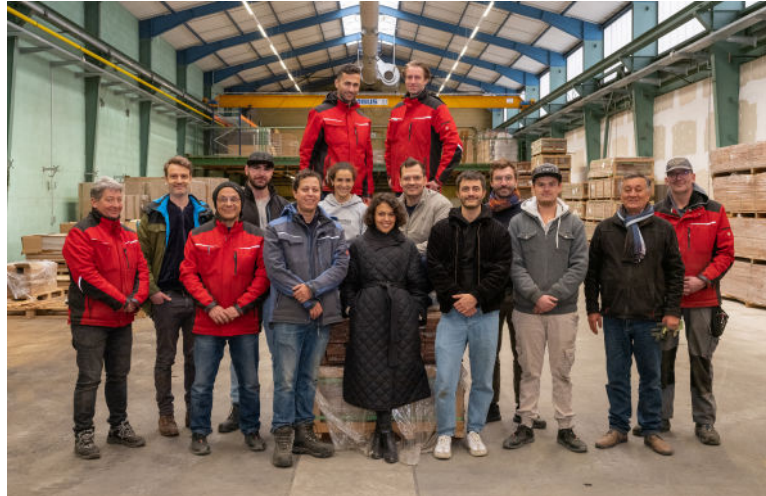


# BETTERWOOD TERRASSENGUIDE



**MANUAL TO BUILD A WOODEN TERRACE**





**Dear terrace builder,**

thank you for choosing our terrace wood from sustainable forestry. Our part of the work is not yet finished with the delivery of the material. We would like to continue to accompany you in your project and will be happy to answer any questions you may have about wood in the future.

This terrace guide is a small contribution from us to make your project a success. Here you will find answers to the most important questions and background information on the special properties of wooden decking boards.

Please read this booklet carefully before installation. Contact us or seek expert advice if any questions remain. Of course, this guide cannot cover every possible aspect of terrace construction, but it accumulates years the knowledge of years of experience.

I wish you all the success with your project and hope that we can assist you well with this guide.

Sincerely,  
Catherine Körting  
*Founder and CEO*

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All information in this brochure has been compiled to the best of our knowledge. Due to location, weathering and other influences, the requirements for a wooden terrace may differ in practice. All information without guarantee and without claim to completeness. Errors and omissions subject to change.



## What do I need to build a wooden terrace?

A wooden terrace consists of more than just wood. Here you will find an overview of the most important components, so that you will not notice that something is missing only at the start of your construction process.



### Necessary:

- **Decking boards** are the top covering of your terrace and can also be used as privacy screens, facing or steps.
- **Substructure** is the base on which the decking boards are screwed.
- **Terrace pads** serve the substructure as a support on the foundation.
- **Decking screws or concealed screwing** are used to fasten the planks to the substructure.
- **Spacers** must be used for an even joint pattern.
- **End-grain sealing wax** is applied to the cut edges of the decking boards and prevents end cracking.
- **Decking drills, countersinks and bits** are essential for pre-drilling and screwing the planks into the substructure.
- **Drill and cordless screwdriver** for pre-drilling and screwing the planks.
- **Hand-held circular saw and / or crosscut saw** preferably with carbide saw blade (HM or HW) and alternating teeth for cutting the wood.
- **Spirit level** to align the substructure.
- **Working gloves** for your protection.
- **A helping hand** because decking sometimes requires teamwork.

### Optional:

- **Terrace oil** to reduce cracking and preserve the wood color longer.
- **Weed fleece** to prevent weeds from growing through the terrace or to protect the structural protection foil on roof terraces and balconies.
- **Longitudinal connecting plates** to connect the substructure timbers together.
- **Angle connectors** to connect the substructure and counter-battens.
- **Post support** if the terrace is elevated.
- **Drainage and ventilation profile** for better structural wood protection.
- **Tensioning straps or plank tensioners** to be able to install crooked planks straight.
- **Shadow joint cutter or plunge saw** for a straight end cut along solid structural members.
- **Sanding machine** to smooth rough areas of decking boards.
- **Building authority and structural engineer** if you want a higher construction height and your state has corresponding specifications.

