hanit
Preserves natural resources

hanit – rot-free boardwalks and marine engineering

www.hanit.ca

Advantages of hanit

A sustainable solution for people and the planet

Low-maintenance & weather-resistant

Wind and rain aren't a problem for hanit. It's water- and weather-resistant and can be used outdoors all year round. hanit is non-absorbent so it's unaffected by damp, moisture or humidity. Even when wet, the surface dries quickly. Because hanit doesn't rot (ever!), it can be used directly in the ground – no painting, staining, pressure treating or chemicals required!

Eco-friendly & pollutant-free

hanit is non-toxic, completely food-safe and free of harmful substances (meeting DIN EN 71-3: European standard for toy safety). hanit is 100% recycled plastic and not mixed or impregnated with other materials. At the end of the product life, hanit is 100% recyclable – preserving natural resources and taking pressure off landfills.

Easy to work with

If you can work with wood, you can work with hanit. You can use the same conventional tools to drill, saw, mill, plane or screw into. On-site modifications are no problem. hanit is also lighter than steel and concrete so it's easier to transport. Once on-site, hanit is easily lifted, carried and placed where it needs to be.

Raw material:
hanit pellets, recycled
from single-use waste plastic

We make more than 2000 hanit products using 100% recycled plastic. Contact us for more information or to discuss specific products to suit your needs.

Water-resistant planks, anti-slip surface

hanit docks

Project partners welcome

When it comes to safe, strong and long-lasting paths in or around water, water-resistant hanit is hard to beat. Waterfront projects are a great showcase of hanit's potential. Once you've worked with rot-free hanit, it's hard to go back. We have a long and successful waterfront track record but we are always on the lookout for new projects and partners. Interested? Contact us!

Let's talk about recycling

How to works at HAHN Kunststoffe in Germany

This is how our products are made.

At the end of their life, our products can be recycled and the process starts again.

It all begins in private households. That's where waste gets sorted into separate recycling bins...

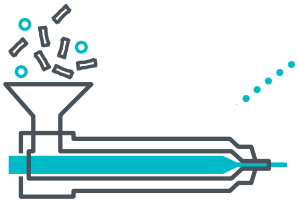
... or designated, color-coded bags.

The contents of the bins and bags are taken to sorting facilities.

That's where the waste is separated by material (such as metal or plastic). Unsuitable leftover material is sorted out.

The plastic waste is baled and delivered to HAHN.

The bales are processed into pellets – the basis for hanit.



The pellets are melted, sometimes colored, and injected into molds.

Tool selection

hanit is easy to work with

Sawing & cutting

Use high-speed band saws or circular saws with slightly crossed teeth, preferably carbide-tipped. Remove shavings quickly to avoid smearing the product. Chainsaws can be used but not recommended for precision cutting.

Drilling

Use drill bits with a helix angle of 20–30° and a point angle of 110–120°. Drilling creates friction and can cause localized melting. Take occasional pauses, especially when drilling deeper holes.

Planing

Planes can be used with hanit. The finish depends on the feed rate, cutting speed, clearance, cutting angle and the condition of the blade.

Routing

The span cross-section should be as large as possible to keep frictional heat to a minimum. The depth of cut and feed rate should be high but the cutting speed low. We recommend routers with indexable carbide inserts.

Angle grinders

Angle grinders are not suitable for cutting hanit due to their high speed.

Working with hanit
Tips & tricks

hanit has a huge variety of uses but it's often a simple replacement for traditional materials. It comes in conventional shapes and sizes and you don't need new skills or equipment. What's more, it's easier to store, lighter to handle and cheaper to transport.

As well as environmental benefits, there are financial savings too. Although hanit may be more expensive than buying, for example, a deck will never rot or deteriorate. Its sheer durability means no more painting or re-treating and little or no maintenance costs. Imagine that.

Special characteristics of recycled plastic

If you can work with wood, metal or concrete, you can work with hanit. Same tools, same skills, same equipment but it's more than just a replacement. What we've seen from hanit so far is just the start. It's infinitely adaptable for even the most innovative projects.

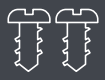
Whatever the project you're working on, there are a few things to bear in mind:

- The surface of hanit is closed but the core has a visibly different honeycomb-like structure. Exposing the core (e.g. by sawing or cutting) does not affect strength, stability or durability.
- Processing hanit often means additional tool wear. We recommend carbide-tipped tools.
- Some hanit products (e.g. bench boards) have metal reinforcement for increased rigidity. Avoid cutting reinforced products.
- Just like working with wood, sawing, cutting and drilling hanit can create plastic 'sawdust' aka swarf and chips. This should be collected and recycled or disposed of responsibly.

Nails
Hammers, nails and nail guns are not a problem for hanit. Just bear in mind that penetrating the surface of hanit is more difficult than wood. In our experience, it's better to use screws where possible and we suggest drilling pilot holes as the plastic is very dense, this is especially true of hanit Ultra.

Downloads
Information about installation, assembly or processing hanit can be found in the Downloads area of hanit.ca.

Pounding in posts
If hanit is being driven into the ground, use a post pounder, pile driver or edge protector to avoid damaging the product.



Screws
When hanit is being screwed down, drill a pilot hole slightly larger than the screw to allow for expansion and contraction.

