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**Izvedba jeklenih in aluminijastih konstrukcij - 5. del: Tehnične zahteve za hladno oblikovane konstrukcijske aluminijaste elemente in hladno oblikovane elemente kot del strešnih, stropnih, talnih in stenskih konstrukcij**

Execution of steel structures and aluminium structures - Part 5: Technical requirements for cold-formed structural aluminium elements and cold-formed structures for roof, ceiling, floor and wall applications

Ausführung von Stahltragwerken und Aluminiumtragwerken - Teil 5: Technische Anforderungen an tragende, kaltgeformte Bauelemente aus Aluminium und tragende, kaltgeformte Bauteile für Dach-, Decken-, Boden- und Wandanwendungen

Exécution des structures en acier et des structures en aluminium - Partie 5 : Exigences techniques pour éléments et structures en aluminium formés à froid pour applications structurales en toiture, couverture, plafond, paroi verticale et plancher

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91.080.13	Jeklene konstrukcije	Steel structures
91.080.17	Aluminijaste konstrukcije	Aluminium structures

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EUROPÄISCHE NORM

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## Execution of steel structures and aluminium structures - Part 5: Technical requirements for cold-formed structural aluminium elements and cold-formed structures for roof, ceiling, floor and wall applications

Exécution des structures en acier et des structures en  
aluminium - Partie 5 : Exigences techniques pour  
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Ausführung von Stahltragwerken und  
Aluminiumtragwerken - Teil 5: Technische  
Anforderungen an tragende, kaltgeformte Bauelemente  
aus Aluminium und tragende, kaltgeformte Bauteile für  
Dach-, Decken-, Boden- und Wandanwendungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 135.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## prEN 1090-5:2025(E)

### European foreword

This document (prEN 1090-5:2025) has been prepared by Technical Committee CEN/TC 135 “Execution of steel structures and aluminium structures”, the secretariat of which is held by SN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1090-5:2017.

This document is part of the EN 1090 series, which comprises the following parts:

- EN 1090-1, Execution of steel structures and aluminium structures — Part 1: Assessment and verification of constancy of performance for structural components
- EN 1090-2, Execution of steel structures and aluminium structures — Part 2: Technical requirements for steel structures
- EN 1090-3, Execution of steel structures and aluminium structures — Part 3: Technical requirements for aluminium structures
- EN 1090-4, Execution of steel structures and aluminium structures — Part 4: Technical requirements for cold-formed structural steel elements and cold-formed structures for roof, ceiling, floor and wall applications
- EN 1090-5, Execution of steel structures and aluminium structures — Part 5: Technical requirements for cold-formed structural aluminium elements and cold-formed structures for roof, ceiling, floor and wall applications

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## 1 Scope

This document specifies requirements for the execution i.e. the manufacture and the installation of cold-formed structural aluminium profiled sheeting, and for the installation of structural members made of aluminium for roof, ceiling, floor, wall and cladding applications.

This document applies to structures designed according to the EN 1999 series.

This document applies to profiled sheeting to be designed according to EN 1999-1-4.

This document also specifies requirements for the execution i.e. the manufacture and the installation of structures made from cold-formed profiled sheeting for roof, ceiling, floor and wall applications under predominately static loading or seismic loading conditions and their documentation.

This document covers products of Structural Class I and II and structural profiled sheeting in Structural Class III according to EN 1999-1-4 used in structures.

NOTE 1 In National Annexes of EN 1999-1-4 specifications can be given regarding the use of the Structural Classes.

Structural profiled sheeting is understood here to be profiled sheet, such as trapezoidal or sinusoidal (Figure 1).

Perforated and micro profiled sheeting are also covered by this part.

This document also covers spacer constructions between the outer and inner or upper and lower skins as well as supporting members for roofs, walls and ceilings made from cold-formed profiled sheeting and the connections and attachments of the afore mentioned elements as long as they are involved in load transfer, it also covers connections and attachments of these elements (Figure 2).

