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# HAHN

KUNSTSTOFFE

[www.hanit.de](http://www.hanit.de)



## hanit®

# WALKWAY CONSTRUCTION AND MARINE ENGINEERING

Guaranteed quality

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FOOTPATHS



STAIRS



PLATFORMS

# THE SMART ALTERNATIVE TO WOOD AND STEEL

hanit® RECYCLED PLASTIC – MADE IN GERMANY

Break new ground in the use of your materials if you're planning renovation or new building work in walkway construction or marine engineering.







A pioneer is at your side: HAHN Kunststoffe GmbH. Back in 1993 – the early days of recycling – our engineers and process technicians developed a new, forward-looking material: hanit®.

Since then, we have been using the contents of yellow sacks and bins for a constantly optimised material allowing you to keep ecology and economy in harmony – green thinking to stay in the black.

With hanit®, you gain a combination of the material benefits of wood and steel with a brand new product made of recycled plastic – as easy to work with as wood, and as rot-proof as steel.

Thanks to our expertise and ability to see projects through with on-site support before, during and after the construction phase, while harnessing the design, practical and simulation potential, we are YOUR partner.

We are also delighted to confirm that our material is completely harmless to human health and the environment, as attested by the appropriate test findings and certificates. Feel free to contact us if you require further information.

 ECO-FRIENDLY	<ul style="list-style-type: none"> <li>» Produced without preservatives</li> <li>» Reduces the strain on landfill, is sustainable and environmentally friendly</li> <li>» Recyclable in the material cycle</li> <li>» Awarded the „BLUE ANGEL“ eco-label</li> <li>» Non-polluting</li> </ul>
 SIMPLE PROCESSING	<ul style="list-style-type: none"> <li>» Easy to process mechanically (drilling, sawing, screwing, nailing)</li> <li>» Simple adjustments can be made on the spot</li> </ul>
 DURABILITY	<ul style="list-style-type: none"> <li>» Weather-resistant</li> <li>» Rot-resistant</li> <li>» Can be used all year round</li> <li>» Moisture-repellent, does not absorb water and dries quickly</li> </ul>
 ECONOMICAL	<ul style="list-style-type: none"> <li>» Long service life</li> <li>» Resistant to oils, brines, acids, salt water</li> <li>» Low maintenance and service costs</li> <li>» Excellent price/quality ratio</li> <li>» Made of high-quality processed secondary plastics (polyolefins)</li> <li>» Ideal construction material, especially for robust profiles and finished parts</li> </ul>
 LIGHT-WEIGHT	<ul style="list-style-type: none"> <li>» Approximately 1/3 the weight of concrete</li> <li>» Installation does not require heavy equipment</li> <li>» Higher load capacity</li> <li>» Transport cost savings</li> <li>» Faster installation</li> <li>» Reduced workload</li> </ul>
 SAFETY & MAINTENANCE	<ul style="list-style-type: none"> <li>» Splinter-free and carries low risk of injury</li> <li>» Non-toxic according to DIN EN 71-3 (Safety of Toys)</li> <li>» No need to clean</li> <li>» Maintenance-free</li> </ul>

# hanit® – WALKWAYS

From the groundwork to the railings

A walkway is more than a few planks fitted together. That's why we offer complete systems that run the entire gamut.

From railings and walkways all the way through to substructures and piles.

What's more, we are happy to furnish you with static calculations for your project, construction drawings and material properties on request – all from a single source.





**OUR  
PERFORMANCE  
IS YOUR EDGE**

### **PLEASE NOTE**

You can find our installation recommendations online at [www.hanit.de](http://www.hanit.de)

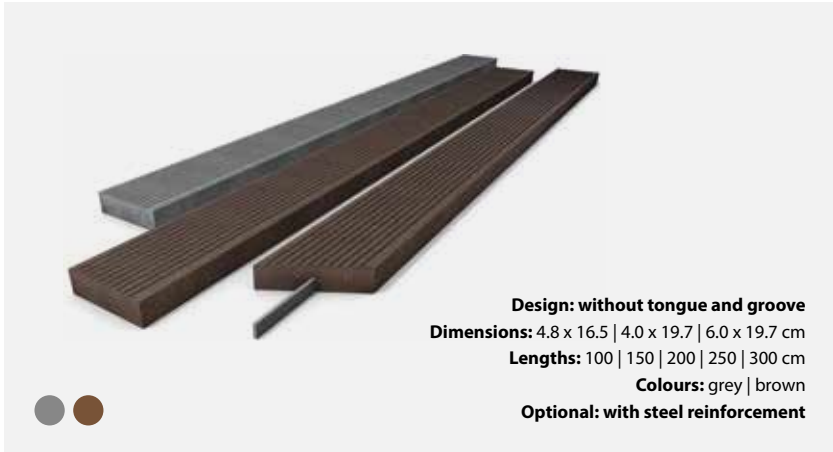
Material properties can be found on page 26, processing instructions on page 27.



# On safe ground

## hanit® footpath plank versions

### hanit® FOOTPATH PLANK WITHOUT TONGUE AND GROOVE



### hanit® FOOTPATH PLANK WITH TONGUE AND GROOVE



### OPTIONAL: RETROFITTED REINFORCEMENT

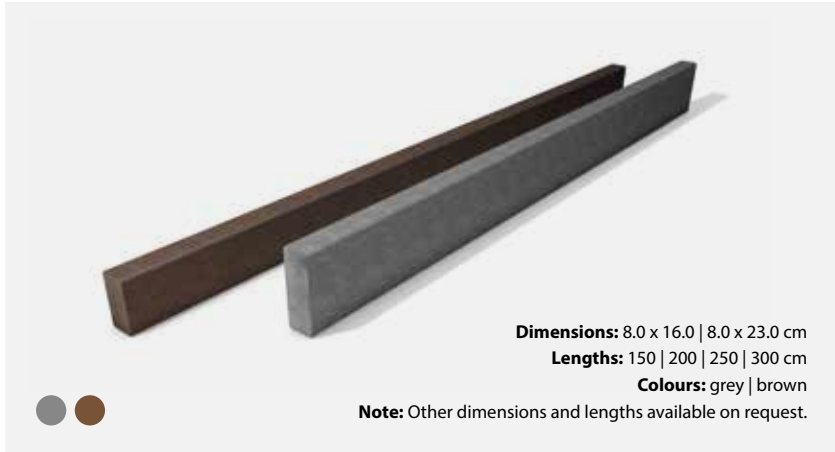
- » Flat steel: 6 x 25 mm, galvanised
- » Centered on the underside. Ends approx. 7 cm before end of profile
- » Flat steel fixed with clips
- » Double reinforcement available on request
- » For footpath planks 6.0 x 19.7 cm stronger reinforcement for increased spans available on request