Expansion
Temperature fluctuations can cause +/- 1.5% expansion/contraction so always plan carefully. For this reason, hanit planks, boards or profiles shouldn't be press fitted.

Support distances
hanit is generally less rigid than wood or metal. We recommend hanit Ultra for spanning gaps and projects like decks and boardwalks.

Material properties

hanit – tried and tested

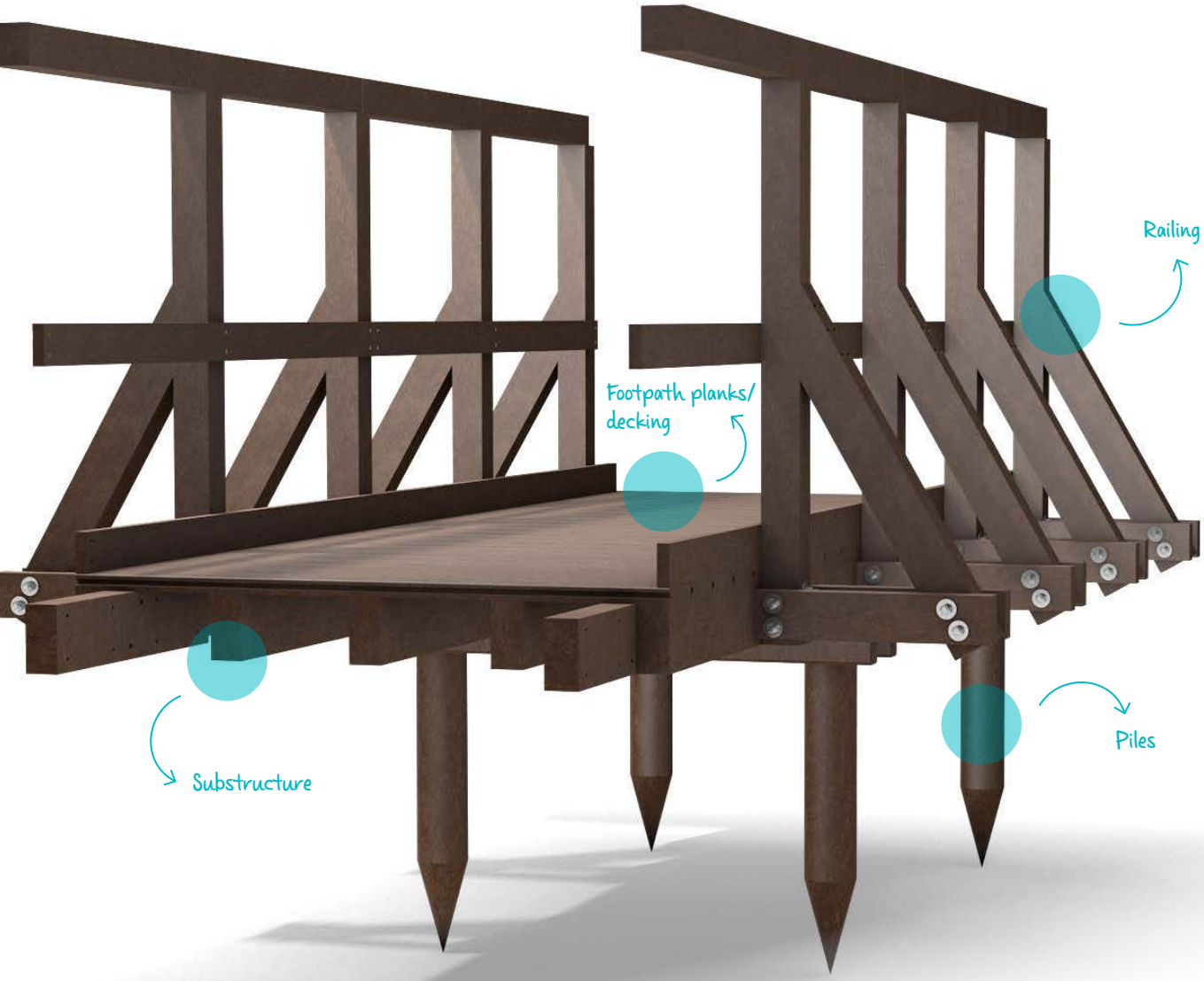
Please note: The values given in this brochure are only a guide. More detail usually needs specific tests or calculations. Official structural analysis is available for a fee. If you have questions about hanit, please contact us.

Testing	Result	
Three-point bending test (DIN EN ISO 178)	Bending stress -5°C/23°F	21.2 MPa
	Bending modulus of elasticity -5°C/23°F	1.289 MPa
	Bending stress 23°C/73°F	11.6 MPa
	Flexural modulus of elasticity 23°C/73°F	581 MPa
	Bending stress 65°C/149°F	4.6 MPa
	Bending modulus of elasticity 65°C/149°F	162 MPa
Tensile test (DIN EN ISO 527-2)	Tensile strength	9.65 MPa
	Tensile elongation	13.8%
	Tensile modulus of elasticity	659 MPa
Pressure properties (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 yield stress	18.2 MPa
	Compressive modulus of elasticity	271 MPa
Water absorption (DIN EN ISO 604)	23°C/73°F, 50% r.L.	<1%
	23°C/73°F, in water	<1%
	100°C/212°F in water	<1%
Surface / contact resistance (DIN IEC 60093)	Surface resistance	$3.2x10^{13}$ Ω
	Spec. surface resistance	$3.2x10^{14}$ Ω
	Contact resistance	$9x10^{13}$ Ω
	Specific contact resistance	$4.5x10^{14}$ Ω
Thermal expansion	Thermal expansion factor	0.00018993 1/°C 34/°F