A combination of steel and aluminium structural profiled sheeting are permitted, e.g. liner trays made of steel, stiffened by profiles made of aluminium. In this case, EN 1090-4 and this document apply.

This document also covers the deconstruction of structures made from cold-formed profiled sheeting and structural members for roof, ceiling, floor and wall applications.

This document does not cover the manufacturing of structural members of all structural classes according to EN 1999-1-4. These products are covered by EN 1090-3.

Welded sections are excluded from this part and are covered by EN 1090-3 except seal welding in low-stress areas.

Composite structural profiled sheeting where the interaction between dissimilar materials are an integral part of the structural behaviour such as sandwich panels and composite floors are not covered by this standard.

NOTE 2 The structures covered in this standard can be for example

- single- or multi-skin roofs, whereby the load-bearing structure (lower skin) as well as the actual roof covering (upper skin) or both consist of structural profiled sheeting;
- single- or multi-skin walls whereby the load-bearing structure (inner skin) as well as the actual cladding (outer skin) or both consist of structural profiled sheeting; or
- suspended ceilings for interior fitting.

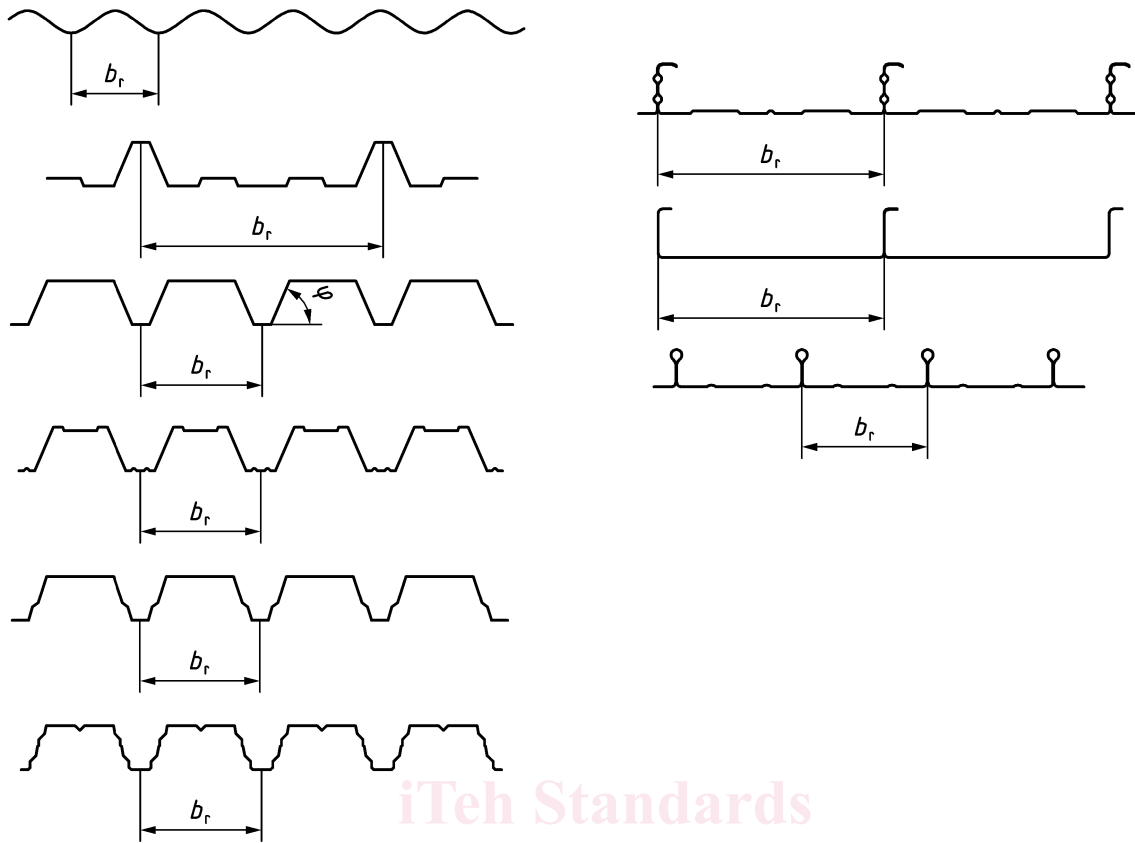


Figure 1 — Examples of profiled sheeting



a) roll formed, press braked, folded sections



b) extruded sections

Figure 2 — Examples of members

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

CEN/TS 1187:2012, *Test methods for external fire exposure to roofs*

EN 508-2:2019, *Roofing and cladding products from metal sheet - Specification for self-supporting products of steel, aluminium or stainless steel sheet - Part 2: Aluminium*

EN 755-7:2016, *Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 7: Seamless tubes, tolerances on dimensions and form*

EN 755-8:2016, *Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 8: Porthole tubes, tolerances on dimensions and form*

EN 755-9:2016, *Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 9: Profiles, tolerances on dimensions and form*

EN 1090-1:2009+A1:2011, *Execution of steel structures and aluminium structures — Part 1: Requirements for conformity assessment of structural elements*

EN 1090-3:2019, *Execution of steel structures and aluminium structures - Part 3: Technical requirements for aluminium structures*