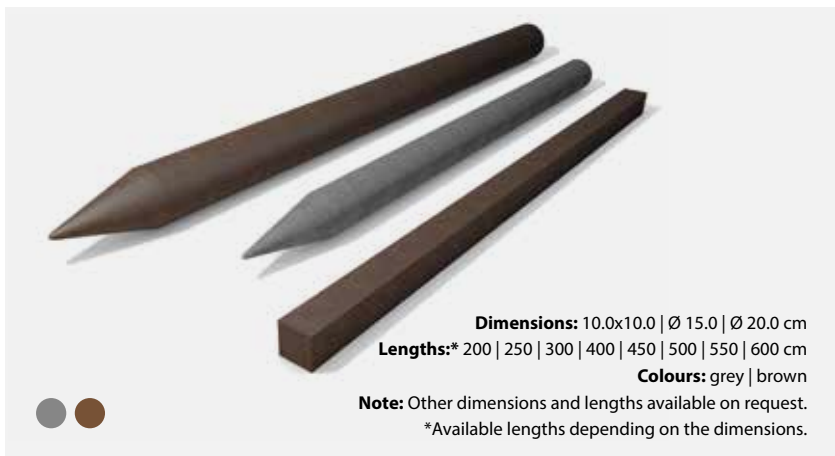
# Substructure and groundwork

hanit® beams and profiles

## hanit® BEAMS



## hanit® PILE-DRIVEN POSTS



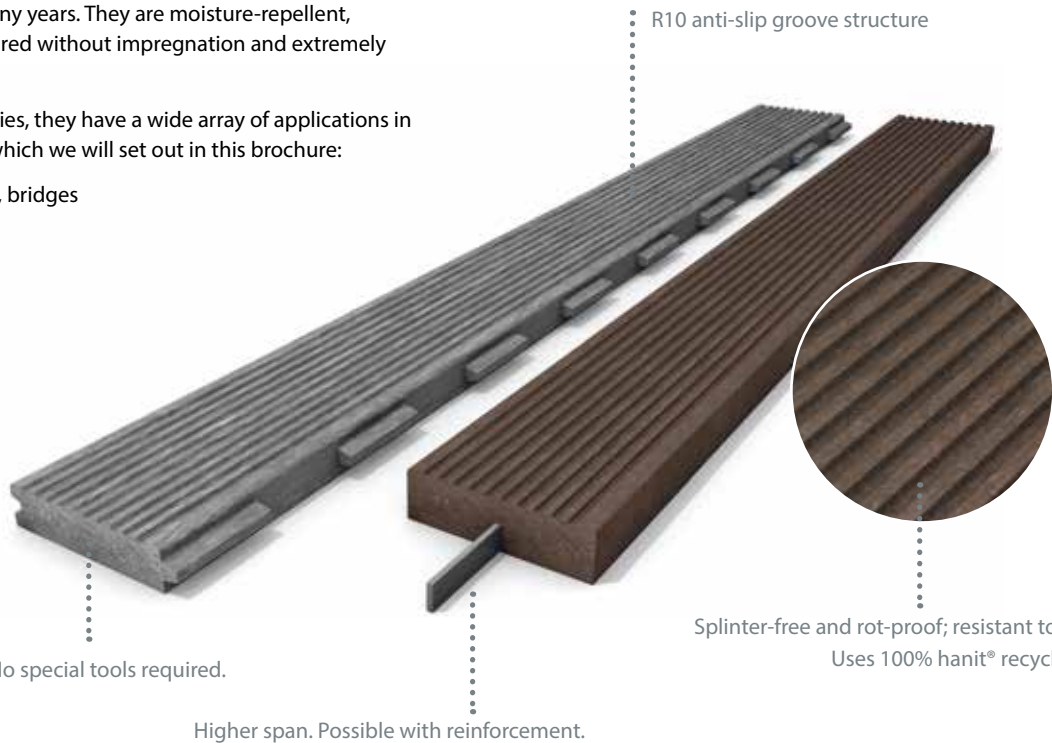
# hanit® FOOTPATH PLANKS

## Back on the right track

A safe choice: hanit® footpath planks have proven their worth umpteen times over many years. They are moisture-repellent, splinter-free, manufactured without impregnation and extremely resistant.

Thanks to these properties, they have a wide array of applications in and around the water, which we will set out in this brochure:

- » Walkways, footpaths, bridges
- » Ports and jetties
- » Water sports
- » Other applications



## OVERVIEW OF SPANS

Floor surface			
Footpath plank (cm)	Material	Surface load: 3 kN/m <sup>2</sup> Concentrated load: 1.5 kN	Surface load: 5 kN/m <sup>2</sup> Concentrated load: 2 kN
4.0 x 17.0 <sup>1</sup>	hanit®	*60 cm	60 cm
4.0 x 17.0 reinforced <sup>1</sup>	hanit®	*100 cm	*100 cm
4.0 x 19.7	hanit®	53 cm	46 cm
4.0 x 19.7 reinforced	hanit®	*80 cm	80 cm
4.8 x 16.5	hanit®	*60 cm	56 cm
4.8 x 16.5 reinforced	hanit®	*80 cm	80 cm
6.0 x 19.7	hanit®	*80 cm	80 cm
6.0 x 19.7 reinforced	hanit®	*100 cm	100 cm

\* Maximum span due to the creep properties

<sup>1</sup> Two footpath planks each measuring 4.0 x 17.0 cm with tongue and groove were tested in combination.