hanit boardwalks & bridges

Bridging the gap to a sustainable future

When in beautiful surroundings, a pedestrian boardwalk or bridge should effortlessly blend in. What should stand out is the bridge's strength and durability while offering safe passage for people, year after year. It takes high-quality material to achieve this and hanit doesn't disappoint. Rot-free, weather-resistant, anti-slip, splinter-free, low-maintenance, good looking and sustainable? That's hanit.



Note
Installation recommendations available at **www.hanit.ca**

Material properties can be found on page 7, processing information on page 6.

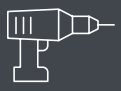
Recycled Plastic Products

hanit – the sustainable solution

Most products designed for outdoor use have a weakness. If they're made of wood, metal or concrete and exposed to the elements, they'll deteriorate. Relentless exposure to rain, frost, hot weather and UV is a destructive cycle but not for hanit. If you need a long-lasting, rot-free, low-maintenance and sustainable alternative, look no further.

Durability

hanit is weather-resistant, rot-free, water-repellent and resistant to UV, acid, alkaline, oil, sand and salt. It's a reliable outdoor all-rounder that's long-lasting, durable and very low-maintenance.



Low-maintenance

Throw away the paintbrush, put down the tool kit and save yourself time and money. Routine maintenance is a thing of the past because hanit doesn't deteriorate like wood, concrete or steel. It's hard-wearing and weather-resistant right out of the box and all through its lifetime.

Shatterproof

hanit doesn't shatter. This means there's a lower risk of injury when being worked with and fewer repairs once installed. If you're building a deck or boardwalk, you can go barefoot without splinters!

Innovative

hanit is an easy replacement for wood, metal and concrete but it can also go way beyond traditional materials. hanit can be adapted in extraordinary ways and for unique projects – creative minds welcome!

Eco-friendly

Most of our products meet or exceed environmental, health and performance standards. hanit is free from toxins and harmful substances, it meets the same safety standards that apply to children's toys.

If you can work with wood...

...you can work with hanit. Drilling, sawing and screwing are no problem. Think of hanit as synthetic wood and use the same tools, skills and techniques.

100% recycled plastic

hanit is 100% waste plastic. It doesn't contain any virgin plastic or need any new fossil fuel-based raw material. What's more, hanit is 100% recyclable.

Lightweight

hanit can outperform an equivalent concrete product while weighing less than a third. This makes hanit much easier to store, cheaper transport and a breeze to work with on-site. It also doesn't crack when dropped so there's far less accidental damage.

Cost-effective

hanit is incredibly tough and durable. It remains looking good for many, many years and is easily cleaned with nothing more than soap and water. Over time, this means less money spent on repairs, replacements or cleaning solutions. Most products even come with a 20-year warranty.

Easier all round

Whether it's walls, borders or slope reinforcement, hanit projects don't usually need heavy machinery or expensive equipment rental. Even our large L-stones and beams can be moved around easily and positioned precisely.