## What features are important for wooden boards?

There are decking boards in different widths, thickness, profiles and from many different types of wood. Here you will find an overview of features to pay special attention to when choosing. Our decking boards meet all the important criteria for a sustainable and long-lasting terrace.

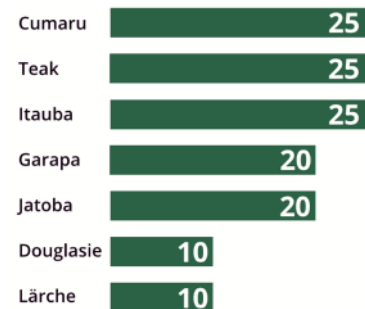


### Origin and certification

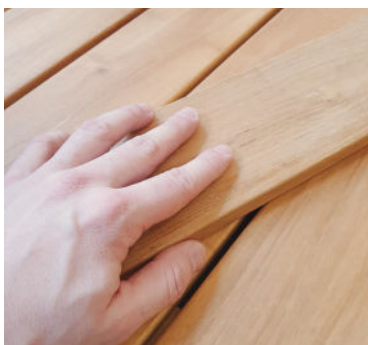
Check whether the wood really comes from sustainable forestry. A sign of this is the FSC 100% certificate. A legal origin, on the other hand, is not an indication of responsible forest management. Check whether the supplier reports transparently and credibly about the origin.

### Durability

Four factors influence the durability of a wooden deck: the type of wood, the construction method, the location and the care. When choosing a wood for your terrace deck, look for high durability. This is sometimes indicated in durability classes, sometimes in years. A durability class 1 to 2 corresponds approximately to a durability of 20 to 30 years - if the terrace was built correctly. A ground-level construction usually reduces the service life. This is because the better a terrace is ventilated, the better the wood can dry, the longer its durability. And of course regular cleaning and other caring measures such as oiling help to increase the life span.



ca. Haltbarkeit in Jahren  
(bei Gebrauchsklasse 3.2)



### Sorting grade

The grades "Premium" and "FAS" (First and second) is given by the manufacturer and ensures the best grading for decking boards. In addition, the dealer can offer hand sorting, which again increases the quality. But even in the highest grade there is an A and a B side for each plank. At Betterwood, the decking boards correspond to the class Premium / FAS and are sorted by hand in the warehouse.

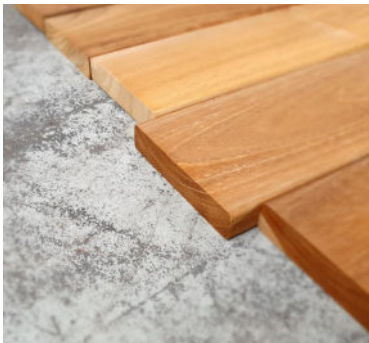


### Drying

Technical drying, also known as kiln drying, ensures the lowest possible risk of warpage. For structural lumber, gentle air drying can also achieve the desired result. A moisture content of 13% to 18% in the wood at the time of construction ensures that the adjustment pressure is not too high. Nevertheless, the planks must be screwed securely, as they can warp and twist even with the optimal drying method.

### Sides of the decking boards

Decking boards have an A- and B-side. In most cases, both sides can be on top. When laying, however, make sure that wood features such as pinholes, knots and intergrowths (→ page 8) tend to be found on the bottom side. Small defects can also occur in the Premium and FAS grading selection.

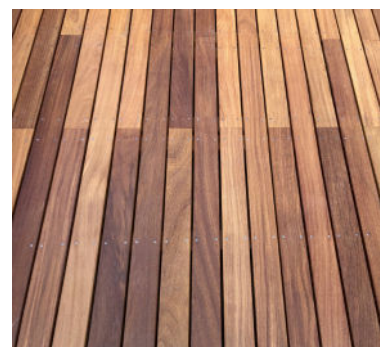


### Lengths of the decking boards

Decking boards are usually around 1-2cm longer than the specified length. However, since the allowance is not always the same, even planks with the same catalog dimension may be slightly different in length in practice. Pay particular attention to this if cutting the decking boards to size before installation. In general, this allowance helps to adjust the decking boards to the needed length on site and thus provides flexibility. In addition, these extra cm allow end cracks to be removed by cutting. Freshly cut edges should be waxed to prevent cracks.