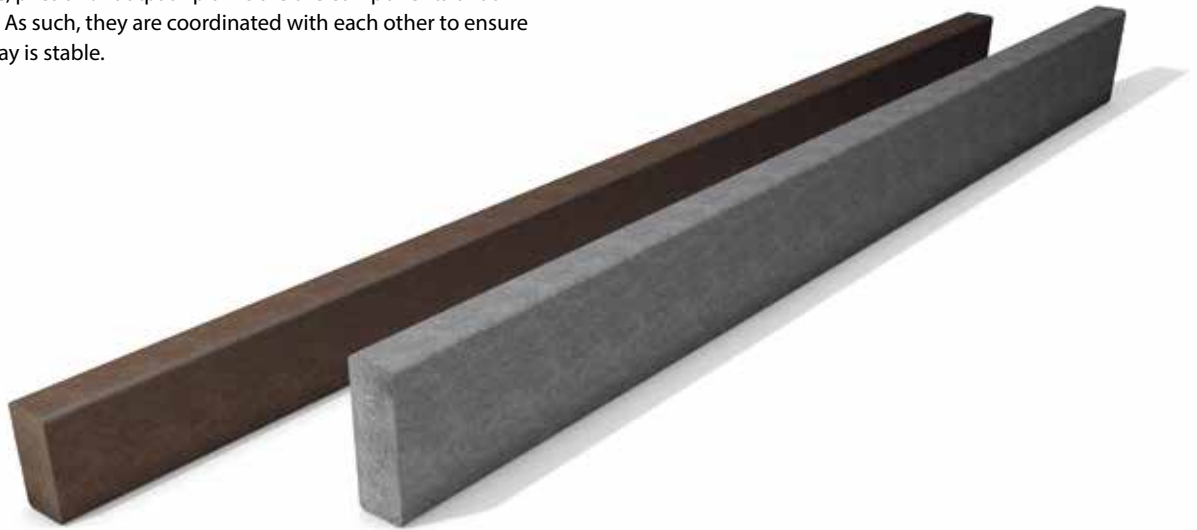
# hanit<sup>®</sup> BEAMS

## Taking the load: robust substructures

The substructure forms the connection between piles and footpath planks. hanit<sup>®</sup> recycled sleepers serve both as crossbeams (ties) between opposite piles and as longitudinal beams between piles standing one after the other.

Practical to install: hanit<sup>®</sup> can be worked with in the same way as wood. Connections, drill holes, shortening, etc. can all be executed at the construction site.

The substructure, piles and footpath planks are the components of our system solution. As such, they are coordinated with each other to ensure that your walkway is stable.

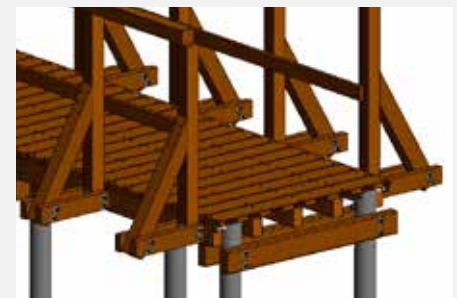


Span of longitudinal beams						
Sleeper (cm)	Surface load: 3 kN/m <sup>2</sup> Concentrated load: 1.5 kN Distance between longitudinal beams			Surface load: 5 kN/m <sup>2</sup> Concentrated load: 2 kN Distance between longitudinal beams		
	40 cm	50 cm	60 cm	40 cm	50 cm	60 cm
8.0 x 16.0	200 cm	185 cm	175 cm	170 cm	155 cm	145 cm
8.0 x 23.0	*250 cm	*250 cm	245 cm	240 cm	225 cm	210 cm

\* Maximum span due to creep properties

Span of crossbeams/ties				
Sleeper (cm)	Surface load: 3 kN/m <sup>2</sup> Concentrated load: 1.5 kN		Surface load: 5 kN/m <sup>2</sup> Concentrated load: 2 kN	
	Distance between longitudinal beams		Distance between longitudinal beams	
8.0 x 16.0	130 cm		120 cm	
8.0 x 23.0	180 cm		160 cm	

These are simply rough guideline values. Exact dimensions are only available after inspection and calculation



### PLEASE NOTE

Crossbeams and longitudinal beams do not always have to feature an identical geometrical design!

These guide values are set out according to the load classes as per Eurocode 1 (Actions on structures; EN 1991).

The fewer longitudinal beams are installed, the smaller the span, as the surface load has to be absorbed by fewer beams.

Screw connection of the mounting system with the ties and longitudinal beams using M16 threaded rods M16 and chipboard screws Ø 8 x 220 mm.

# hanit® PILES

A firm foundation for centuries

A walkway is constantly being exposed to high loads. As such, a secure foundation is a basic requirement for a long service life. Our hanit® recycled plastic is extremely rot-proof, allowing piles to be used even at the transition between water and air – and permanently, too.



## PLEASE NOTE

The two factors that determine the choice of pile-driven posts are the nature of the ground and height of the walkway. We are happy to advise you on the optimal diameters and lengths.

