BRITISH STANDARD

BS EN
1059:1999

Timber structures — Product requirements for prefabricated trusses using punched metal plate fasteners

The European Standard EN 1059:1999 has the status of a British Standard

ICS 91.080.20

National foreword

This British Standard is the English language version of EN 1059:1999.

The UK participation in its preparation was entrusted by Technical Committee B/525, Building and civil engineering structures, to Subcommittee B/525/5, Structural use of timber, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 8, an inside back cover and a back cover.

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English Version

Timber structures — Product requirements for prefabricated trusses using punched metal plate fasteners

Structures en bois — Exigences de produits pour fermes industrialisées utilisant des connecteurs à plaque métallique emboutie

Holzbauwerke — Produktanforderungen an vorgefertigte Fachwerkträgern mit Nagelplatten

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 124, Timber structures, the Secretariat of which is held by DS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2000, and conflicting national standards shall be withdrawn at the latest by January 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This standard covers product requirements for prefabricated trusses made using punched metal plate fasteners.

The main objective of this standard is to ensure that these trusses will perform in accordance with the design requirements.

References made in this standard to prefabricated trusses also includes beams and girders

1 Scope

This European Standard specifies product requirements for trusses assembled using punched metal plate fasteners.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 336 Structural timber - Coniferous and poplar - Sizes, permissible deviations.

EN 385 Finger jointed structural timber - Performance requirements and minimum production requirements.

EN 518 Structural timber - Grading - Requirements for visual strength grading standards.

EN 519 Structural timber - Grading - Requirements for machine strength graded timber and grading machines.

EN 844-3 Round and sawn timber - Terminology - Part 3: General terms relating to sawn timber.

EN 844-9 Round and sawn timber - Terminology - Part 9: Terms relating to features of sawn timber.

prEN 1075 Timber structures - Test methods - Joints made of punched metal plate fasteners.

EN 1310 Round and sawn timber - Method of measurement of features.

EN 10088-2 Stainless steels - Part 2: Technical delivery conditions for sheet/plate and strip for general purposes

EN 10147 Continuously hot-dip zinc coated structural steel sheet and strip - Technical delivery conditions.

3 Definitions

For the purposes of this standard, the following definitions apply.

3.1 anchorage area: The surface area of timber occupied by the plate projections in any particular member.

3.2 common production end: One (consistent) end, with respect to the production jig, of a batch of like trusses.

3.3 dead knot: On the surface being considered, a knot that is intergrown with the surrounding wood for less than one quarter of the cross-sectional perimeter, as defined in EN 844-9.

3.4 effective thickness: The target thickness as defined in EN 336 minus any wane present on the edge being considered.

3.5 internal bracing: Restraint to prevent lateral buckling of a compression member.

3.6 live knot: On the surface being considered, a knot that is intergrown with the surrounding wood for at least one quarter of the cross-sectional perimeter as defined in EN 844-9.

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 Symbols

None.

5 Material Requirements

5.1 Timber

5.1.1 Strength

Timber shall be strength graded using grading standards and methods complying with EN 518 or EN 519.

5.1.2 Permissible geometric defects

In addition to the specified grade requirements, timber shall meet the following criteria for spring, bow, twist and cup as defined in EN 844-3 and measured in accordance with EN 1310.

Spring:	4 mm maximum per 2 m length.
Bow:	10 mm maximum per 2 m length.
Twist:	1 mm maximum per 25 mm width per 2 m length.
Cup:	2 mm maximum per 100 mm of face.

5.1.3 Finger jointed timber

Finger joints shall meet the requirements of EN 385 for the appropriate service class.

5.1.4 Protection

If required, timber shall be treated with a preservative in accordance with the requirements of the product specification. The preservative treatment shall be compatible with the fastener's treatment.

5.2 Punched metal plate fasteners

5.2.1 Strength

Characteristic strength properties for punched metal plate fasteners shall be determined from tests undertaken in accordance with the requirements of prEN 1075.

5.2.2 Marking

Punched metal plate fasteners shall bear a mark which readily identifies the producer or supplier and type of plate.

5.2.3 Protection

Punched metal plate fasteners shall possess a minimum corrosion protection specification equivalent to a hot-dip zinc coating of Z275 to EN 10147, or shall be manufactured from stainless steel to EN 10088-2. No further coating of the fasteners is required after punching.

6 Product requirements

6.1 Truss Members

6.1.1 Timber Sizes

Member size tolerances shall be in accordance with tolerance class 2 given in EN 336.

Target sizes shall be not less than:

- Thickness (width), all members: 35 mm;
- Depth, external (chord) members: 70 mm;
- Depth, internal (web or diagonal) members: 58 mm.

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

6.1.2 Wane

Wane shall not occur within the area of any jointing device or within support areas.

6.1.3 Joint gaps

The maximum gap between members at the time of fabrication shall not exceed 3 mm and shall average no more than 1,5 mm.

6.1.4 Moisture Content

The maximum moisture content of the timber at the time of fabrication shall not exceed 22%.

6.1.5 Dimensional Accuracy

The overall horizontal and vertical dimensions of the truss shall not deviate from the specified dimensions by more than the following tolerances:

Up to 10 m: 10 mm;
More than 10 m: 1 mm for each metre.

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

6.1.6 Camber

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

6.2 Truss Connections

6.2.1 Live knots

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

6.2.2 Dead knots

Where a dead knot, knot hole, or fissure occurs within the anchorage area, the number 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.

6.2.3 Fastener positioning

Fasteners shall not be misplaced by more than 5 mm in any direction.

6.2.4 Fastener installation

The plate projections 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 member.

6.2.5 Protruding fasteners

Punched metal plate fasteners shall not protrude outside the outer edges of the truss. The lower edge of punched metal plate 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 the masking of protruding punched metal plate fasteners, particularly those that protrude into walk spaces or other areas permitting access.

7 Product Documents

7.1 Information to manufacture the product

Sufficient product documentation shall be available to enable the truss producer to manufacture the truss in accordance with the design specifications.

7.2 Information to accompany the product

Adequate drawings and written instructions shall be provided with the product relating to their handling, storage, erection, positioning and internal bracing, together with any fixing details necessary to construct compound (girder) or multi-part trusses.

7.3 Document Retention

Sufficient project documentation shall be retained by the truss producer for a minimum period of 10 years, using a reference system which would enable their traceability.

8. Marking

All trusses in a structure shall be clearly and durably marked enabling identification of the producer, their job reference and reference to this standard where conformity with its requirements is claimed. On all trusses the manufacturer shall clearly indicate a common production end.

In addition the producer shall clearly mark, either directly on the trusses or on accompanying drawings, the location of all support areas and any points at which members require bracing according to the design.

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