



EcoLock

VINYL SHEET PILING

An ecological and cheap, maintenance-free solution, designed for many years of use.



About the company

Pietrucha Group comprises one trading company and three plastic materials processing plants. The manufacturing plants are in three locations and employ over 300 people.

The wide range of products on offer ensures a well-established position in the Polish and world-wide market of land and water engineering. The effectiveness of the solutions that we offer is proved by the numerous projects in Europe and around the world. The experience that we have gained through all these years makes it possible to offer top-quality products and introduce into the market new, innovative solutions to meet the customers' expectations. Our technologically advanced manufacturing plants offer a wide range of construction profiles and geosynthetics made from thermoplastic materials.

The seat of S. & A. Pietrucha Ltd in Ksawerów (Łódzkie Province, Poland) is responsible for the production and direct sale of vinyl sheet piles.



Manufacturing plant in Ksawerów, Poland

The high quality of sheet piling is the effect not only of the modern machinery stock but also of 20 years of experience in processing plastic materials. The manufacturing of PVC sheet piles is a process requiring the utmost care and for this reason the quality of our products is controlled at each stage of production. We have our own quality control lab and we cooperate with accredited scientific centres to ensure the top quality of our products. We also have a well-developed technological-designing department, technical advisors, sheet pile assembly department and the lease department of equipment and assembly machinery. We manufacture sheet piles in various colours and lengths depending on the customer's requirements.



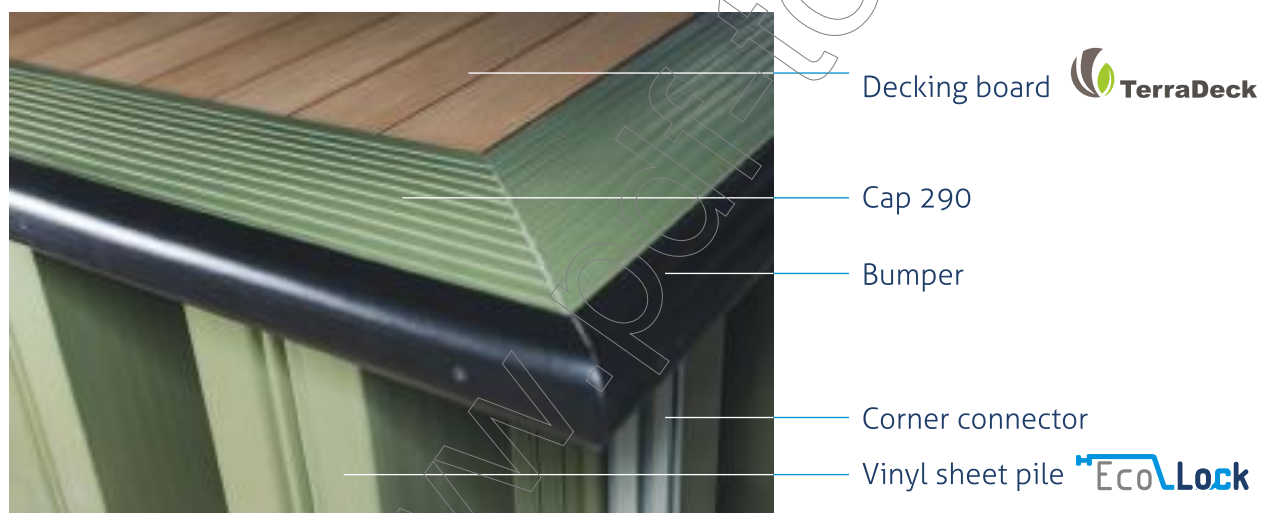
Manufacturing room

EcoLock vinyl sheet piles

Vinyl sheet piles **EcoLock** are made from rigid polyvinyl chloride modified with agents facilitating processing, impact resistance modifying agents, thermal and UV stabilising agents and mineral filling materials. The sheet piles are manufactured by applying the extrusion moulding method as monolithic profiles or the co-extrusion moulding method with the core made from the material obtained through recycling construction type PCV, covered with a layer of the primary plastic material. The standard colour range includes grey, olive and brown. There is a possibility to order sheet piles in RAL colours.

Complete system

An important advantage of EcoLock sheet piles is that they form a complete system that ensures full and universal applications. The system comprises as many as 10 types of sheet piles for various uses as well accessories such as corner connectors that allow for the walls to be joined at a 90° angle, caps protecting the wall from the top and a flexible bumping block often used in kayak marinas.