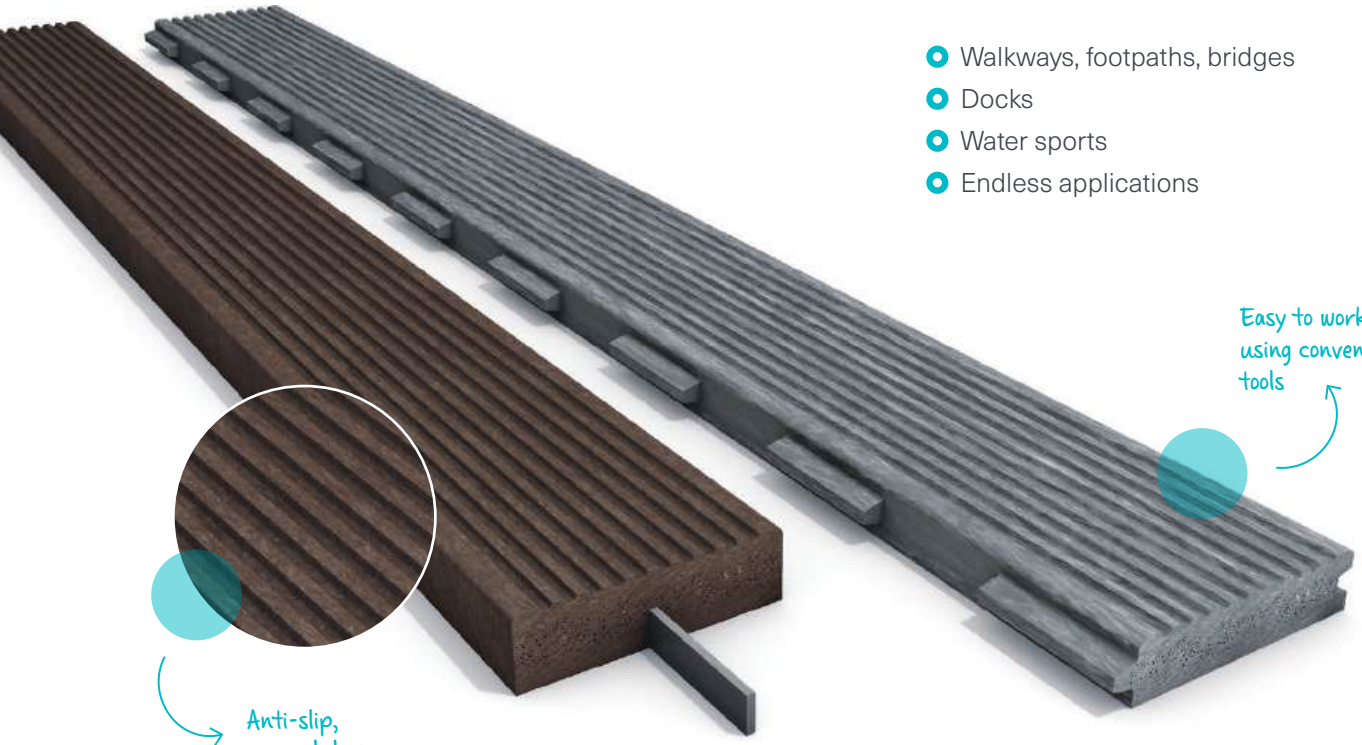
hanit footpath planks

Stable connections

A safe choice. Tried and tested over many, many years, hanit footpath planks have an enviable track record. Whether sun, sea, salt or sand, hanit is moisture-repellent, splinter-free, non-toxic, free of additives or preservatives, UV-resistant and extremely durable.

hanit performs well by the water and is great for projects like:

- Walkways, footpaths, bridges
- Docks
- Water sports
- Endless applications

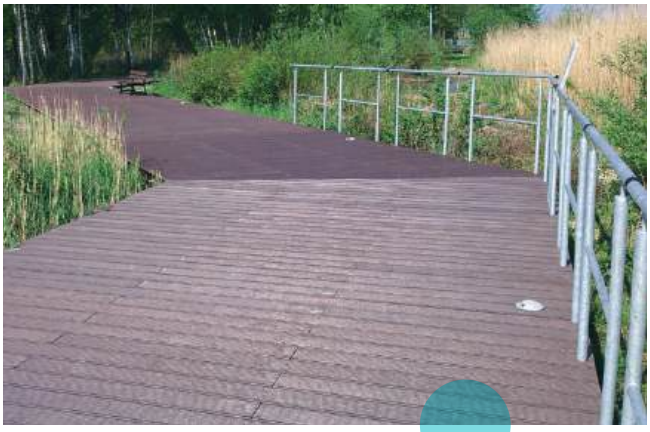


Overview of spans		
Footpath plank (inch)	**Uniformly distributed load: 62.6 psf Point load: 337 lbs**	**Uniformly distributed load: 104.4 psf Point load: 450 lbs**
1 5/8" x 6 3/4"[1]	*23 5/8"	23 5/8"
1 5/8" x 6 3/4" reinforced[1]	*3' 3 3/8"	*3' 3 3/8"
1 5/8" x 7 3/4"	20 3/4"	18 1/8"
1 5/8" x 7 3/4" reinforced	*2' 7 1/2"	2' 7 1/2"
1 7/8" x 6 1/2"	*23 5/8"	22"
1 7/8" x 6 1/2" reinforced	*2' 7 1/2"	2' 7 1/2"
2 3/8" x 7 3/4"	*2' 7 1/2"	2' 7 1/2"
2 3/8" x 7 3/4" reinforced	*3' 3 3/8"	3' 3 3/8"

[1] Two footpath planks each measuring 1 5/8" x 6 3/4" with tongue and groove were tested in combination | * Maximum span due to the creep properties

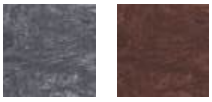
Optional: retrofitted reinforcement
- Flat steel: $^{15}/_{64}$“ x 1“, galvanized
- Centered on the underside
  Ends approx. $2^{3}/_{4}$” before end of profile
- Flat steel fixed with clips
- Double reinforcement available on request
- For planks $2^{3}/_{8}$” x $7^{3}/_{4}$” stronger reinforcement for increased spans available on request

Footpath planks



- Lengths: from 3' 3⅜" – 9' 10"
- Thickness: 1⅝ / 1⅞ / 2⅜" Width: 6½ / 7¾" depending on version
- Splinter-free, rot-proof, free of harmful substances
- Available with steel reinforcement for wider spans

Colors:



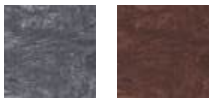
Gray Brown

Steel reinforced to span wider gaps

Footpath planks with tongue and groove

- Lengths: from 3' 3⅜" – 9' 10"
- Thickness: 1⅝", width: 6¾"
- Overall strength improved by tongue and groove design
- Available with steel reinforcement for wider spans

Colors:



Gray Brown

hanit beams

Secure, sustainable substructure

The substructure connects the piles and footpath planks. hanit beams can be used as crossbeams (ties) between opposite piles or as longitudinal beams.

