification number, which identifies the member to the accompanying documents.

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Figure ZA.1 gives an example of such a CE marking to be affixed on the prefabricated structural member.

 01234	<i>CE marking symbol given in Directive 93/68/EEC</i>
<b>AnyCo Ltd</b> <b>11</b> 01234-CPD-00234	<i>Identification number of the notified certification body</i>  <i>Name or identifying mark of the manufacturer</i> <i>NOTE Registered address of the manufacturer may also be added.</i> <i>Last two digits of the year in which the marking was affixed</i>
<b>EN 14250:2010</b> AnyCo No. 338/2011	<i>Number of the EC certificate of conformity</i>  <i>Number of the European Standard with the year of its publication</i> <i>Description of the member as its identification number</i>

Figure ZA.1 – Example of the CE marking affixed on the prefabricated structural member

### ZA.3.3 CE marking in the accompanying documents

#### ZA.3.3.1 General

The CE marking symbol and the information a) to f) given in ZA.3.2, together with the following information, shall be given in the commercial documents, accompanying the structural member:

Information on those relevant essential characteristics of the member listed in Table ZA.1 which are to be declared and, where relevant, expressed as "Pass" for the pass/fail requirements (where necessary), or "NPD" (i.e. No performance determined) for those for characteristics, where this is relevant, namely for:

- a) mechanical resistance: declared as given in Table ZA.1 using one of the methods described in 5.1.2 (see Notes 1 and 2);

NOTE 1 Further rules on the CE marking given in the commercial documents, accompanying the member, together with the appropriate examples, are explained in ZA.3.3.2 (for Method 1), ZA.3.3.3 (for Method 2), ZA.3.3.4 (for Method 3a) and ZA.3.3.5 (for Method 3b).

- b) dimensional stability: calculated according to EN 1995-1-1 (see Note 2);

NOTE 2 Characteristics given in 4.1.1, 4.1.2, 4.2 and 5.4 (see Table ZA.1) there is no need to be explicitly declared with all methods since the requirements given for them should always be fulfilled.

- c) reaction to fire: class (including smoke and droplets) from Table 1 or, when tested, according to EN 13501-1;

- d) fire resistance: class according to EN 13501-2, where required;

- e) release of dangerous substances: see Notes 1 and 2 in ZA.1, where applicable;

- f) durability of the timber used for the structural member:

- 1) without preservative treatment, as natural durability: declared as intended durability class, according to 4.1.5.1; or

- 2) after preservative treatment, for:

- i) timber: declared as durability class, type of preservative, critical retention value and penetration class, according to 4.1.5.2;

- ii) fasteners: declared as "Pass", according to 4.2.

The "No performance determined" (NPD) option shall not be used where the characteristic is subject to a threshold level. Otherwise, the NPD option may be used when and where the characteristic, for a given intended use, is not subject to regulatory requirements in the Member State(s) of destination.

In addition to any specific information relating to dangerous substances given in the examples of the CE marking below, the member should also be accompanied, when and where required and in the appropriate form, by documentation listing any other legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation.

NOTE 3 European legislation without national derogations need not be mentioned.

NOTE 4 Affixing the CE marking symbol means, if a product is subject to more than one directive, that it conforms to all applicable directives.

#### **ZA.3.3.2 Declaration of material properties and geometrical data (i.e. Method 1)**

According to Method 1 (see 5.1.2, a)) all data that are needed on the structural member and its parts, according to the design method valid in the Member State of its intended use to indirectly determine the characteristic or design values for the load-bearing capacities and stiffness of the structural member, shall be as follows:

Mechanical resistance: declared indirectly by a reference to a dated design drawing(s) of the structural member with the following information:

- a) values for the material properties (i.e. timber strength classes, type and properties of the punched metal plate fasteners);
- b) geometrical properties (i.e. timber sizes and plate sizes) as well as the main dimensions of the member.