The system of vinyl sheet piles is supplemented by decking boards **TerraDeck**. Their essential advantage is the possibility of using them in unfavourable weather conditions where water resistance is one of the key parameters. The planks are made from wood flour and PVC which allows them to combine the aesthetics of natural wood with functionality and endurance of plastic material. Using both EcoLock and TerraDeck systems ensures achieving excellent effects when building tourist and utility wharves, piers and private yacht marinas.

TerraDeck decking boards are characterised by:

- very high load resistance
- resistance to exterior factors, e.g. sunshine and water which prevents planks from cracking and rotting
- complete resistance to insects and rodents
- non existent problems with fungus or rotting



Advantages resulting from using our sheet piling



Light and easy to install with the use of standard tools



Cheap - savings of up to 40% on materials, installation and transport service



Long-term protection without the need for maintenance due to the material being completely resistant to:

- bio-corrosion
- rust
- cracking
- scratching
- abrasion
- sea water
- harmful UV rays



Warranty of up to 50 years - extraordinary durability, very good mechanical and endurance parameters



Ecological solution - the product contains material obtained from the recycling of structural PVC with the possibility for further processing



Lock connections ensure leakproofness of the walls



Clean, simple and aesthetic appearance is made possible thanks to practically invisible coupling



Simpler installation compared to other sheet piles of this type thanks to the unique flat-surface project



Easy to form interior and exterior curves matching the natural shore lines, e.g. in river engineering



Technical conditions of application

The application of vinyl sheet piles in construction should be in compliance with technical documentation drawn up in accordance with the binding norms and provisions and approved in the prescribed mode. Safeguarding made from vinyl sheet piles should be made precisely in accordance with the designer's guidelines and the manufacturer's recommendations.

Methods of installation

1 Driving

Most frequently used method in which the sheet piles are mechanically pressed into the soil by using vibratory hammers along previously installed templates. To ensure complete protection of sheet piles from damage, only light equipment is to be used with low energy impacts. The type of equipment used depends on the type of soil, depth of a hollow and the durability of a sheet pile. **In the case of hard soils (compact silt) and the installation of long profiles,** steel guide bars called mandrels are to be used. Those that prove to be the most useful are the lateral or frontal mandrels. Also multiple mandrels can be used since they allow for installation of a number of sheet piles simultaneously. More information on installation and the use of mandrels is to be found on page 6.



2 Jetting

Method used for installation of sheet piles in tightly cohesive or compact soils. The technique of wash boring creates pressure directly beneath the base of a sheet pile to loosen and remove the soil from under the profile. Air or water jet pumps with low pressure or high pressure water pumps are used to soften the soil.



3 Digging

Method used in constructing sheet piling wall of small immersion, often on rock soils, where it is not possible to use the techniques of pile ramming or wash boring. Sheet piles are installed in a previously dug out trench which is then filled on both sides of the wall with specifically selected rubble bed. It is recommended that the rubble bed used should be hardened mechanically or chemically.



Installation of vinyl sheet piles with the use of steel guide bars

The key to success in installation in **hard, compact substrates** and in ramming **long elements** is the use of special guide bars. It is a steel element with its shape corresponding to the vinyl sheet pile being rammed. The length of mandrels should correspond to that of PVC elements being rammed.

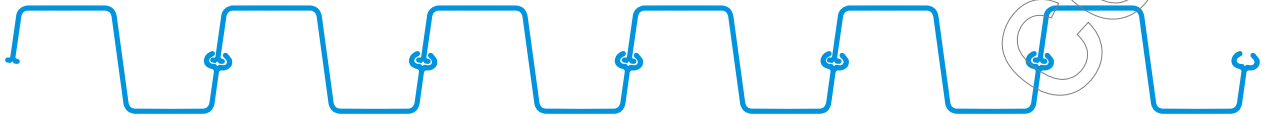
Advantages of using mandrels

- enables ramming sheet piles in very difficult soil environments (compact silt, clay, gravel)
- enables installation of long profiles, even up to 12m
- prevents sheet piles from cracking while being rammed
- removes obstacles found in soil (roots, stones)
- helps to maintain straight lines
- ensures pre-loosening of soil
- multiple mandrels significantly accelerate installation work



Installation services and the lease of equipment

We offer a comprehensive customer service: from manufacturing sheet piles, through logistics to the lease of equipment and the installation service. As part of our cooperation with a contractor, our technical advisors offer their visits to building sites where they provide professional consulting, technical assistance in connecting and operating a hammer as well as training in sheet pile installation. Our offer ensures the lease of light hammers and vibratory hammers fitted onto diggers.