EN 1994-1-1:2004<sup>1</sup>, *Eurocode 4 — Design of composite steel and concrete structures — Part 1-1: General rules and rules for buildings*

EN 1995-1-1:2004<sup>2</sup>, *Eurocode 5 — Design of timber structures — Part 1-1: General — Common rules and rules for buildings*

EN 1995-1-2:2004<sup>3</sup>, *Eurocode 5 — Design of timber structures — Part 1-1: General — Common rules and rules for buildings*

EN 1999-1-1:2023, *Eurocode 9 - Design of aluminium structures — Part 1-1: General rules*

EN 1999-1-4:2023, *Eurocode 9 — Design of aluminium structures — Part 1-4: Cold-formed structural sheeting*

EN 10204:2004, *Metallic products - Types of inspection documents*

EN 13501-5:2016, *Fire classification of construction products and building elements - Part 5: Classification using data from external fire exposure to roofs tests*

EN 62305-3:2011, *Protection against lightning - Part 3: Physical damage to structures and life hazard (IEC 62305-3:2010)*

EN ISO 376:2011, *Metallic materials - Calibration of force-proving instruments used for the verification of uniaxial testing machines (ISO 376:2011)*

<sup>1</sup> As impacted by EN 1994-1-1:2004/AC:2009.

<sup>2</sup> As impacted by EN 1995-1-1:2004/AC:2006, EN 1995-1-1:2004/A1:2008, EN 1995-1-1:2004/A2:2014.

<sup>3</sup> As impacted by EN 1995-1-2:2004/AC:2009.

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EN ISO 717-1:2020, *Acoustics — Rating of sound insulation in buildings and of building elements — Part 1: Airborne sound insulation (ISO 717-1)*

EN ISO 6507 (all parts), *Metallic materials - Vickers hardness test (ISO 6507 (all parts))*

EN ISO 10140 (all parts), *Acoustics — Laboratory measurement of sound insulation of building elements (ISO 10140 (all parts))*

EN ISO 11654:1997, *Acoustics - Sound absorbers for use in buildings - Rating of sound absorption (ISO 11654:1997)*

EN IEC 62561-1, *Lightning protection system components (LPSC) — Part 1: Requirements for connection components (IEC 62561-1)*

ISO 7976-1, *Tolerances for building — Methods of measurement of buildings and building products - Part 1: Methods and instruments*

ISO 7976-2, *Tolerances for building — Methods of measurement of buildings and building products - Part 2: Position of measuring points*

ISO 17123 (all parts), *Optics and optical instruments — Field procedures for testing geodetic and surveying instruments*