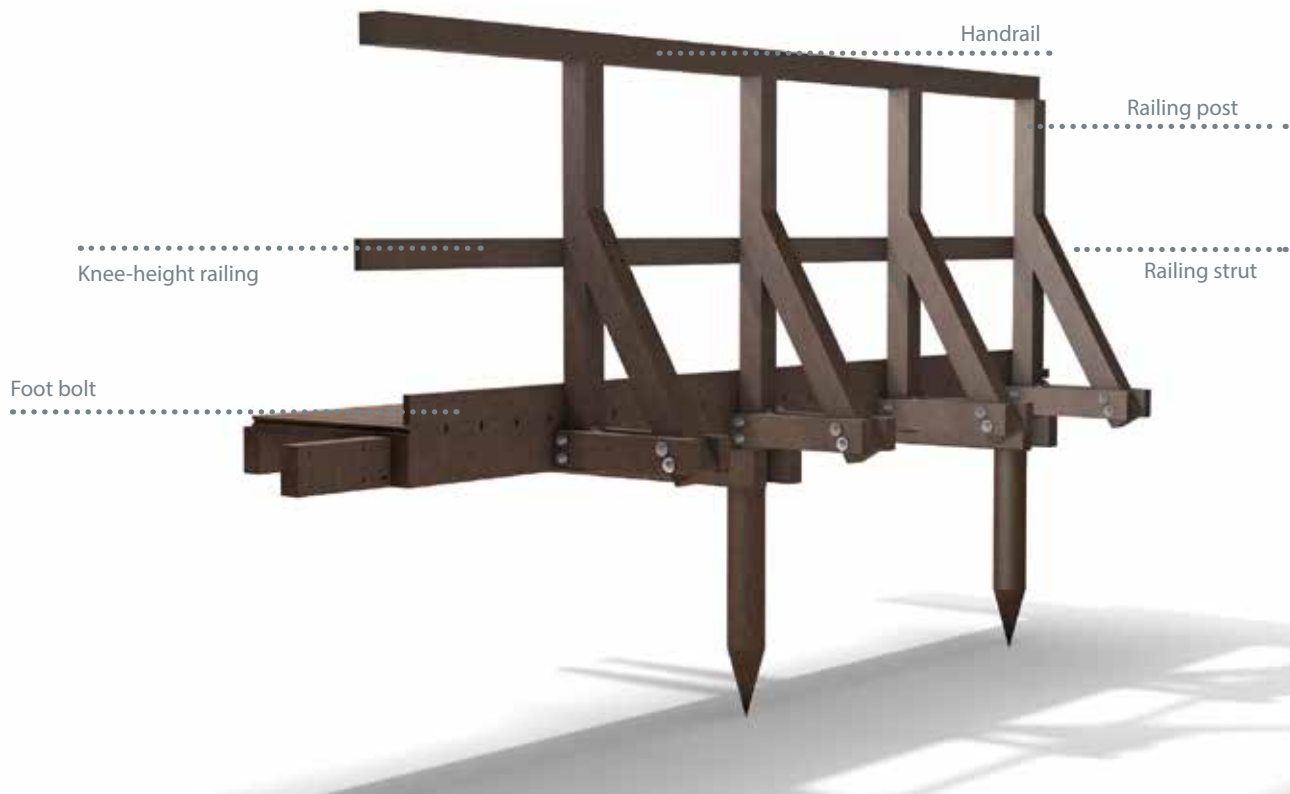
Pile	
Dimensions (cm)	Max. flooring height above solid ground
10x10	*100 cm
Ø 15	*150 cm
Ø 20	*200 cm

\* The figures given for the maximum height of the walkway is simply a rough guide value and must be checked in every individual case.

# hanit® RAILING SYSTEMS

Everything at hand

In construction, the railing is usually the last component to be added. But when it comes to safety, it's top of the list. A railing made of hanit® profiles is no less a part of the walkway than the footpath planks, substructure and piles.



## PLEASE NOTE

The railing design is in accordance with:

- » Eurocode 1 (Actions on structures)
- » Eurocode 3 (Design of steel structures)
- » Eurocode 7 (Geotechnical design)

Please take equipotential bonding into consideration when planning metal railing systems.



# hanit® FOOTPATH PLANKS AND ROLLING ELEMENTS

When simplicity and speed are of the essence

Sometimes things just need to get done quickly. This is especially the case if footpaths are only to be laid out temporarily or seasonally (e.g. on beaches that are not open in winter). In such instances, it could be too time-consuming and expensive to assemble and disassemble individual planks.

## We have the solutions you need:

- » **Pre-assembled boardwalk elements** in standard dimensions allow footpaths to be laid and taken up again quickly and conveniently as required. The elements are made from one piece and do not have to be assembled. That's why they can't be beaten in handling.
- » Do you need other widths or lengths? We're happy to offer **ready-assembled footpath sections**, tailored to the requirements of the site. This means that you won't have to have tools, a power supply and the like available on site.
- » The **roll out element** can be rolled out like a rug and taken back up again just as easily. This enables you to save space in transporting it, while also ensuring easy 'installation'. No screwing, no assembly. Its manoeuvrability makes it ideally suited to soft surfaces (e.g. sand and grass) and for temporary use.

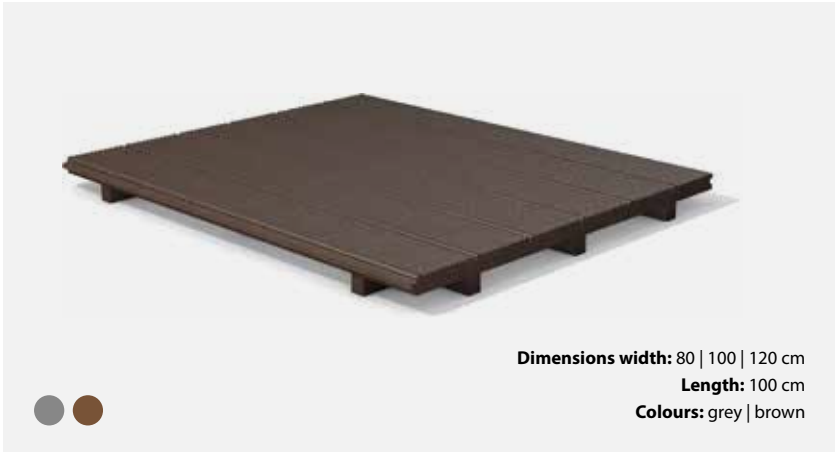


## BENEFITS OF READY-ASSEMBLED FOOTPATH SECTIONS (CUSTOM)

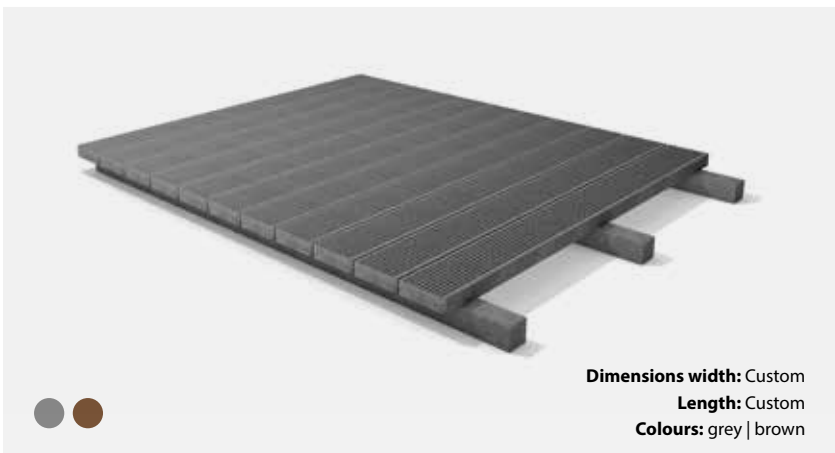
- » Variable in length and width
- » No on-site assembly
- » Suitable for all footpath planks

Several planks are pre-mounted on beams. These beams are arranged in such a way that the elements can be pushed into one another.

hanit® PRE-ASSEMBLED BOARDWALK ELEMENT (standard)



hanit® READY-ASSEMBLED FOOTPATH SECTIONS (custom)



hanit® ROLL OUT ELEMENT



# MARINE ENGINEERING

Secures the bank and protects the watercourse – permanently

Systems for securing slopes and banks have to be able to withstand all sorts of things. The fastenings and facings are beset by brines, acids, oils and salts from below. At the same time, the material has to survive rain, hail, wind and UV rays from above.