Pneumatic hammer



Hydraulic vibratory hammers fitted onto diggers



We offer to your disposal among others:

Light hammers

- Collins VSPH101, CPH0306, CPH0203, Atlas COPCO

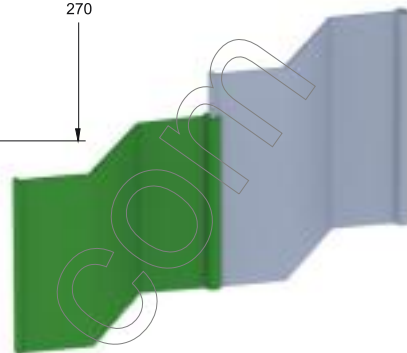
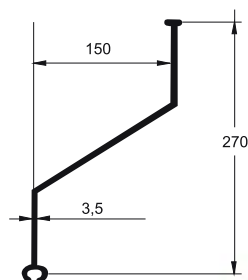
Vibratory hammers

- Dawson EMV300
- Müller MS-1 HFB
- MGF RBH 401b
- Movax ML-15

GW-270 / 3,5

	unit	value
Allowable Moment (M)	kN-m/m	1,43
Section Modulus (Z)	cm ³ /m	65,0
Moment of Inertia (I)	cm ⁴ /m	480,0
Impact Strength	N-mm/mm ²	3 360,0
Thickness (t)	mm	3,5
Section Depth	mm	155,5
Section Width	mm	270,0
Tensile Strength	MPa	44,05

Tolerances according to standard DIN 16 941

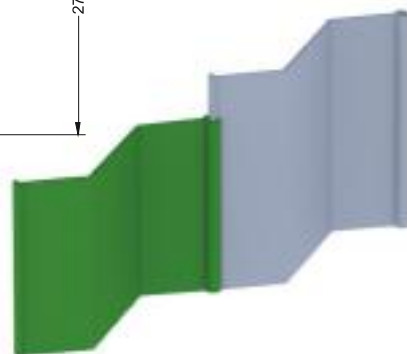
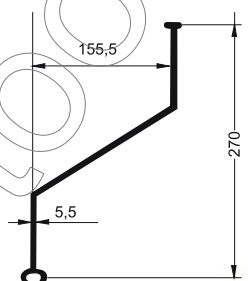


GW-270 / 5,5

wave shape

	unit	value
Allowable Moment (M)	kN-m/m	2,2
Section Modulus (Z)	cm ³ /m	100
Moment of Inertia (I)	cm ⁴ /m	510,0
Impact Strength	N-mm/mm ²	3 360,0
Thickness (t)	mm	5,5
Section Depth	mm	155,5
Section Width	mm	270,0
Tensile Strength	MPa	44,05

Tolerances according to standard DIN 16 941

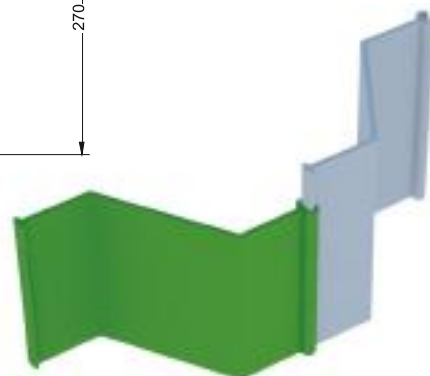
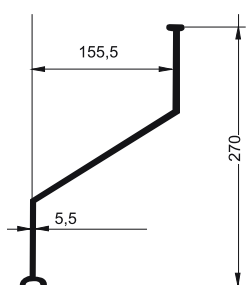


GW-270 / 5,5

trapezoid shape

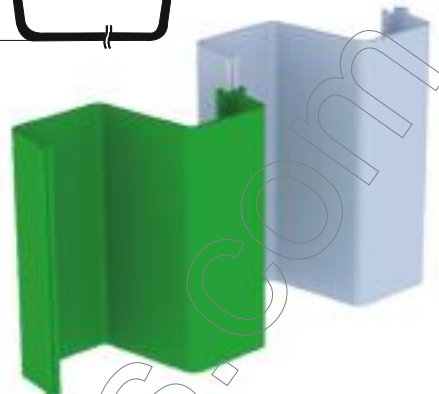
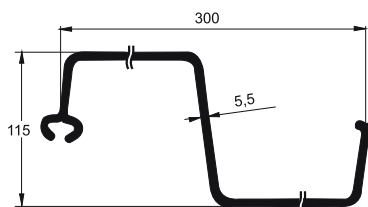
	unit	value
Allowable Moment (M)	kN-m/m	7,84
Section Modulus (Z)	cm ³ /m	357,0
Moment of Inertia (I)	cm ⁴ /m	2 626,0
Impact Strength	N-mm/mm ²	3 360,0
Thickness (t)	mm	5,5
Section Depth	mm	155,5
Section Width	mm	270,0
Tensile Strength	MPa	44,05