### Appearance of the wood

Since wood is a natural product, no two decking boards look alike. Within a species, colors can vary and the wood can have different surface textures. In addition, you should be aware that the wood will change its color and surface when placed outside over time.



## What are typical wood properties?

*Wood is a natural product. As such the occurrence of its natural properties can not fully be avoided, even with the most careful sorting. However, typical characteristics of wood do not constitute defects and do not negatively affect the quality of the product.*



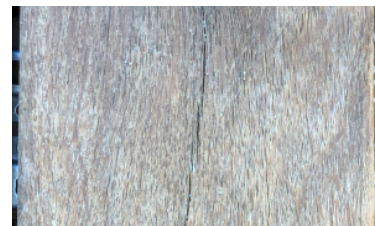
### Alternating rotational growth

The growth characteristic of tropical wood often provides a dynamic structure and can sometimes cause wood fibers to stand up because of alternating rotational growth - especially in the case of Cumaru wood.

Sanding (→ page 35) the affected areas after the first rain or watering will make the rough surfaces smooth again.

### Crackings, hairline cracks, end cracks

In a natural product such as wood, differing weather conditions - wet, cold and dry atmosphere - cause stress in the material and can result in cracks. Typical for wood are cracks at the plank edges and hairline cracks on the surface. The risk of end cracks after cutting can be reduced with end-grain sealing wax. Surface tensions can be alleviated by oiling the decking boards (→ page 38). In the course of up to 30 years of outdoor usage, it is impossible to avoid the occurrence of cracks on the planks.



### Swelling and shrinkage

Wood expands and contracts depending on the season and the associated temperature and humidity levels. Therefore, planning for a terrace to the millimeter does not make sense. Warping can also occur during transport or on-site storage (→ page 13). The dimensions of the decking boards correspond to the time after they were treated at the sawmill. Prior to this, the wood was kiln-dried to the optimum moisture content. This ensures that the swelling and shrinkage behavior remains manageable: approx. +/- 3mm depending on the type of wood.





### Knots

Trees have knots and you can see them in the wood. In the "Premium" grade, there should be no knotholes going through the whole decking board. However, even with this premium grade, a certain amount of knottiness can occur, but it should be to a small degree.

### Water stains

Water stains cannot always be avoided when transporting the planks. They disappear through further weathering, cleaning (→ page 36) or oiling (→ page 38) of the planks and do not constitute a reason for complaint.



### Mould and fungus formation

One of the unique characteristics of tropical woods is that they are particularly resistant to pests and fungal attacks. This means that tropical wood decays and moulds much less quickly than domestic wood species. This makes it particularly suitable for outdoor use. Nevertheless, fungal infestation cannot be ruled out with tropical woods. Depending on the region and environment, flying algae, fungi and stains can occur on site for a variety of reasons. Generally, these problems can be easily treated with the use of a terrace cleaner, impregnation (→ page 40) or by sanding (→ page 35).





### Pinholes

Small holes in the decking boards may occur. So called pinholes are tolerable up to a certain degree. It is important to know that such holes are not an active worm infestation. These holes are caused by fresh wood insects. An active infestation in seasoned wood is excluded. Pinholes do not affect the strength properties or durability of the wood.

### Holes larger than 3 mm

A hole with a diameter of more than 3mm may have been caused by a moisture meter, a drill hole or an insect. Such holes are sorted out on the A-side, but tolerated on the B-side. The holes can be closed with a round bar. Acute insect infestation can be ruled out due to the natural properties of tropical woods.



### Smell

Odours are perceived very differently from people. The wood smell of Cumaru, for example, is described by some people as appallingly strong, by others as pleasant. Certainly most types of wood emit some odours. How strong this smell is also depends on the humidity and temperature on site. But you can be sure of one thing: Sooner or later, the odour of the wood will decrease with time. This process can be accelerated by cleaning (→ page 36). However, it cannot be ruled out that wood initially emits an odour that can be unpleasant for someone's nose.