Figure ZA.2 gives an example of CE marking to be given in the commercial documents, accompanying the structural member, using Method 1, when declaring the member's mechanical resistance.

 01234	CE marking symbol given in Directive 93/68/EEC  Identification number of the notified certification body
<b>AnyCo Ltd</b> 11 01234-CPD-00234	Name or identifying mark of the manufacturer NOTE Registered address of the manufacturer may also be added. Last two digits of the year in which the marking was affixed Number of the EC certificate of conformity
<b>EN 14250:2010</b> Prefabricated timber structural member assembled with punched metal plate fasteners used in buildings AnyCo No. 338/2011	Number of the European Standard with the year of its publication  Description of the member (i.e. generic name) and its intended use  Member batch identification number
<b>Member related documents</b> - Drawing: Document ABC/09 by BD Company	Content of the member's design documents
<b>Mechanical resistance</b> as load-bearing capacity & stiffness	Information on mandated essential characteristics
- Strength grade of timber - Fasteners	C24 acc. to EN 14545
- Geometrical data	See doc. ABC/09
<b>Reaction to fire</b>	D-s2, d0
<b>Fire resistance</b>	R30
<b>Release of dangerous substances</b>	NPD
<b>Durability</b> Natural durability	durability class 2

Figure ZA.2 – Example of CE marking given in the commercial documents accompanying the structural member using Method 1

**ZA.3.3.3 Declaration of structural member characteristics (i.e. Method 2)**

According to Method 2 (see 5.1.2, b)) the characteristic or design values for the load-bearing capacities and stiffness of the structural member, determined according to the method(s) given in EN 1995-1-1, taking possibly into account sets of National Determined Parameters (NDP), shall be as follows:

Mechanical resistance, declared as:

- a) characteristic or design value of load-bearing capacity in ultimate limit state (ULS as defined in EN 1990) for applicable load duration classes;
- b) instantaneous deflection in serviceability limit state (SLS as defined in EN 1990);
- c) all the used Nationally Determined Parameters (NDP) or set of NDP when other than recommended values;
- d) outer dimensions of the member and the open span and minimum support length;
- e) bracing requirements, when relevant;

f) strength grade of timber.

Figure ZA.3 gives an example of CE marking to be given in the commercial documents, accompanying the structural member, using Method 2, when declaring the member's mechanical resistance.

