BS EN 10249-2:2024

BSI Standards Publication

Cold formed steel sheet piles

Part 2: Tolerances on dimensions and shape

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National foreword

This British Standard is the UK implementation of EN 10249-2:2024. It supersedes BS EN 10249-2:1996, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee ISE/103, Structural Steels Other Than Reinforcements.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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English Version

Cold formed steel sheet piles - Part 2: Tolerances on dimensions and shape

Palplanches en acier profilées à froid - Partie 2 : Tolérances sur dimensions et forme

Kaltgeformte Spundbohlen aus Stahl - Teil 2: Grenzabmaße und Formtoleranzen

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Contents

European foreword

This document (EN 10249-2:2024) has been prepared by Technical Committee CEN/TC 459/SC 3 “Structural steels other than reinforcements”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by January 2025, and conflicting national standards shall be withdrawn at the latest by January 2025.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 10249-2:1995.

EN 10249-2:2024 includes the following significant technical changes with respect to EN 10249-2:1995:

a) restructure of the standard;

b) update of the normative references and general requirements;

c) addition of a new Table 2 with the tolerance on the width;

d) adaptation of the terms “sweep” and “bow” in 8.2 and 8.3;

e) new wording for Clause 11 about the mass tolerance;

f) addition of two figures in Clause 13 about interlocks.

EN 10249 consists of the following parts under the general title *Cold formed steel sheet piles:*

— *Part 1: Technical delivery conditions*

— *Part 2: Tolerances on dimensions and shape*

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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1 Scope

This document specifies the tolerances on dimensions, squareness of ends, straightness and mass of cold formed steel sheet piles and is designed to be read in conjunction with EN 10249-1.

This document specifies the tolerances of cold formed steel sheet piles produced from hot rolled strip or sheet with a thickness equal to or greater than 3 mm.

The products specified are for general, structural and civil engineering works. The types of steel sheet piles covered by this document are: Z-shaped, Omega-shaped and trench sheets.

This document also specifies options that can be agreed between the purchaser and the manufacturer at the time of the order and enquiry.

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.

EN 10021:2006, *General technical delivery conditions for steel products*

EN 10079:2007, *Definition of steel products*

EN 10051, *Continuously hot-rolled strip and plate/sheet cut from wide strip of non-alloy and alloy steels - Tolerances on dimensions and shape*

EN 10249-1, *Cold formed sheet piling of non alloy steels - Part 1: Technical delivery conditions*

EN 12063, *Execution of special geotechnical work - Sheet pile walls, combined pile walls, high modulus walls*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 10021:2006, EN 10079:2007, EN 10249-1 and the following 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/ui

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

4 General requirements

The tolerances on dimensions and shape of this document shall apply, as far as possible, in addition to the technical delivery conditions of EN 10249-1.

The determination of sheet pile dimensions and tolerances shall comply with the following preparation before any measurement is carried out. This requirement shall apply in the workshop or on-site without any distinction.

The sheet piles to be measured shall be extracted from the storing stack and laid down on the ground separately. The reference ground shall be flat and free of any local relief over the length of the sheet piles. Transverse supports, e.g. blocks, may be used for supporting the sheet piles on the ground, but the distance between supports shall not exceed five meters. The sheet piles shall be laid down parallel to the ground as indicated in Clauses 5 to 11. Double Z-shaped sheet piles without welding of the common interlock, as well as single Z-shaped piles shall be supported by blocks or any suitable supporting device.

All the measurements are taken outside of the zone deformed by cutting at a distance from the ends of at least 250 mm.

The dimensions are measured by instruments of appropriate accuracy.