Tolerances according to standard DIN 16 941



	unit	value
Allowable Moment (M)	kN-m/m	7,05
Section Modulus (Z)	cm ³ /m	320,0
Moment of Inertia (I)	cm ⁴ /m	1 800,0
Impact Strength	N-mm/mm ²	3 360,0
Thickness (t)	mm	5,5
Section Depth	mm	115,0
Section Width	mm	300,0
Tensile Strength	MPa	44,05

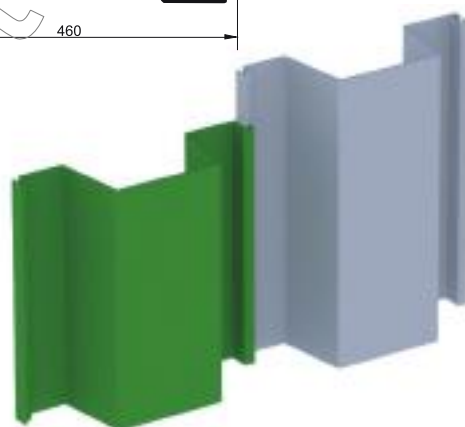
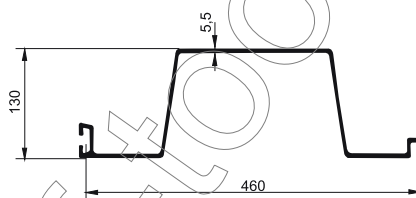
Tolerances according to standard DIN 16 941



GW-300 / 5,5

	unit	value
Allowable Moment (M)	kN-m/m	8,37
Section Modulus (Z)	cm ³ /m	380,0
Moment of Inertia (I)	cm ⁴ /m	2 413,0
Impact Strength	N-mm/mm ²	3 360,0
Thickness (t)	mm	5,5
Section Depth	mm	130,0
Section Width	mm	460,0
Tensile Strength	MPa	44,05

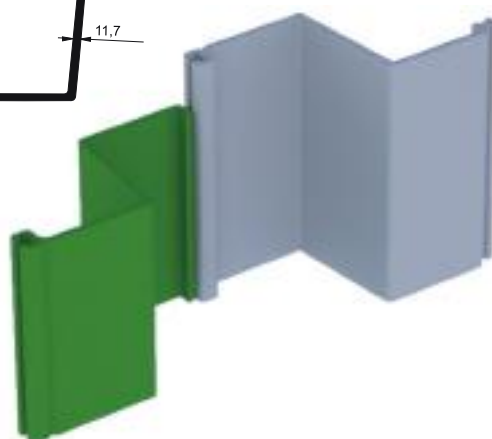
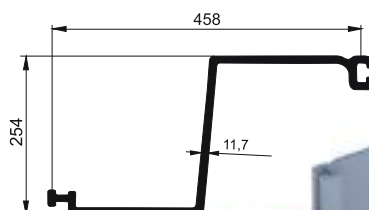
Tolerances according to standard DIN 16 941



GW-460 / 5,5

	unit	value
Allowable Moment (M)	kN-m/m	36,56
Section Modulus (Z)	cm ³ /m	1 660,0
Moment of Inertia (I)	cm ⁴ /m	21 080,0
Impact Strength	N-mm/mm ²	3 360,0
Thickness (t)	mm	11,7
Section Depth	mm	254,0
Section Width	mm	458,0
Tensile Strength	MPa	44,05

Tolerances according to standard DIN 16 941

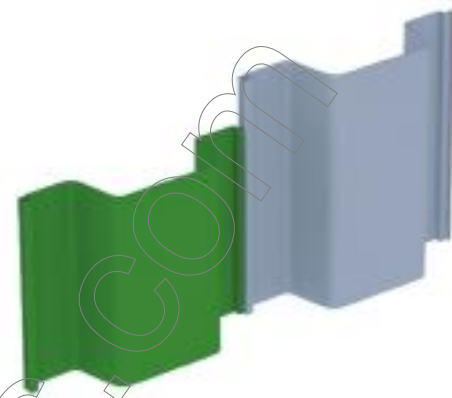
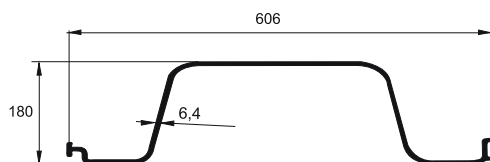


