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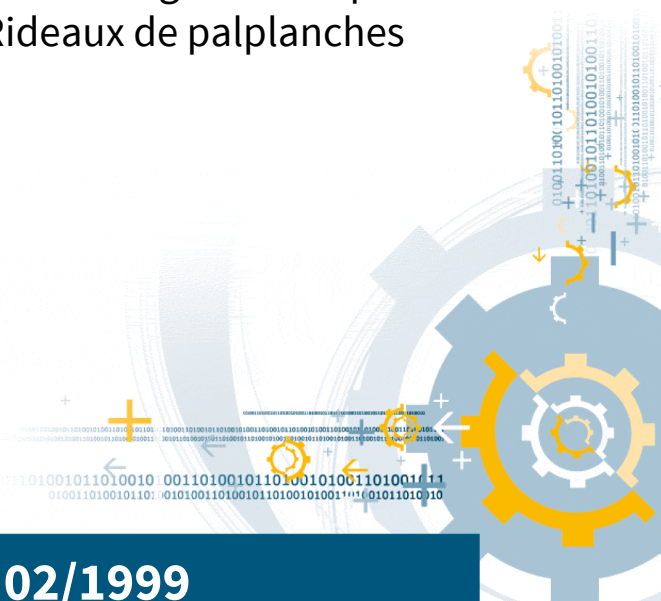
ILNAS-EN 12063:1999

**Execution of special geotechnical work
- Sheet-pile walls**

Ausführung von besonderen
geotechnischen Arbeiten - Spezialtiefbau
- Spundwandkonstruktionen

Exécution de travaux géotechniques
spéciaux - Rideaux de palplanches

02/1999



National Foreword

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English version

Execution of special geotechnical work - Sheet-pile walls

Exécution de travaux géotechniques spéciaux - Rideaux de palplanches

Ausführung von besonderen geotechnischen Arbeiten - (Spezialtiefbau) - Spundwandkonstruktionen

This European Standard was approved by CEN on 9 January 1999.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Contents

	Page
Foreword	4
1 Scope	5
2 Normative references	5
3 Definitions	6
4 Information needed for the execution of sheet pile walls	12
4.1 General	12
4.2 Specific	13
5 Site investigations	14
5.1 Soils and rock investigation	14
5.2 Driveability of sheet piles	14
6 Materials and products	14
6.1 Steel sheet piles	14
6.2 Timber sheet piles	14
6.3 Other materials and products	14
6.4 Corrosion protection for steel sheet piles and preservation of wooden sheet piles	14
6.5 Sealings for interlocks	14
7 Design considerations	15
7.1 General	15
7.2 Selection of sheet pile	15
7.3 Other structural elements	16
7.4 Sequence of execution	16
7.5 Specific design considerations	17
8 Execution of sheet pile wall structures	17
8.1 General	17
8.2 Site preparation	17
8.3 Storage and handling of the sheet piles	18
8.4 Welding and cutting of steel elements	18
8.5 Driving of the sheet piles	31
8.6 Tolerances regarding plan position and verticality	34
8.7 Corrections of sheet pile position during driving	35
8.8 Installation of anchorages	35
8.9 Walings and struts	35
8.10 Excavation, filling, drainage and de-watering	36
8.11 Extraction of sheet piles	36
8.12 Rock dowels and anchor bolts	37
8.13 Sealing	38
9 Supervision, Testing and Monitoring	39
9.1 Supervision	39
9.2 Testing	39
9.3 Monitoring	40
10 Site Records	40
10.1 Records in connection with the execution	40
10.2 Records at completion of the execution works	40
11 Special Requirements	41
11.1 Safety	41
11.2 Impact on the surrounding buildings and installations	41
11.3 Noise hindrance	41
11.4 Permeability of sheet pile walls	41
Annex A (informative) Handling and storage of sheet piles	42
Annex B (informative) Welding of sheet piles	50
Annex C (informative) Driving of sheet piles	61
Annex D (informative) Installation and driving assistance	63
Annex E (informative) Watertightness of interlock sealings	66

Annex F (informative) **Timber sheet piles and walings** **69**

Annex G (informative) **Bibliography** **77**

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 288 "Execution of special geotechnical works", the secretariat of which is held by AFNOR.

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 August 1999, and conflicting national standards shall be withdrawn at the latest by August 1999.

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.

The present standard expands on design only when necessary, but provides full coverage of the execution and supervision requirements for sheet pile wall structures.

It has been drafted on the basis of existing Codes of Practice and general available expertise which can be found in specialized literature.

1 Scope

This Standard specifies requirements, recommendations and information concerning the execution of permanent or temporary sheet pile wall structures in accordance with 2.4 of ENV 1991-1:1994 and the handling of equipment and materials.

It does not give requirements and recommendations for the installation of specific parts of the structure such as ground anchorages and piles which are covered by other codes.

It applies only to steel sheet pile walls, combined walls and wooden sheet pile walls.

Composite structures such as Berliner walls and sheet pile walls in combination with shotcrete, are not the subject of this standard.