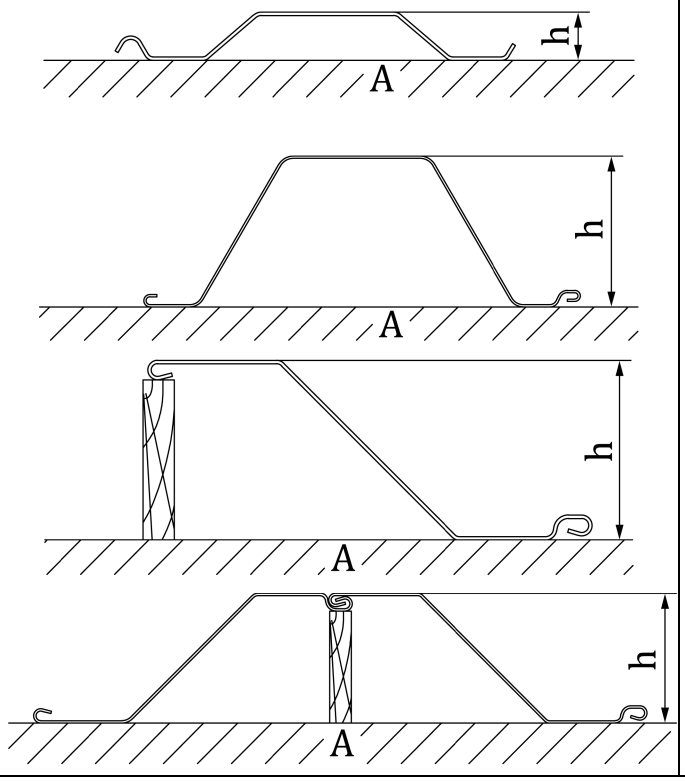
Although the tolerances on the straightness stated in this document are cumulative, each sheet pile shall slide through its own weight when being threaded over the free length of one adjacent and identical sheet pile that has been installed in compliance with the installation tolerances of EN 12063.

5 Height of profiles

The tolerances on the height of sheet piles are given in Table 1.

Table 1 – Height of sheet piles

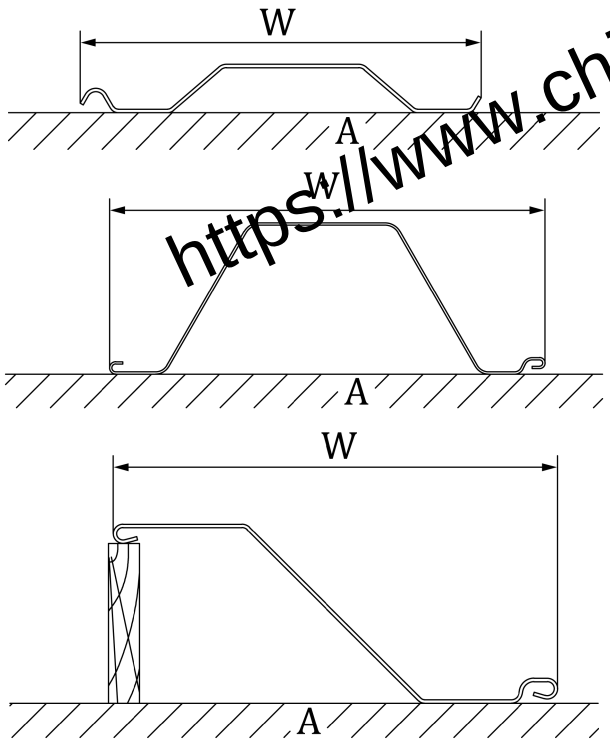
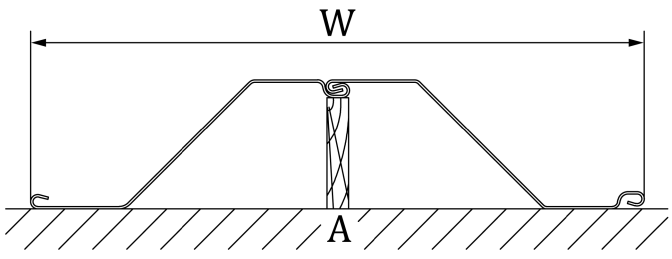
Dimensions in millimetres

Designation	Figure	Nominal dimension	Tolerance
Height *h*		*h* ≤ 200 200 < *h* ≤ 300 300 < *h* ≤ 400 400 < *h*	±4 ±6 ±8 ±10
Key A ground			

6 Width of profiles

The tolerances on the width of sheet piles are given in Table 2.

Table 2 — Width of sheet piles

Designation	Figure	Nominal dimension	Tolerance
Width *w* Single pile		all	±2 % *w*
Width *w* Double pile		all	±3 % *w*
Key A ground			

7 Wall thickness of profiles

The tolerances on the wall thickness of the profiles shall comply with the requirements of EN 10051.

8 Straightness of profiles (deviation from straight line)

8.1 General

The controls of the profile straightness (measurement of the sweep and the bow) shall be carried out on a sheet pile which freely lies on a plane surface according to the following Table 3 and Table 4.

For Z-shaped sheet piles, the controls shall be carried out on an interlocked pair of sheet piles with or without welded interlocks.

NOTE In the following clauses, *L* represents the nominal length of a sheet pile section.