GW-458 / 12

GW-610 / 6,4

	unit	value
Allowable Moment (M)	kN-m/m	12,77
Section Modulus (Z)	cm ³ /m	580,0
Moment of Inertia (I)	cm ⁴ /m	5 174,0
Impact Strength	N-mm/mm ²	3 360,0
Thickness (t)	mm	6,4
Section Depth	mm	180,0
Section Width	mm	606,0
Tensile Strength	MPa	44,05

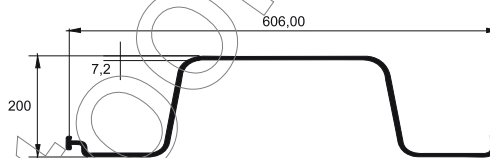
Tolerances according to standard DIN 16 941



GW-610 / 7,2

	unit	value
Allowable Moment (M)	kN-m/m	17,18
Section Modulus (Z)	cm ³ /m	780,0
Moment of Inertia (I)	cm ⁴ /m	7 895,0
Impact Strength	N-mm/mm ²	3 360,0
Thickness (t)	mm	7,2
Section Depth	mm	200,0
Section Width	mm	606,0
Tensile Strength	MPa	44,05

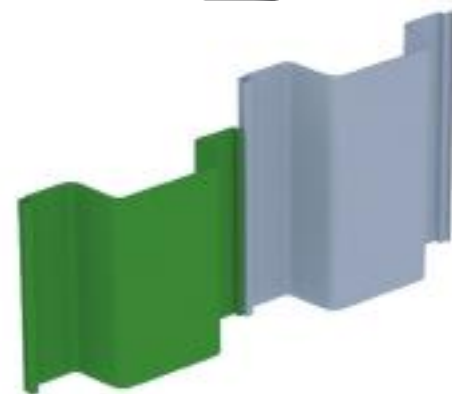
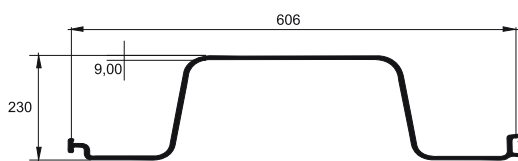
Tolerances according to standard DIN 16 941



GW-610 / 9,0

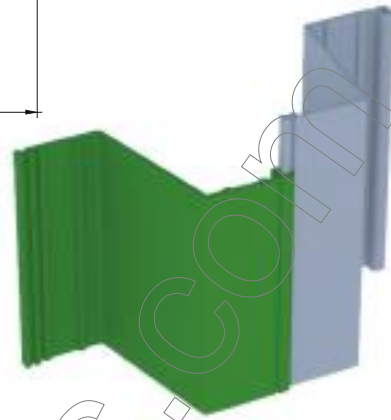
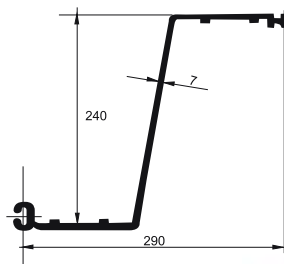
	unit	value
Allowable Moment (M)	kN-m/m	24,23
Section Modulus (Z)	cm ³ /m	1 100,0
Moment of Inertia (I)	cm ⁴ /m	12 576,0
Impact Strength	N-mm/mm ²	3 360,0
Thickness (t)	mm	9,0
Section Depth	mm	230,0
Section Width	mm	606,0
Tensile Strength	MPa	44,05

Tolerances according to standard DIN 16 941



	unit	value
Allowable Moment (M)	kN-m/m	27,07
Section Modulus (Z)	cm ³ /m	1 229,0
Moment of Inertia (I)	cm ⁴ /m	15 652,0
Impact Strength	N-mm/mm ²	3 360,0
Thickness (t)	mm	7,0
Section Depth	mm	240,0
Section Width	mm	290,0
Tensile Strength	MPa	44,05