Easy installation: if you can work with wood, you can work with hanit. Sawing, drilling, fitting, screwing into and connecting can all be done on-site.

Our substructure system consists of piles, profiles and footpath planks.
It's a tried and tested combination for stability and durability.

Span of longitudinal beams

Beam (inch)	Surface load: 62.6 psf | Point load: 337 lbf Distance between longitudinal beams			Surface load: 104.4 psf | Point load: 450 lbf Distance between longitudinal beams		
	15 3/4"	19 11/16"	23 5/8"	15 3/4"	19 11/16"	23 5/8"
3 1/8" x 6 1/4"	6' 7"	6' 13/16"	5' 9"	5' 6 15/16"	5'	4' 9"
3 1/8" x 9"	*8' 2"	*8' 2"	8' 7/16"	7' 10 1/2"	7' 4 9/16"	6' 10 11/16"

* Maximum span due to creep behavior.

Span of crossbeams/ties

Beam (inch)	Surface load: 62.6 psf | Point load: 337 lbf	Surface load: 104.4 psf | Point load: 450 lbf
3 1/8" x 6 1/4"	4' 3 3/16"	3' 11 1/4"
3 1/8" x 9"	5' 10 7/8"	5' 3"

Guide values only. Exact values need further consideration and calculation.

Please note

The geometrical design of cross-beams and longitudinal beams should be identical.

These guide values are set out according to the load classes as per Eurocode 1 (Actions on structures; EN 1991). Fewer longitudinal beams means smaller spans as the surface load has to be absorbed by fewer beams.

The suggested fasteners for the ties and longitudinal beams are M16 threaded rods and Ø 5/16" x 8 11/16".

Beams

Colors:

Gray

Brown

- Dimensions: 3⅛ × 6¼", 3⅛ x 9"
- Lengths from 4' 11" to 9' 10" depending on version, up to 19' 8¼" on request
- No rotting or decay
- Ideal for substructures

hanit piles

Futureproof foundations

A boardwalk is constantly exposed to high loads. If you want your boardwalk to last, you need a secure foundation. hanit doesn't rot. Ever. So hanit piles are perfect for taking your structure out of the water and into the air. Permanently.

Various sizes available

Colors:

Gray

Brown

- Dimensions: 4 × 4", 6" and 7¾"
- Lengths from 6' 7" to 19' 8" depending on version
- Check soil type and structure height before choosing length and diameter of pile

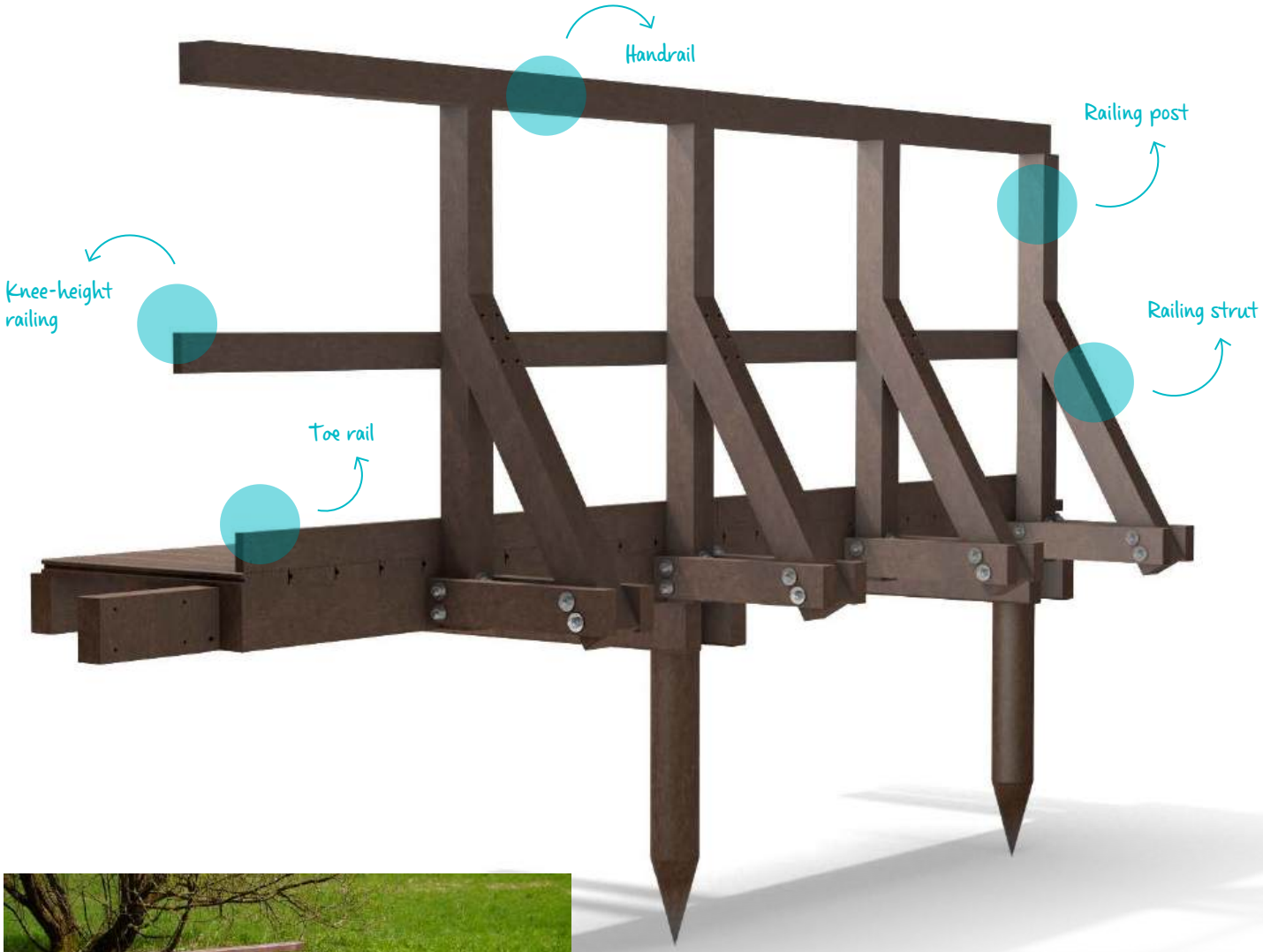
Piles	
Dimensions	**Max. flooring height above solid ground**
4″ x 4″	*3′ 3⅜″
Ø 6″	*4′ 11″
Ø 7¾″	*6′ 7″