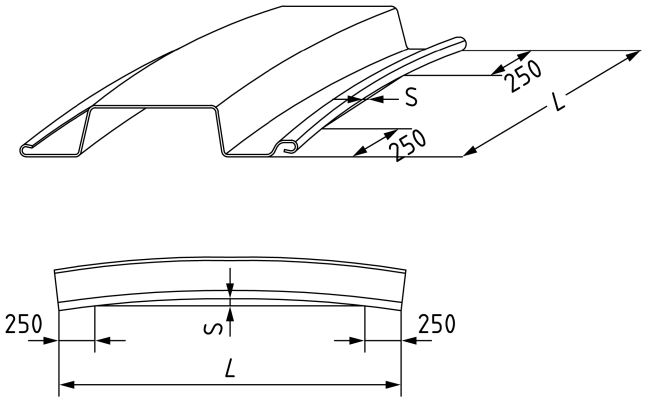
8.2 Sweep

The sweep in the horizontal plane of the sheet pile is the distance between the cord and the arc formed by the sheet pile edge (see Table 3).

The dimension *S* shall be ≤ 0,25 % *L*.

Table 3 — Sweep of sheet piles

Dimensions in millimetres

Designation	Figure	Nominal dimension	Tolerance
Sweep *S*		all lengths *L*	≤ 0,25 % *L*

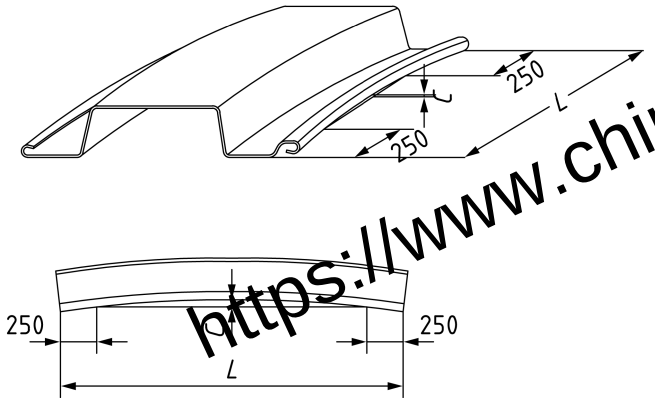
8.3 Bow

The bow in the vertical (perpendicular) plane of the sheet pile is the distance between the sheet pile edge in its middle and the reference plane surface (see Table 4).

The dimension *C* shall be ≤ 0,25 % *L*.

Table 4 — Bow of sheet piles

Dimensions in millimetres

Designation	Figure	Nominal dimension	Tolerance
Bow *C*		all lengths *L*	≤ 0,25 % *L*

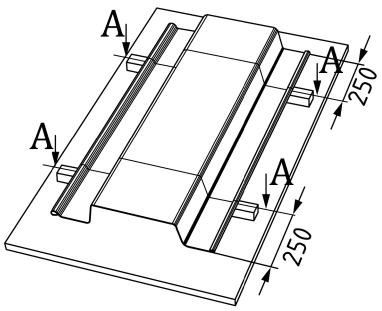
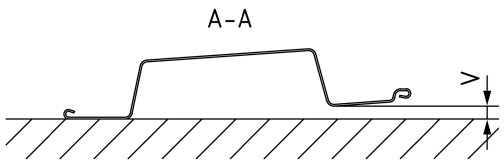
8.4 Twisting

One sheet pile end being fixed, the dimension *V* which characterizes the twisting is measured at the free end of the sheet pile with regard to the reference plane (see Table 5).

The dimension *V* shall not exceed 2 % *L* with a maximum of 100 mm.

Table 5 — Twisting of sheet piles

Dimensions in millimetres

Designation	Figure	Nominal dimension	Tolerance
Twist *V*		all lengths *L*	≤ 2 % *L* and ≤ 100
			
Key A-A cross-section above the support of the sheet pile			

9 Length

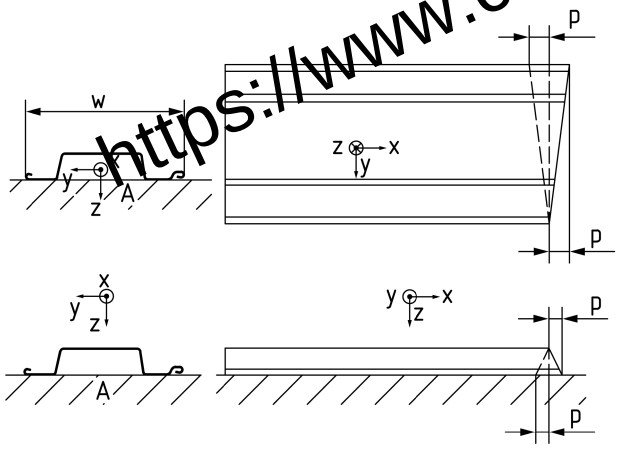
The tolerance on the length *L* of all profiles is ± 50 mm.