But not with hanit®. This special material resists stormy weather and aggressive chemical compounds, while also ensuring that the material does not affect the water quality. A protective system that works at all levels.

- » Rot-proof
- » Weather-resistant
- » Weatherproof
- » Resistant to oils, brines, acids and salt water
- » Does not release any pollutants into surface water



SHEET PILE WALL CLADDING



FISH LADDERS



COASTAL AND SURF PROTECTION



FENDERS



SCREENING IN FRONT OF THE FLOOD COMPENSATION ZONE



SHEET PILE WALL CLADDING WITH RUNNING BOARDS



STREAM CLEAN-UP

**TIP:**

We carry a large selection of profiles that can be used as fenders and ram protection.

We would be happy to provide you with detailed information.



BANK REINFORCEMENT



WATERWAY GUIDANCE

# WALKWAYS, FOOTPATHS, BRIDGES

## It's your project

No two projects are the same. Walkways, footpaths and bridges differ in width, length, height and design. Sometimes it's a matter of building a completely new structure, sometimes of upgrading an existing one, where the intention is to continue using parts of the walkway system (e.g. the steel frame).

We offer both complete systems and individual components for upgrading work. Check out our solutions.

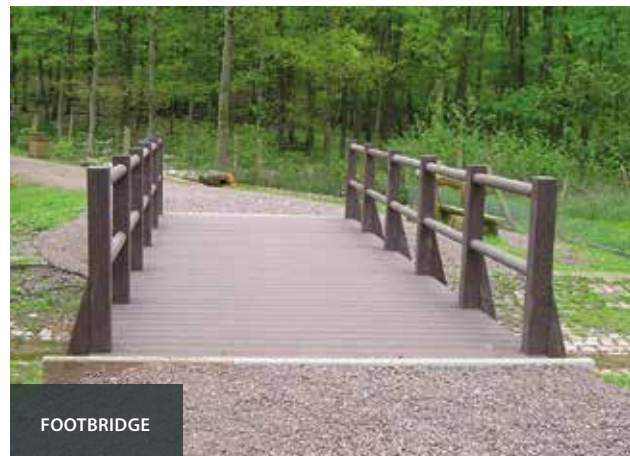
- » Individually adjustable
- » Rot-resistant
- » Vandalism-proof



PATH SYSTEM WITH RAILINGS



SEAFRONT BOARDWALKS



FOOTBRIDGE



SWIMMING PIER



MOORLAND PATH

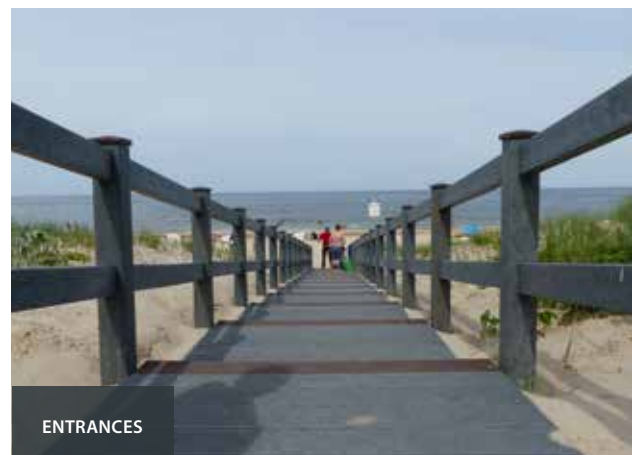




hanit®  
MORE THAN  
JUST A FOOT-  
PATH PLANK

**DEPENDING ON THE PROJECT, RECYCLED PROFILES CAN BE INSTALLED TO DIFFERENT SPECIFICATIONS:**

- As treads
- As treads plus substructure
- As treads, substructure and pile foundations
- Stairway and railing systems available as options



# MARINAS, PORTS AND JETTIES

The surest route to your boat

We provide solutions for boat moorings at marinas, ports and jetties. Whether canoes or yachts, every boat has its berth.

And it needs to be easily accessible. With our footpath planks, you can create the perfect route to your craft

- » Anti-slip
- » Weatherproof
- » Saltwater-resistant

## TIP:

We carry a large selection of profiles that can be used as fenders and ram protection.

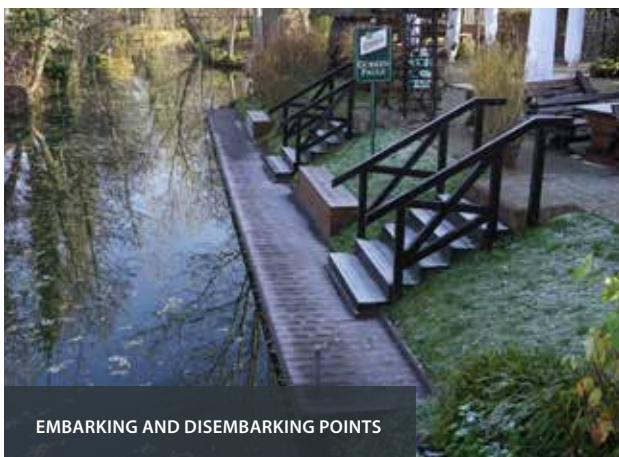
We would be happy to provide you with detailed information.



YACHT HARBOUR/JETTY



LANDING STAGES WITH JETTIES



EMBARKING AND DISEMBARKING POINTS



CANOE RAMP



LANDING STAGE



JETTY/WALKWAY



JETTY WITH FINGER PIER

# WATER SPORTS

## A playground on the water

Lots of people gravitate towards the water in their free time – for swimming, boating, fishing, water sports or simply relaxing. The possibilities are endless.

What you need here are planks that are durable and remain safe even if you're having so much fun that you forget what's beneath your feet.