2 Normative references

This 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 Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 287-1:1992 + A1:1997, *Approval testing of welders - Fusion welding - Part 1 : Steels.*

EN 288-2:1992 + A1:1997, *Specification and approval of welding procedures for metallic materials - Part 2 : Welding procedures specification for arc welding.*

EN 288-3:1992 + A1:1997, *Specification and approval of welding procedures for metallic materials - Part 3 : Welding procedure tests for the arc welding of steels.*

EN 499:1994, *Welding consumables - Covered electrodes for manual metal arc welding of non alloy and fine grain steels – Classification.*

EN 996:1995, *Piling equipment - Safety requirements.*

prEN 1537, *Execution of special geotechnical work - Ground anchors.*

ENV 1991-1:1994, *Eurocode 1 : Basis of design and actions on structures - Part 1 : Basis of design.*

ENV 1992-1-1:1994, *Eurocode 2 : Design of concrete structures - Part 1-1 : General rules and rules and rules for buildings.*

ENV 1993-1-1;1994, *Eurocode 3 : Design of steel structures - Part 1-1 : General rules and rules for buildings.*

ENV 1993-5:1998, *Eurocode 3 : Design of steel structures - Part 5 : Piling.*

ENV 1997-1:1994, *Eurocode 7 : Geotechnical design - Part 1 : General rules.*

EN 10020:1988, *Definitions and classification of grades of steel.*

EN 10079:1992, *Definition of steel products.*

EN 10219-1:1997, *Cold formed structural welded hollow sections of non-alloy and fine grain steels - Part 1 : Technical delivery requirements.*

EN 10219-2:1997, *Cold formed welded structural hollow sections of non-alloy and fine grain steels - Part 2 : Tolerances, dimensions and sectional properties.*

EN 10248-1:1995, *Hot rolled sheet piling of non alloy steels - Part 1 : Technical delivery conditions.*

EN 10248-2:1995, *Hot rolled sheet piling of non alloy steels - Part 2 : Tolerances on shape and dimensions.*

EN 10249-1:1995, *Cold formed sheet piling of non alloy steels - Part 1 : Technical delivery conditions.*

EN 10249-2:1995, *Cold formed sheet piling of non alloy steels - Part 2 : Tolerances on shape and dimensions.*

EN 24063:1992, *Welding, brazing, braze welding and soldering of metals – Nomenclature of processes and reference number for symbolic representation on drawings. (ISO 4063:1990)*

EN 25817:1992, *Arc-welded joints in steel - Guidance on quality levels for imperfections. (ISO 5817:1992)*

EN 29692:1994, *Metal-arc welding with covered electrode, gas-shielded metal-arc welding and gas welding - Joint preparations for steel. (ISO 9692:1992)*

ISO 1106-1:1984, *Recommended practice for radiographic examination of fusion welded joints - Part 1 : Fusion welded butt joints in steel plates up to 50 mm thick.*

3 Definitions

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

3.1 anchorage

anchoring system for the sheet pile wall, for example anchor plates or anchor walls including the connecting rods (tie rods), screw anchors, ground and rock anchors, driven ground anchors, anchoring piles and anchors with grouted or expanded bodies

3.2 auxiliary structures

all structures necessary for the proper and safe execution of the sheet piling works

3.3 bracing

a system of walings and struts to support the structure

3.4 combined wall

retaining wall composed of primary and secondary elements. The primary elements can be steel tubes, beams, or box piles. The secondary elements are normally U or Z-shaped steel sheet piles. Figure 1 shows examples of combined walls

3.5 comparable experience

documented, or other clearly established information related to the ground and installation conditions, involving similar types of soil and rock and for which similar behaviour is expected. Information gained locally is considered to be particularly relevant

3.6 cushion

material, fitted into a recess in the driving cap, which smoothes the impact force of the falling hammer on the driving cap and on the head of the sheet pile (see figure 2)

3.7 de-clutching

disconnection of the interlock during sheet pile driving

3.8**de-clutching detector**

instrument for determining whether or not the interlocks of adjacent sheet piles are fully engaged during driving

3.9**driving cap**

device, placed on the top of the sheet pile which transmits the blow of the hammer evenly, thereby preventing damage of the sheet pile head (see figure 2)

3.10**driving**

any method of installing the sheet piles to the required depth

3.11**driving method**

method of driving such as panel driving, pitch and drive, staggered driving by means of impact, vibration pressing or by a combination of these

3.12**driving assistance**

method to reduce the penetration resistance during driving, such as jetting or pre-augering

3.13**fish plate, splice plate**

steel plate which joins two lengths of sheet pile together (see figure B.2)

3.14**guide frame**

frame consisting of one or more stiff guide beams, normally of steel or wood, to position and maintain the alignment of sheet piles during pitching and driving

3.15**hammer**

part of piling equipment for driving sheet piles by percussion impact

3.16**leader**

beam or similar, attached to the driving rig to lead the sheet pile and the hammer (or the vibrator) during driving (see figures 2, 3 and 5)

3.17**leader slide**

guiding device connecting the drive cap and/or the hammer to the leader (see figures 2 and 3)

3.18**leading system**

whole system to guide the sheet pile and the hammer (or the vibrator) during driving (see figure 3)

3.19**rock dowel**

rod protruding from the toe of the sheet pile, used for fixing sheet piles to the bed-rock (see figure 13)

3.20**screw anchor**

rod with a screw blade at the end, which is rotated into the natural ground behind the sheet piles to provide an anchorage

3.21**shackle**

device for lifting sheet piles from the ground and placing them in the vertical position (see figure A.7)