* Maximum height information is only a guide. Always check individually for each case.

Railing systems

Safety, form and function

Railings are often the last component to be added. But when it comes to safety, they should be first on the list. Railings made of hanit are no afterthought. They're the same tough, robust and high-quality material as the piles, substructure and footpath planks.



Note

The railing design is in accordance with:

- Eurocode 1 (actions of structures)
- Eurocode 3 (design of steel structures)
- Eurocode 7 (geotechnical design)

Always consider equipotential bonding when planning metal railing systems.

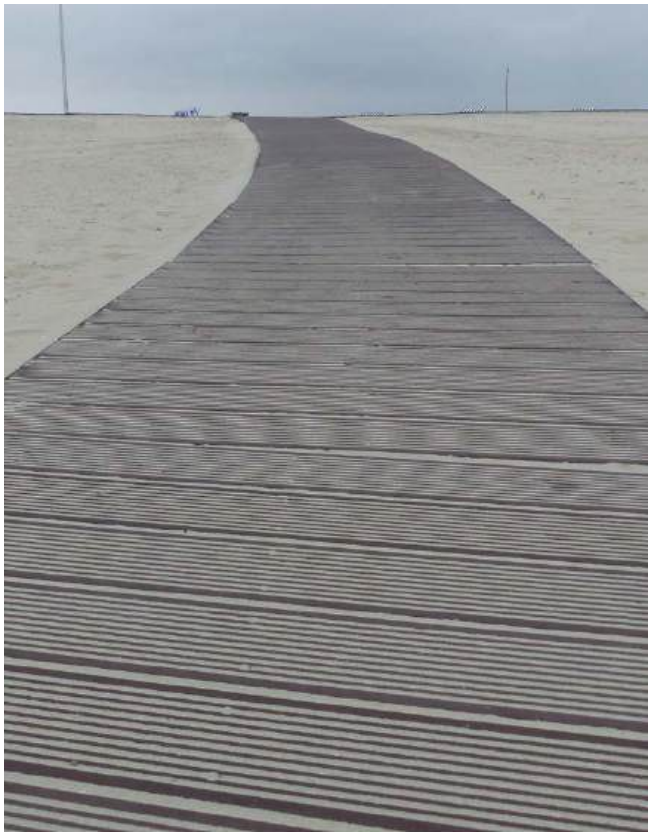
Anti-slip,
even when wet

Pre-assembled footpath elements

When it needs to be quick and easy

Sometimes things just need to get done quickly – especially if a path is only temporary or seasonal (e.g. for a beach that closes in winter). In this case, it's too time-consuming to assemble and disassemble individual framing and planks.

The answer? Save time and money with hanit pre-assembled elements. Put them down when you need them. Take them away when you don't.



Pre-assembled footpath elements

- Dimensions, W × L: 3' 3⅜"/3' 11¼" x 3' 3⅜"
- Quick and convenient installation
- Produced from a single mold
- Connecting system for perfect fit

Colors:

Gray Brown

Colors:

Gray Brown

Advantages of pre-assembled footpath elements (custom)

- Variable in length and width
- No need to assemble on-site

Several planks are pre-assembled on beams.
The beams are arranged so that the elements fit into each other.

Marine engineering

Reinforcing, protecting and routing. Permanently.

Slope and embankment reinforcement has to withstand Mother Nature at her best and worst. Every component is beset by saltwater, acids and oils. At the same time, the material has to survive rain, ice, hail, wind, sun and UV.

hanit can withstand virtually any weather and is resistant to acid, oil and chemicals. Perhaps most importantly, hanit doesn't affect water-quality.