This is because hanit® planks are anti-slip, splinter-free and highly resilient, making them the ideal floor covering for a wide range of purposes.

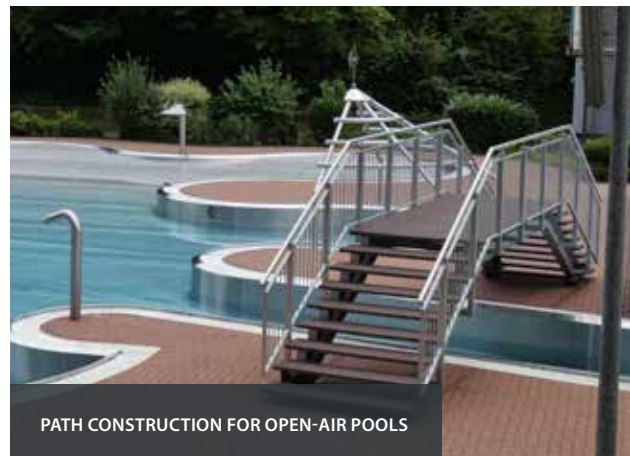
- » Resistant to chlorine and algae
- » Anti-slip
- » Free of pollutants in accordance with DIN EN 71-3 (Safety of toys)
- » Splinter-free



NATURAL SWIMMING POOL



SWIMMING POOL SUN TERRACE



PATH CONSTRUCTION FOR OPEN-AIR POOLS



BATHING JETTIES



WATER POLO FACILITY



BATHING LAKE

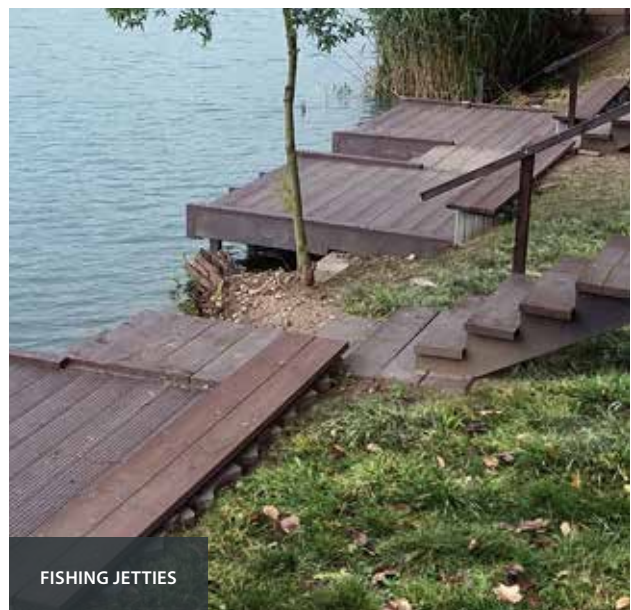


WAKEBOARDING FACILITY

**NOTE:**

hanit® offers unbeatable advantages, especially in places where people walk around barefoot, like swimming pools and sports facilities.

hanit® does not splinter, so it does not pose any risk of injury. Regular testing of slip resistance and the materials gives installers a sense of reassurance that hanit® offers the highest safety standards in this regard.



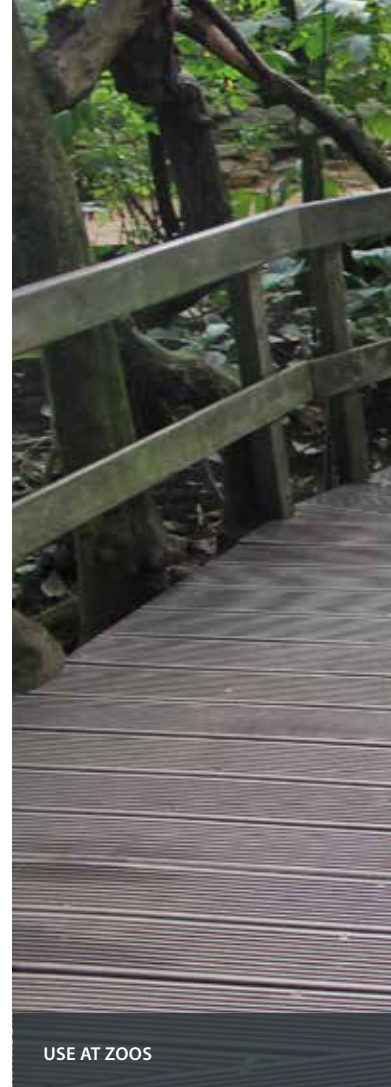
FISHING JETTIES

# SEEING THE BIG PICTURE

Fantastic away from water, too

hanit® planks can also prove very useful away from bodies of water and swimming pools. Our customers are constantly proving as much. Here are just a few of their ideas, which demonstrate just how versatile the footpath planks can be:

- » Seating in public areas
- » Playground design
- » Zoos and animal parks
- » Coverings and standalone structures



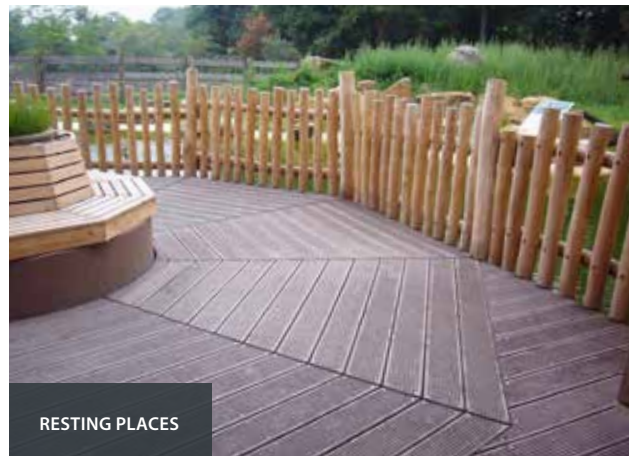
USE AT ZOOS



ROOT BRIDGES



RAMPS



RESTING PLACES



PLAYGROUND DESIGN

**TIP:**

As they can be custom machined, hanit® planks can be adjusted quickly and easily on site; special tools are not required.