 01234	<i>CE marking symbol given in Directive 93/68/EEC</i>  <i>Identification number of the notified certification body</i>								
<b>AnyCo Ltd</b> <b>11</b> 01234-CPD-00234	<i>Name or identifying mark of the manufacturer</i> <i>NOTE Registered address of the manufacturer may also be added.</i> <i>Last two digits of the year in which the marking was affixed</i> <i>Number of the EC certificate of conformity</i>								
<b>EN 14250:2010</b> Prefabricated timber structural member assembled with punched metal plate fasteners used in buildings  AnyCo No. 338/2011	<i>Number of the European Standard with the year of its publication</i> <i>Description of member (i.e. generic name) and its intended use</i>  <i>Member batch identification number</i>								
<b>Mechanical resistance</b> , as load-bearing capacity and stiffness:	<i>Information on mandated essential characteristics</i>								
<ul style="list-style-type: none"> <li>• Design load bearing capacity for top chord:               <table border="0" style="width: 100%;"> <tbody> <tr> <td style="padding-right: 20px;">- uniform permanent load case or</td> <td><math>Q_d = 1,6 \text{ kN/m}</math></td> </tr> <tr> <td>- uniform long-term load case, or</td> <td><math>Q_d = 2,1 \text{ kN/m}</math></td> </tr> <tr> <td>- uniform medium-term load case, and</td> <td><math>Q_d = 2,4 \text{ kN/m}</math></td> </tr> <tr> <td>- uniform short-term upward load</td> <td><math>Q_{wkd} = 0,8 \text{ kN/m}</math></td> </tr> </tbody> </table> </li> </ul>	- uniform permanent load case or	$Q_d = 1,6 \text{ kN/m}$	- uniform long-term load case, or	$Q_d = 2,1 \text{ kN/m}$	- uniform medium-term load case, and	$Q_d = 2,4 \text{ kN/m}$	- uniform short-term upward load	$Q_{wkd} = 0,8 \text{ kN/m}$	
- uniform permanent load case or	$Q_d = 1,6 \text{ kN/m}$								
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- uniform medium-term load case, and	$Q_d = 2,4 \text{ kN/m}$								
- uniform short-term upward load	$Q_{wkd} = 0,8 \text{ kN/m}$								
<ul style="list-style-type: none"> <li>• Drifted load arrangement has been considered using factor for design load <math>Q_d</math></li> </ul>	0,5								
<ul style="list-style-type: none"> <li>• Deflection from a uniform unit load (1 kN/m) in SLS</li> </ul>	$w_{inst,1} = 0,4 \text{ mm}$								
<ul style="list-style-type: none"> <li>• Material safety factors applied in ULS design:               <table border="0" style="width: 100%;"> <tbody> <tr> <td style="padding-right: 20px;">- for timber</td> <td><math>\gamma_m = 1,4</math></td> </tr> <tr> <td>- for fasteners</td> <td><math>\gamma_s = 1,3</math></td> </tr> </tbody> </table> </li> </ul>	- for timber	$\gamma_m = 1,4$	- for fasteners	$\gamma_s = 1,3$					
- for timber	$\gamma_m = 1,4$								
- for fasteners	$\gamma_s = 1,3$								
<ul style="list-style-type: none"> <li>• Outer dimensions</li> </ul>	(10,0 × 1,4) m								
<ul style="list-style-type: none"> <li>• Open span</li> </ul>	8,0 m								
<ul style="list-style-type: none"> <li>• Support length</li> </ul>	$\geq 100 \text{ mm}$								
<ul style="list-style-type: none"> <li>• Top chord bracing support</li> </ul>	min. 900 mm spacing								
<ul style="list-style-type: none"> <li>• Strength grade of timber</li> </ul>	C24								
<b>Reaction to fire</b>	D-s2, d0								
<b>Fire resistance</b>	NPD								
<b>Release of dangerous substances</b>	NPD								
<b>Durability</b> Natural durability	durability class 2								

**Figure ZA.3 – Example of CE marking given in the commercial documents accompanying the structural member using Method 2**

**ZA.3.3.4 Declaration of compliance with a given production document of the structural member (i.e. Method 3a)**

According to Method 3a (see 5.1.2, c)) the declaration of mechanical resistance is indirectly performed based on purchaser order by declaring compliance with the given production documents of the structural member, together with the information on the purchaser and the party responsible for the structural design of the member. The structural design and production documents of the member are prepared according to any design method valid in the Member State of its intended use under the responsibility of another party than the manufacturer.

Mechanical resistance, declared indirectly as:

- a) compliance with the dated production documents of the structural member;
- b) identification of the purchaser;
- c) identification of the party responsible for the structural design of the member;
- d) strength grade of timber.

Figure ZA.4 gives an example of CE marking to be given in the commercial documents, accompanying the structural member, using Method 3a, when declaring the member's mechanical resistance.

 01234	<i>CE marking symbol given in Directive 93/68/EEC</i>
<b>AnyCo Ltd</b> 11 01234-CPD-00234	<i>Identification number of the notified certification body</i>  <i>Name or identifying mark of the manufacturer</i> <i>NOTE Registered address of the manufacturer may also be added.</i> <i>Last two digits of the year in which the marking was affixed</i> <i>Number of the EC certificate of conformity</i>
<b>EN 14250:2010</b> Prefabricated timber structural member assembled with punched metal plate fasteners used in buildings AnyCo No. 338/2011	<i>Number of the European Standard with the year of its publication</i> <i>Description of the member (i.e. generic name) and its intended use</i> <i>Member batch identification number</i>
<b>Mechanical resistance</b> as load-bearing capacity & stiffness:	<i>Information on mandated essential characteristics</i>
- Production drawing: 146-65/2010-11-20	
- Ordered by: Building Timber Company Ltd.	
- Based on design: 146-66/Building Design Comp. Ltd.	
- Strength grade of timber: C24	
<b>Reaction to fire</b> D-s2, d0	
<b>Fire resistance</b> R30	
<b>Release of dangerous substances</b> NPD	
<b>Durability</b> Natural durability   durability class 2	