- Rot-free
- Weather-resistant
- Splinter-proof
- Resistant to oils, alkalis, acids and salt water
- Does not pollute water or soil

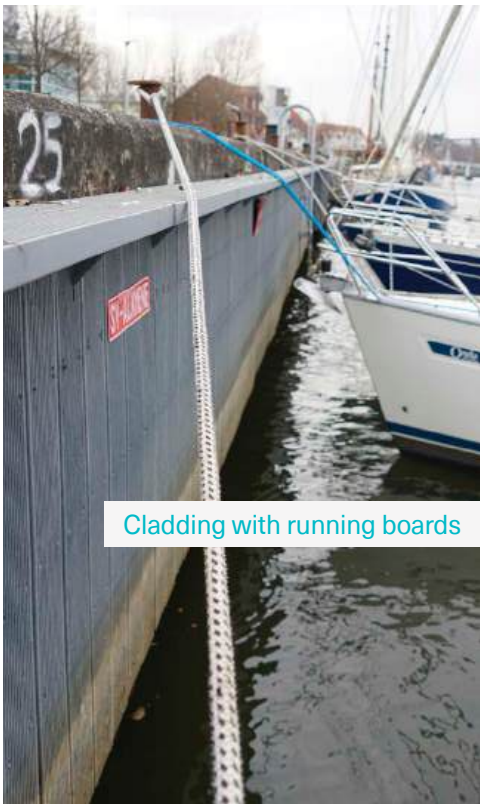
Fish ladders

Coastal and surf protection

Fender

Barrier in flood compensation zone

hanit –
saltwater resistant



Cladding with running boards

Stream restoration

Tip:
hanit profiles are ideal for fenders and impact protection.
Any questions? Contact us for friendly help and advice.

Waterway routing

Bank reinforcement

Much more than just **foothpath planks**

Boardwalk with railing

Beach access

hanit can be used on its own or with other materials as:

- a walking surface
- a walking surface and substructure
- a walking surface, substructure and pile foundations
- step and railing systems

Pedestrian bridge

Dock

Walkways, footpaths and bridges

Make it happen with hanit

No two projects are the same. Walkways, footpaths, and bridges differ in width, length, height and design. Sometimes, you need to build a completely new structure. Sometimes, you need to upgrade an existing one, e.g. new footpath planks on an existing steel frame.

hanit is a complete system or available as individual components for repairs or upgrades. Check out what hanit can do.

- Customizable
- Rot-free
- Vandal-resistant

Boardwalks

Docks

Bike storage

Beach access

Marina docks and slips

Marinas, harbors and wharfs

Shelter from the storm

Marinas, harbors and wharfs provide a home and safe haven for boats, yachts and even kayaks or canoes. Whatever the vessel, they should be easy to reach and hanit rot-free footpath planks lead the way.

- Anti-slip
- Weatherproof
- Saltwater resistant

Entrances and exits

Canoe escalator

Tip:
hanit boards are ideal for fenders and impact protection.
Any questions? Contact us for friendly help and advice.

Dock

Easily adapted for existing structures

Slip

Boat storage

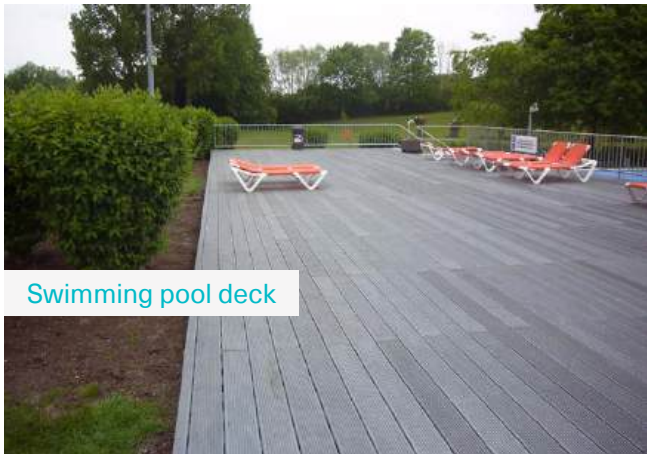
Water sport

Safety, quality and longevity

Lots of people head to the water in their free time. Swimming, boating, fishing, water sports or simply relaxing, the possibilities are endless!

If you're building for water sports, safety and longevity can't be overlooked. But good looks can be a priority too! hanit footpath planks are anti-slip, splinter-free, durable and very low-maintenance. They just don't age like conventional materials and can be easily cleaned with nothing more than soap and water. Perfect for waterside fun!

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



Swimming pool deck

Walkways at public pool

Docks

Water polo facility

Natural swimming pool

Note:
In barefoot areas like swimming pools and sports facilities, the advantages of hanit are unbeatable. hanit does not splinter so there is a lower risk of injury. And thanks to regular testing for slip resistance, hanit offers the highest level of safety.