A reduced tolerance may be agreed at the time of the enquiry and order: see ***Option 1***, Clause 14.

10 Squareness of end of profiles

The total deviation between the highest and the lowest point of the cutting plane (p) shall not exceed 2 % of the width w of the profile, measured perpendicular to the longitudinal axis (see Table 6).

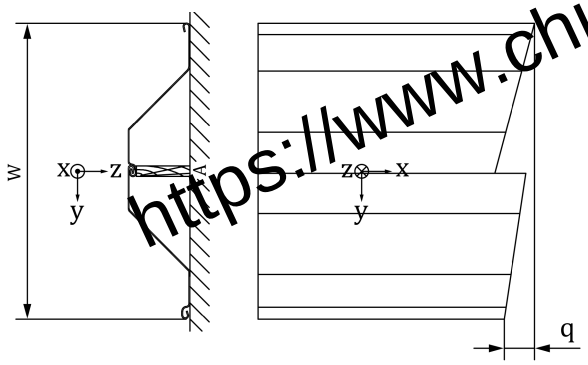
Table 6 — Squareness of ends of sheet piles

Designation	Figure	Nominal dimension	Tolerance
Squareness p		all widths w	< 2 % w
Key A ground			

When Z-shaped sheet piles are delivered in double piles with the common interlock welded, the head of the sheet pile shall not present a misalignment (q) exceeding 20 mm (see Table 7).

Table 7 — Misalignment of the head of Z-shaped double piles

Dimensions in millimetres

Designation	Figure	Nominal dimension	Tolerance
Misalignment of the head of Z-shaped double piles q		all widths w	20
Key A ground			

11 Angular deviation

The tolerance on the angular deviation of the flange angle α of all profiles is ± 2° (see Figure 1).

For special applications, the tolerance on the flange angle α may be agreed at the time of the enquiry and order: see ***Option 2***, Clause 14.

Figure 1 — Flange angle α

12 Mass of profiles

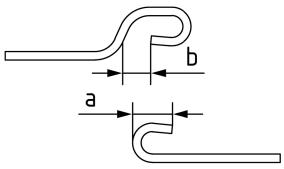
The actual mass of a piece shall not deviate more than ± 7 % from the calculated mass (product of nominal pile length by mass per linear meter of pile according to section tables of the producers).

A reduced tolerance may be agreed at the time of the enquiry and order: see ***Option 3***, Clause 14.

13 Interlocks and overlapping

The form of the cold rolled interlocks and overlapping shall be at the manufacturer's discretion.

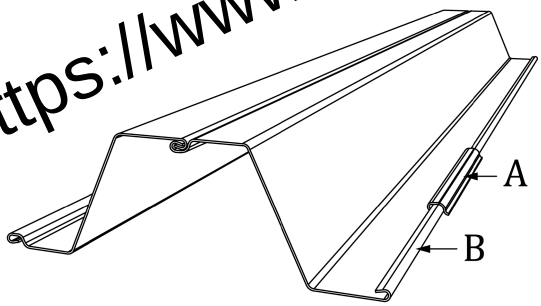
Omega and Z-shaped sheet piles have two different interlock shapes on opposite edges. The interlocks shall have adequate free play, so that the sheet piles can be threaded into each other, and the interference of two interlocks shall prevent the two elements disengaging (see Figure 2). This shall be verified by threading and gliding a 500 mm long interlock sample along the length of the pile (see Figure 3).



Key

a interlock width
b interlock opening

Figure 2 — Interference of interlocks



Key

A interlock sample – 500 mm long
B interlock of the steel sheet pile

Figure 3 — Verification of the interlock tolerance

14 Options

The following options can be agreed at the time of the enquiry and order:

1 A reduced tolerance for the length L of profiles (see Clause 9).

2 A different tolerance for the flange angle α (see Clause 11).

3 A reduced tolerance for the mass of profiles (see Clause 12).

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