### **3 Terms, definitions, symbols and abbreviations**

#### **3.1 Terms, definitions** (<https://standards.iteh.ai>)

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp/>

— IEC Electropedia: available at <https://www.electropedia.org/>

##### **3.1.1**

##### **cassette profile**

roll formed, press-braked or folded structural profiled sheeting with or without stiffeners used as substructures for walls and roofs with a bigger variety in cross sections than liner trays

##### **3.1.2**

##### **component I**

component (usually the profiled sheeting) that is facing the head of the fastener (the swage head in the case of blind rivets)

##### **3.1.3**

##### **component II**

second component of a connection (usually the supporting member)

##### **3.1.4**

##### **decking**

load bearing profiled sheeting to support

EXAMPLE insulation and outer skin.

**3.1.5****edge stiffener**

supporting plate or profile at the longitudinal edge of a laying area to replace the missing neighbored profiled sheeting and stiffen the free edge

**3.1.6****fastening**

fastener and the process of fastening and the final connected components

**3.1.7****flashing**

non-load-bearing element, for example accessories and coverings in the areas of the skirting, eaves, gable end, ridge and corners

**3.1.8****layout drawing**

drawing showing the position of structural components and installation details

**3.1.9****liner**

inner profiled sheeting of a double skin system

**3.1.10****member**

linear profiled cross sections (structural element with cross-sectional dimensions much smaller than its length)

Note 1 to entry: This is a narrower definition of the term member than the one given in EN 1990.

**3.1.11****penetration**

opening in the decking made on-site

**3.1.12****restraint**

restriction of the lateral or rotational movement, or the torsional or warping deformation, of a member or element, that increases its buckling resistance to the same extent as a rigid support

**3.1.13****saddle washer**

oversized gasket that is adapted to the respective profile shape, which is made of aluminium, steel or stainless steel with a seal bonded to it and an adapted corrosion protection to that of the profiled sheeting which can be used when profiled sheeting are connected via its top flange

Note 1 to entry: The corrosion protection is adapted to that of the profiled sheeting.

Note 2 to entry: Saddle washer can be used when attaching profiled sheeting via its top flange.

Note 3 to entry: As an example, a figure of a saddle washer is given in EN 1993-1-3:2024, Table 10.3.

**3.1.14****structural aluminium component**

load-bearing element made from aluminium sheet by cold rolling or press braking

**prEN 1090-5:2025(E)****3.1.15****structural cold-formed profiled sheeting**

part of a structure such as trapezoidal, sinusoidal, standing seam or cassette profile I

**3.1.16****tolerance**

difference between the upper limit of size and the lower limit of size

Note 1 to entry: Tolerance is an absolute value without sign.

[SOURCE: ISO 6707-1:2020, 3.1.1, Note 2 and 3 are deleted.]

**3.1.16.1****essential tolerance**

basic limit for a geometrical tolerance necessary to satisfy the design assumptions for structures in terms of mechanical resistance and stability

**3.1.16.2****functional tolerance**

geometrical tolerance, which might be required to meet a function other than mechanical resistance and stability, e.g. appearance or fit up

**3.1.16.3****manufacturing tolerance**

permitted range in the size of a dimension of a component resulting from component manufacture

**3.1.17****trimmer**

beam around an opening in a floor or roof or wall

**3.2 Symbols and abbreviations**

For the purposes of this document, the following symbols and abbreviations apply.

<i>C</i>	corrosivity category
<i>D</i>	edge waviness of the side lap
<i>E</i>	modulus of elasticity
<i>F</i>	force, shear force of the fastener
<i>I</i>	second moment of area
<i>L</i>	span, distance
<i>M</i>	bending moment
<i>R</i>	end support reaction, airborne sound insulation
<i>T</i>	shear flow
<i>V</i>	shear force of the structural component
<i>a</i>	distance between a fastener and a web of a profiled sheet
<i>b</i>	width,