Wakeboard facility

Fishing platform

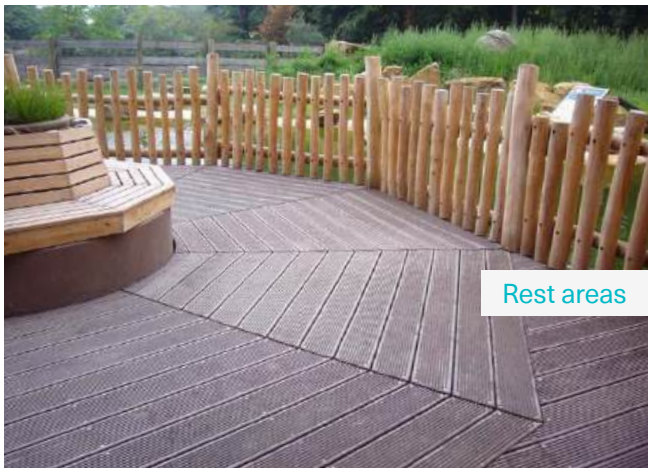
Zoo walkway

Root bridges

Tip:
Cutting, sawing and drilling hanit is quick and easy to do on-site with conventional tools and techniques.

hanit is a highly resilient material

Ramps



Rest areas

hanit boardwalks

A win, with or without water

You don't need to be by the pool or at the waterfront to get the best out of hanit. Put simply, hanit is perfect for almost any construction project that needs to withstand weather or high loads. We love to celebrate the diverse uses for hanit but we really need to thank you, our customers. Your creativity and ideas have taken us in new directions and showcased hanit's versatility over and over again.

- Seating in public spaces
- Playgrounds
- Zoos and amusement parks

If you have an idea or a project in the planning, we'd love to hear from you.

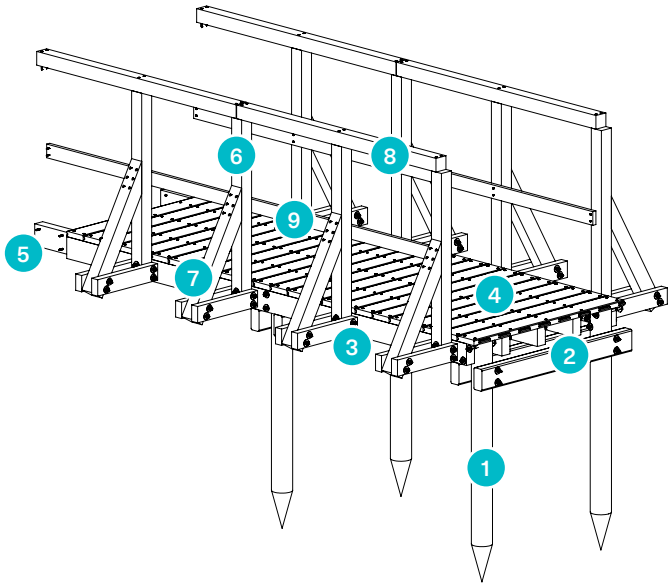
Playground design

Boardwalks example

Substructure design for bridges and boardwalks

Whether a bridge over a stream or a path through the forest, with or without railings, the diagram below shows how a typical design (cross and longitudinal beams with footpath planks) can create a rock-solid walkway. This, combined with standard railings, is an effective and inexpensive model that can be applied to almost any project.

Notes
- Pile Ø 6"
- Available with and without railing
- Widths: 4' or 5'
- Permissible individual load: 450 lbf
- Permissible surface load: 104.4 psf

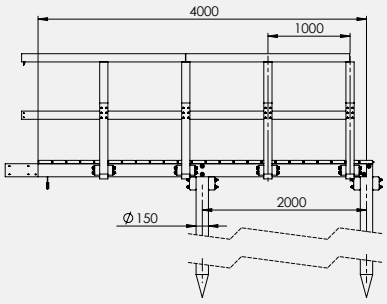


Parts list as required for 13′ 1½″ of walkway (linear feet)

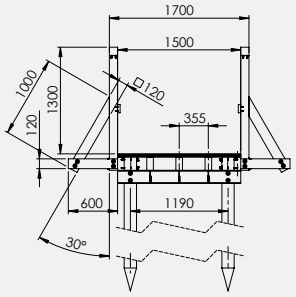
	Description	Quantity 3′ 11¼″	Quantity 4′ 11¹⁵⁄₁₆″
1	Pile Ø 6′	4	4
2	Crossbeams / ties 3⅛″ x 6¼″ x walkway width	4	4
3	Longitudinal beams 3⅛″ x 6¼″ x 13′ 1½″	4	5
4	Footpath plank 1⅝″ x 6¾″ x footpath width	24	24
5	Beam 3⅛″ x 6¼″ x 3′ 3⅜″ (longitudinal beam connector)	2	2
6	Railing post 3⅞″ x 3⅞″ x 4′ 7″	8	8
7	Railing strut	8	8
8	Hand railing 3⅞″ x 3⅞″ x 6′ 7″	4	4
9	Knee-height railing 1⅛″ x 3⅞″ x 6′ 7″	4	4

Please note:
The models only show the exemplary possible structure and do not provide a calculation that is dependent on on-site conditions.

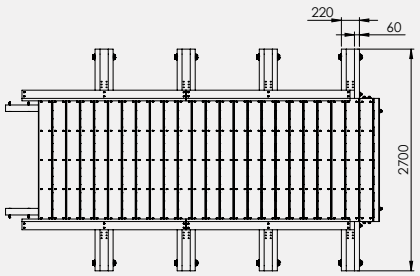
Technical specifications (in mm)



Page view



Front view



Supervision

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hanit is also non-toxic and food-safe. It doesn't add or leach chemicals and it isn't impregnated with agents or preservatives. Ice, snow, sun, sand, salt, soil and acidity are no problem for hanit.

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