**Figure ZA.4 – Example of CE marking given in the commercial documents accompanying the structural member using Method 3a**

**ZA.3.3.5 Declaration of compliance with a given manufacturer's design document (i.e. Method 3b)**

According to Method 3b (see 5.1.2, d)) the declaration of mechanical resistance is indirectly performed based on purchaser order by declaring compliance with the given manufacturer's design documents of the structural member, referring to one or more specified load situations in a specific part of works. The manufacturer shall verify by structural design calculations according to the methods given in the Eurocode standards (e.g. EN 1990, EN 1991 and EN 1995-1-1), taking into account the Nationally Determined Parameters (NDP) given in the national annex of the Member State of its intended use, if any, that the structural member is able to resist all the loads affecting to it in ULS and that the given deflection limits are satisfied in SLS.

Mechanical resistance, declared indirectly as:

- a) referring to the construction works, in which the structural member is intended to be installed with its position number;
- b) compliance with the dated structural design documents produced (and copies held) by the manufacturer;
- c) strength grade of timber.

Figure ZA.5 gives an example of CE marking to be given in the commercial documents, accompanying the structural member, using Method 3b, when declaring the member's mechanical resistance.

 01234	<i>CE marking symbol given in Directive 93/68/EEC</i>								
<b>AnyCo Ltd</b> 11 01234-CPD-00234	<i>Identification number of the notified certification body</i>  <i>Name or identifying mark of the manufacturer</i> <i>NOTE Registered address of the manufacturer may also be added.</i> <i>Last two digits of the year in which the marking was affixed</i> <i>Number of the EC certificate of conformity</i>								
<b>EN 14250:2010</b> Prefabricated timber structural member assembled with punched metal plate fasteners used in buildings AnyCo No. 338/2011	<i>Number of the European Standard with the year of its publication</i>  <i>Description of the member (i.e. generic name) and its intended use</i>  <i>Member batch identification number</i>								
<b>Mechanical resistance</b> as load-bearing cap.& stiffness: Construction works: Number Street / Town / Country Position number: 724-2A Design document of the manufacturer: 1234/2010-11-12	<i>Information on mandated essential characteristics</i>								
<table border="1" style="width: 100%;"> <tr> <td style="width: 60%;">- Strength grade of timber</td> <td>C24</td> </tr> <tr> <td><b>Reaction to fire</b></td> <td>D-s2, d0</td> </tr> <tr> <td><b>Fire resistance</b></td> <td>R30</td> </tr> <tr> <td><b>Release of dangerous substances</b></td> <td>NPD</td> </tr> </table>	- Strength grade of timber	C24	<b>Reaction to fire</b>	D-s2, d0	<b>Fire resistance</b>	R30	<b>Release of dangerous substances</b>	NPD	
- Strength grade of timber	C24								
<b>Reaction to fire</b>	D-s2, d0								
<b>Fire resistance</b>	R30								
<b>Release of dangerous substances</b>	NPD								
<b>Durability</b> Natural durability   durability class 1 and 2									

**Figure ZA.5 – Example of CE marking given in the commercial documents accompanying the structural member using Method 3b**

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- [10] 2000/147/EC: Commission Decision of 8 February 2000 implementing Council Directive 89/106/EEC as regards the classification of the reaction to fire performance of construction products (notified under document number C(2000) 133), *OJ L 50, 23.2.2000, pp. 14-18*