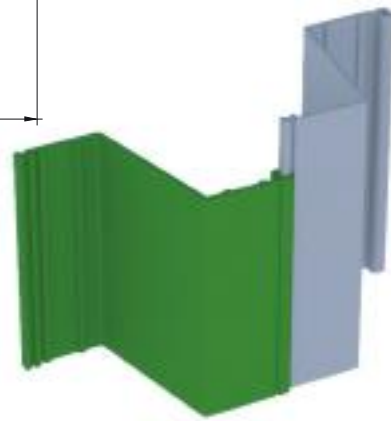
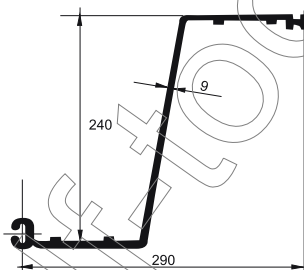
Tolerances according to standard DIN 16 941



GW-580 / 7,0

	unit	value
Allowable Moment (M)	kN-m/m	38,43
Section Modulus (Z)	cm ³ /m	1 745,0
Moment of Inertia (I)	cm ⁴ /m	22 223,0
Impact Strength	N-mm/mm ²	3 360,0
Thickness (t)	mm	9,0
Section Depth	mm	240,0
Section Width	mm	290,0
Tensile Strength	MPa	44,05

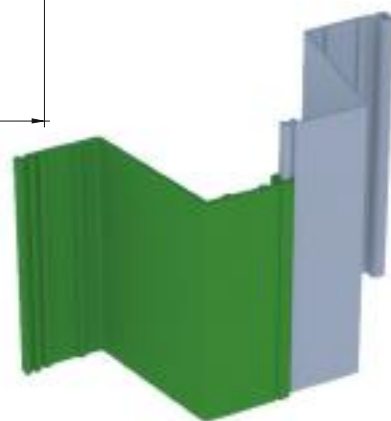
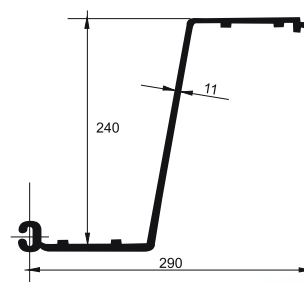
Tolerances according to standard DIN 16 941



GW-580 / 9,0

	unit	value
Allowable Moment (M)	kN-m/m	42,97
Section Modulus (Z)	cm ³ /m	1 951,0
Moment of Inertia (I)	cm ⁴ /m	24 847,0
Impact Strength	N-mm/mm ²	3 360,0
Thickness (t)	mm	11,0
Section Depth	mm	240,0
Section Width	mm	290,0
Tensile Strength	MPa	44,05

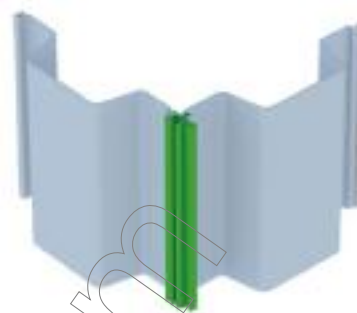
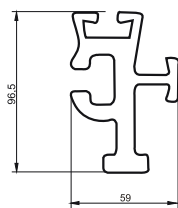
Tolerances according to standard DIN 16 941



GW-580 / 11,0

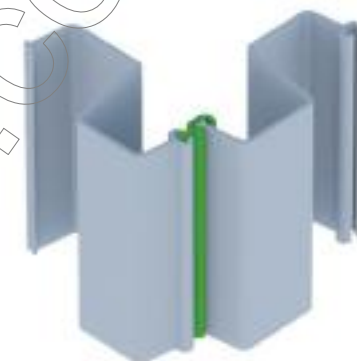
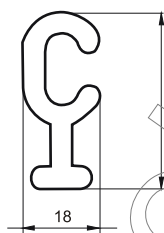
Corner 610/580

	unit	value
Section width	mm	96,50
Section depth	mm	59,00
Density	kg/m ³	1450-1550



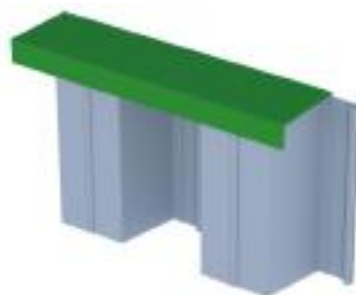
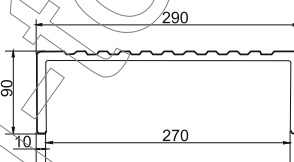
Corner 300

	unit	value
Section width	mm	45,00
Section depth	mm	18,00
Density	kg/m ³	1450-1550