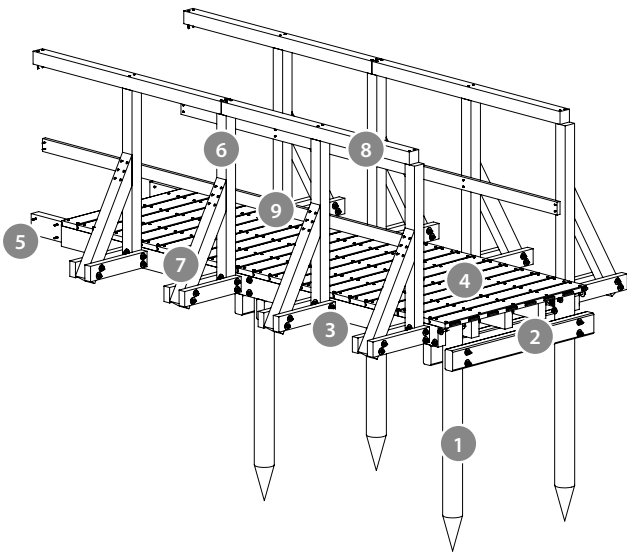
PLAYGROUND DESIGN

# Walkway model example A

The all-rounder among the hanit® walkways.

Whether as a bridge over a stream or a path in the moor, with or without railings: the typical structure with foundation, cross and longitudinal beams as well as treads represents the rock-solid form of a walkway system.

With model variant A, in combination with the simple but standard-compliant railing system, we have a good and inexpensive variant ready for every application.



### Parts list (as required for 4 running metres of walkway)

Description	Quantity	
	1200 mm	1500 mm
1 Pile Ø 150 mm	4	4
2 Crossbeams / ties 80 x 160 mm x walkway width	4	4
3 Longitudinal beams 80 x 160 x 4000 mm	4	5
4 Footpath plank 40 x 170 x footpath width	24	24
5 Beam 80 x 160 x 1000 mm (longitudinal beam connector)	2	2
6 Railing post 100 x 100 x 1400 mm	8	8
7 Railing strut	8	8
8 Hand railing 100 x 100 x 2000 mm	4	4
9 Knee-height railing 30 x 100 x 2000 mm	4	4

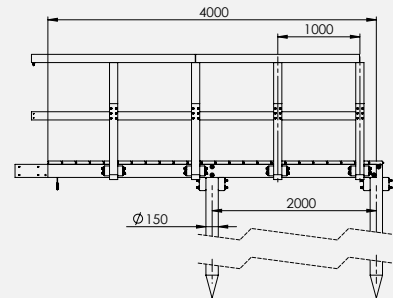
### PLEASE NOTE:

The models are merely intended to show an example of a possible structure by way of example and are no substitute for calculations based on the site conditions.

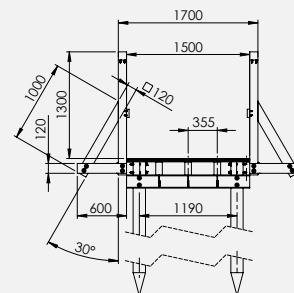
### NOTES:

- » Material: hanit®
- » Pile Ø 15 cm
- » Available with or without a railing
- » Widths: 1.20 m, 1.50 m
- » Permissible concentrated load: 2 kN
- » Permissible surface load: 5 kN/m<sup>2</sup>

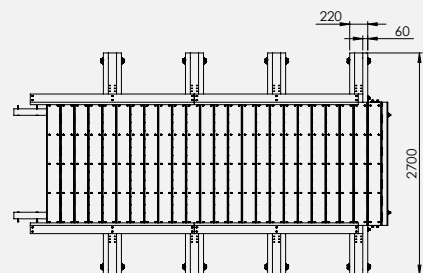
### Technical specifications (in mm)



Side view



Front view



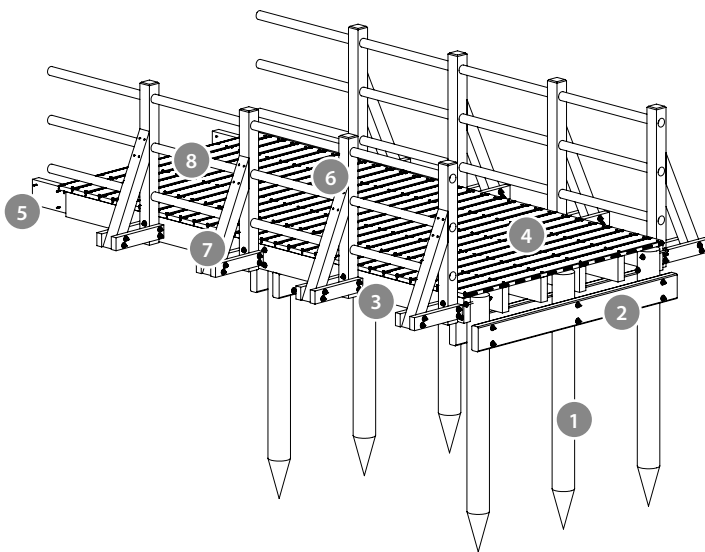
Top view



# Walkway model example B

Is your project more complex and challenging? Is safety a major concern? Are you concerned about the number of piles?

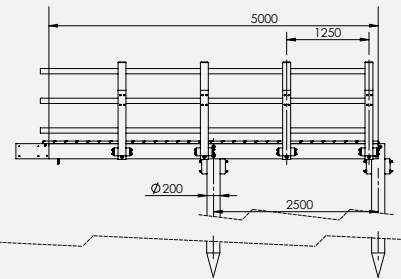
This solution provides you with the answers. It includes an extremely robust, high-quality railing. Thanks to the huge axial dimension of 2.5 metres, you need fewer piles. Essentially, this design may prove the most economic for large projects (like recreational boating harbours and large jetties).