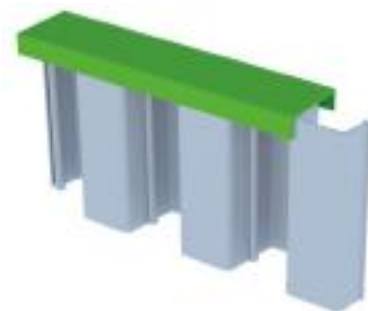
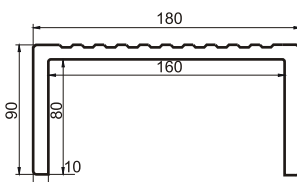
Cap 290

	unit	value
Section width exterior	mm	290
Section width interior	mm	270
Section depth exterior	mm	90
Section depth interior	mm	80
Thickness	mm	10
Density	kg/m ³	1450-1550



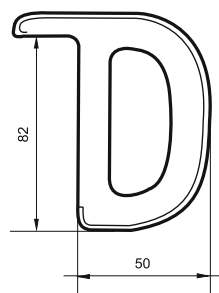
Cap 180

	unit	value
Section width exterior	mm	180
Section width interior	mm	160
Section depth exterior	mm	90
Section depth interior	mm	80
Thickness	mm	10
Density	kg/m ³	1450-1550

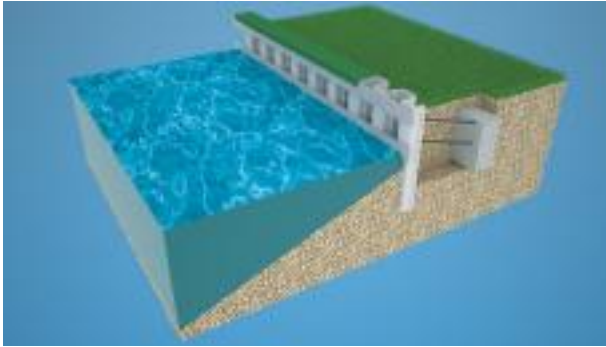


Bumper

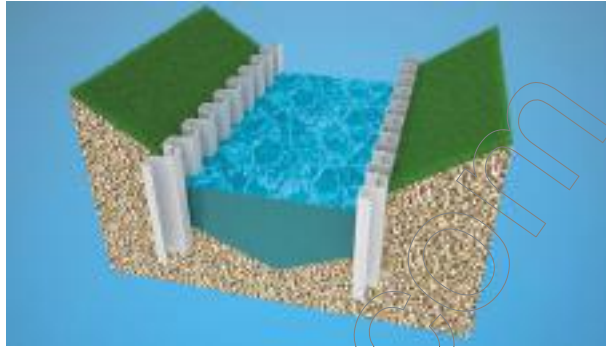
	unit	value
Section width	mm	82
Section depth	mm	50
Density	kg/m ³	1450-1550



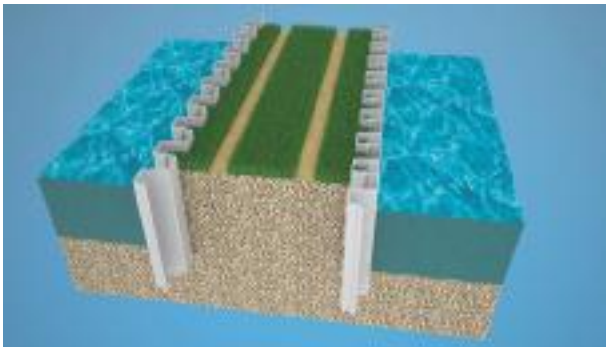
Possibilities for vinyl sheet piles application



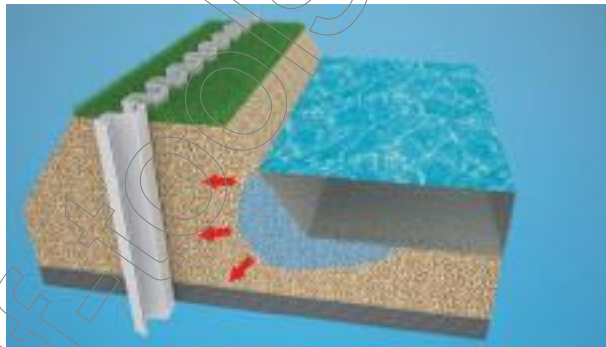
1 Sheet pilings and cut-off walls (with or without propping) to secure the banks of water channels and reservoir.



2 Regulation of beds of rivers, canals (i.e. irrigation channels), reservoirs.



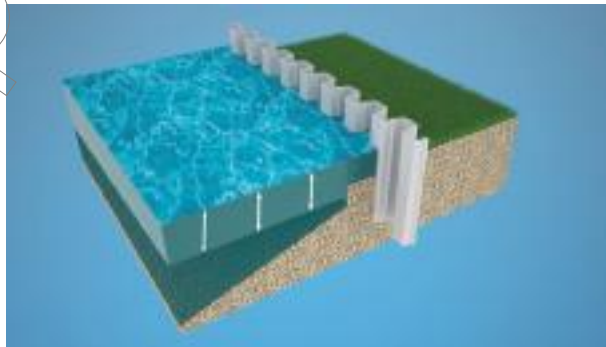
3 Building and improving dykes



4 Securing flood banks.



5 Retaining walls
Securing excavations, landslides and slopes.



6 Securing places with a variable water level.



7 Cut-off walls
Shields limiting groundwater infiltration.



8 Cut-off walls in ecologically vulnerable areas.

Implemented investments

Pietrucha Company has been manufacturing sheet piles for nearly 10 years. We can pride ourselves in high, year by year sales dynamics. A large part of our production is exported. We sell products to our customers from South America through Europe to the Far East. Our products are highly valued not only for their world-class quality which is confirmed by their parameters, but also for their competitive prices.



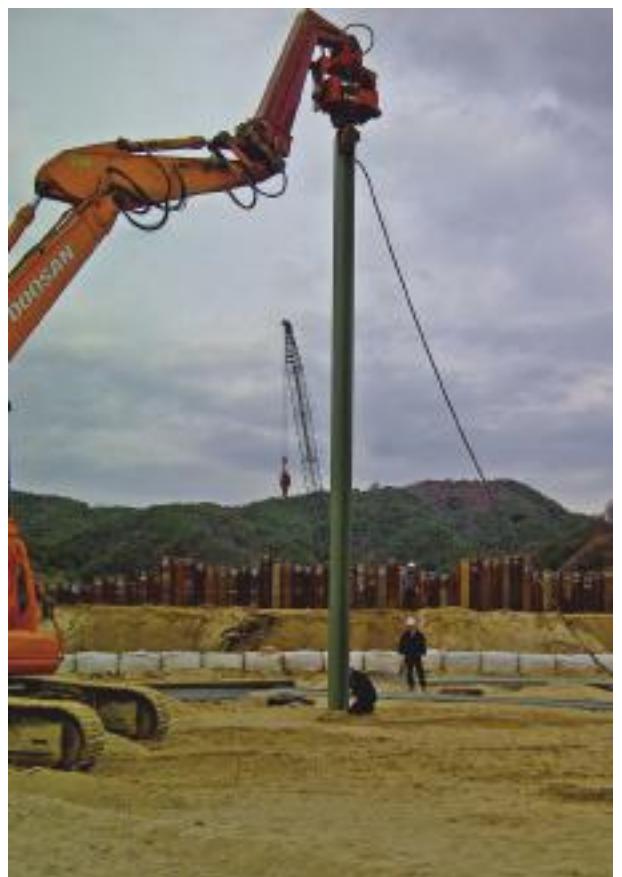
Blans, Denmark. GW-580 / 11
Yacht Harbour.



Padang, Indonesia. GW-610 / 9
Anti-erosion protection of the river-bed



Padang, Indonesia. GW-610 / 9
Anti-erosion protection of the river-bed



South Korea. GW-580 / 7
Flood banks protection



Wrocław, Poland. GW-300 / 5.5
Retaining wall.



Pokój, Poland. GW-300 / 5.5
Regulation of the bed of water canal.



Święcianowo, Poland. GW-300 / 5.5
Breeding fish pond.



Kowal, Poland. GW-580 / 7
Retention reservoir by A1 road.



Szczecin, Poland. GW-300 / 5.5
Wharf reinforcement.



Warszawa, Poland. GW-300 / 5.5
Water culvert.



Biestrzynnik, Poland. GW-580 / 11
Water threshold.



Łunawy Wielkie, Poland. GW-300 / 5.5
Securing foundations of a hydroelectric power plant.



Warta, Poland, Jeziorsko Reservoir. GW-580 / 7.0
Kayak Marina.



Utrecht, Netherlands. GW-610 / 9.0
River bank regulation.



Sopot. GW-610 / 9.0 and geogrid Polgrid 30/30
Retaining wall.



Certificates and approvals

Hygienic Certificate
by National Institute of Hygiene
Department of Environmental Hygiene
HK/W/0211/2011

Technical Approval
issued by Institute of Land Reclamation
and Grassland Farming
AT/18-2009-0024-02



UNIA EUROPEJSKA
EUROPEJSKI FUNDUSZ
ROZWOJU REGIONALNEGO



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