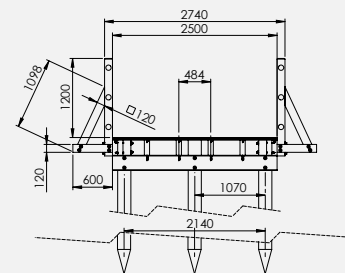
## NOTES:

- » Material: hanit®
- » Pile Ø 20 cm
- » Available with or without a railing
- » Widths: 1.20 m, 1.50 m, 2.0 m and 2.50 m
- » Permissible concentrated load: 2 kN
- » Permissible surface load: 5 kN/m<sup>2</sup>

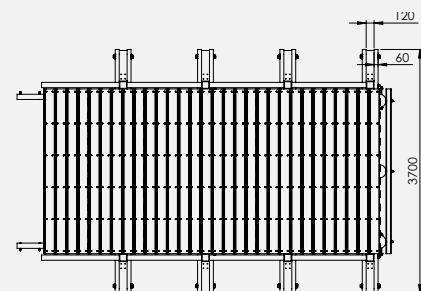
## Technical specifications (in mm)



## Side view



## Front view



## Top view

## Parts list (as required for 5 running metres of walkway)

Description	Quantity			
	1200 mm	1500 mm	2000 mm	2500 mm
1 Pile Ø 200 mm	4	4	4	6
2 Crossbeam / ties 80 x 230 x walkway width	4	4	4	4
3 Longitudinal beams 80 x 230 x 5000 mm	4	4	5	6
4 Footpath plank - 40 x 170 x footpath width	30	30	30	30
5 Beam 80 x 230 x 1000 mm (longitudinal beam connector)	2	2	2	2
6 Railing post 120 x 120 x 1500 mm	8	8	8	8
7 Railing strut	8	8	8	8
8 Crossbar Ø 80 x 2480 mm	12	12	12	12

## PLEASE NOTE:

The models are merely intended to show an example of a possible structure by way of example and are no substitute for calculations based on the site conditions.



## MATERIAL PROPERTIES

Test	hanit® result	
Three-point bend test (DIN EN ISO 178)	Bending stress -5° C	21.2 MPa
	Flexural modulus of elasticity -5° C	1,289 MPa
	Bending stress 23° C	11.6 MPa
	Flexural modulus of elasticity 23° C	581 MPa
	Bending stress 65° C	4.6 MPa
Tensile test (DIN EN ISO 527-2)	Tensile strength	9.65 MPa
	Tensile elongation	13.8 %
	Tensile modulus of elasticity	659 MPa
Pressure characteristics (DIN EN ISO 604)	Compressive stress 1 % elongation	1.8 MPa
	Compressive stress 2 % elongation	3.3 MPa
	Compressive stress 10 % elongation	13.3 MPa
	Compressive stress at yield	18.2 MPa
	Compression modulus of elasticity	271 MPa
Water absorption (DIN EN ISO 62)	23° C, 50 % RH	<1 %
	23° C in water	<1 %
	100° C in water	<1 %
Surface/volume resistance (DIN IEC 60093)	Surface resistance	3.2x10 <sup>13</sup> Ω
	Spec. Surface resistance	3.2x10 <sup>14</sup> Ω
	Volume resistance	9x10 <sup>13</sup> Ω
	Spec. Volume resistance	4.5x10 <sup>14</sup> Ω
Thermal expansion	Thermal expansion factor	0.00018993 1/°C

### PLEASE NOTE:

The guideline values given in this brochure are merely intended to provide a rough indication. Detailed proposals require exact calculations.

Official structural analysis is also available on request at extra cost.



hanit® recycled products

# PROCESSING GUIDELINES

hanit® products can be adapted using tools and machines used as standard in wood and metal processing, as required. However, it is important to be mindful of specific properties of the material:

- » As a general rule, machining the profiles will cause high tool wear. We, therefore, recommend using carbide-tipped tools.
- » Recycled products have a closed surface. In places, the core has a grid-like structure that becomes visible during machining. Such properties are normal for the material and are not cause for concern.
- » Some hanit® products have been provided with additional metal reinforcement. These are described as “plus reinforcement” or “reinforced” in the product information. Cutting into these products (length/width) should be avoided.
- » Any chips that occur during machining should be collected using appropriate extraction systems or equipment for subsequent use.

## TIPS FOR WORKING WITH RECYCLED PROFILES



When bolting recycled profiles together, the profile to be fastened must be pre-drilled (e.g. boards, dock planks, square profiles). The hole must be larger than the bolt. Elongated slots are recommended to account for the temperature-related expansion of the material.



Recycled profiles are only partially paintable due to their properties. Good results have been obtained using permanently elastic plastic paints (all-weather paints) together with a roughened surface and priming. Permanent paint adhesion cannot be guaranteed.



hanit® products can be nailed both conventionally and with nail guns. Due to the compact surface, it is, however, more difficult to penetrate the profiles than it would be with wood. Consider this when fixing.



Compared to wood or metal products, plastic has lower rigidity and greater flexibility. These special material properties must be taken into account when planning distance between supports in dock, fence, and patio construction.



If profiles are hammered, we recommend using a ram or a corner protector to prevent damage to the product.



Boards, beams, and square profiles must not be press-fitted. The profiles may exhibit length variations of +/- 1.5% due to temperature fluctuations. An expansion distance (expansion joint) must therefore be maintained during installation.



Sunlight affects the profile alignment, and can, for example, cause fence posts to tilt. To prevent profile distortion caused by sunlight, the profiles should not be stored loosely.



We have structural verification tests, installation recommendations, and assembly instructions for many products and applications. More information can be found on our website [www.hahnkunststoffe.de](http://www.hahnkunststoffe.de) in the download section or on the selected product's page.

# HAHN

## KUNSTSTOFFE

### HAHN Kunststoffe GmbH

Gebäude 1027  
55483 Hahn-Flughafen  
Germany

☎ +49 6543 9886-10

☎ +49 6543 9886-99

✉ [info@hahnkunststoffe.de](mailto:info@hahnkunststoffe.de)

🌐 [www.hahnkunststoffe.de](http://www.hahnkunststoffe.de)

### HAHN France S.A.S.

57245 Peltre, France  
☎ +33 3 87 57 57 10  
🌐 [www.hahnfrance.fr](http://www.hahnfrance.fr)

### HAHN Plastics Ltd.

Swinton M27 8LJ, United Kingdom  
☎ +44 161 850 1965  
🌐 [www.hahnplastics.com](http://www.hahnplastics.com)

### HAHN Plastics (North America) Ltd.

50 Northland Road, Waterloo, ON N2V 1N3, Canada  
☎ +1 519 218-8800  
🌐 [www.hahnplastics.ca](http://www.hahnplastics.ca)

### PRECO SYSTEM S.R.L.

33013 Gemona del Friuli (UD), Italy  
☎ +39 432 970597  
🌐 [www.plasticariciclata.it](http://www.plasticariciclata.it)