## Sapwood

All trees contain sapwood. The proportion depends on the species, age and growing conditions. In most species it is a mantle of light-coloured wood about 3 to 5 cm wide that encloses the heartwood. Sapwood is more susceptible to fungal attack than the heartwood. Even decking boards of the premium grade can have a maximum sapwood content of 20% on their bottom side (B-side). On the top side (A-side), there may only be a maximum of 5% sapwood.

## Discolouration due to stacked wood

Many types of wood darken when exposed to light. As a result, stacking laths from transport and storage sometimes stand out and can be seen as lighter spots on the planks. These darken over time and the wood colour evens out and becomes homogeneous again.



## Iron-tannin reaction

Wood reacts with iron. Small iron particles on the surface can lead to black spots or stains. Causes can be flash rust, iron particles from cordless screwdrivers, bits, flower fertiliser containing iron, but also ground water containing iron. In practice, this iron-tannin reaction is often mistaken for mould. The discolouration can be removed with bleaching agents such as oxalic acid (→ page 40). When working with metal, wood should therefore be covered and carefully swept off afterwards.

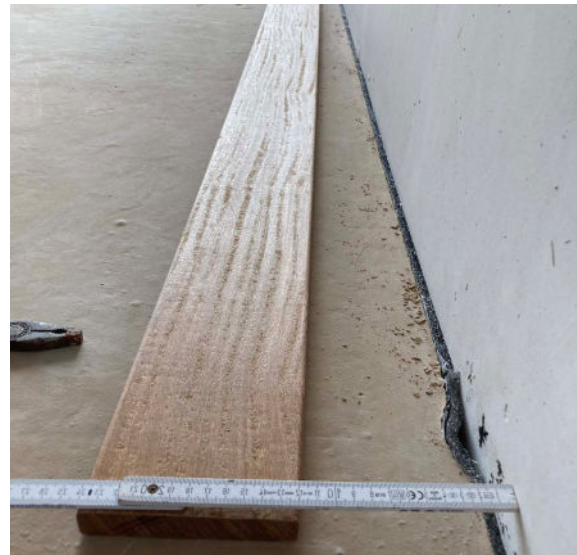


### Planing marks

Occasionally, the decking boards can show traces of planing. Use the side with planing marks as the underside on your wooden terrace. Smaller planing marks can also be sanded away very easily, if they are disturbing.

### Warpage

Wood is a natural product and can warp, especially if it is not screwed properly. This means that even if the boards have just left our warehouse, some boards may not be completely straight. However, none of this is a problem when building terraces: warpages can be straightened out when screwing by pressing the plank (→ page 32). Most bends are therefore tolerable and cannot be ruled out.



### Greying of the decking boards

All wood will turn grey over time when it is outside. Although the natural wood colour can be preserved longer with decking oil (→ page 38), the process cannot be stopped completely. Before deciding on a wooden deck, be aware that the appearance will change and don't just be guided by the colour of the wood.



## How do I complain correctly?

Despite careful quality control, defects or even damage can occur during transport. The following instructions show how to proceed if there are reasons to complain, so that we can find a satisfying solution quickly:

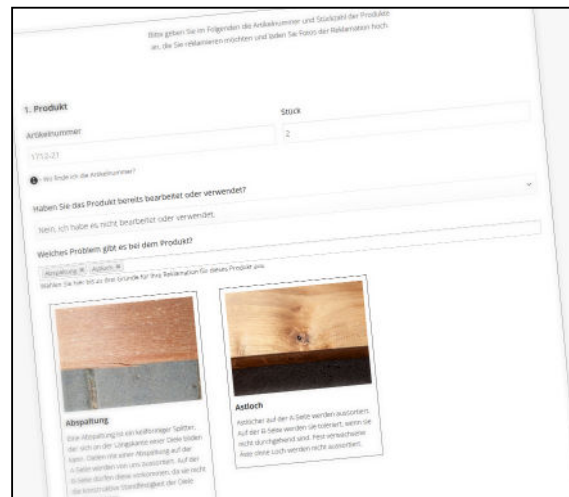


### Possible reasons for a complaint:

- My order is incomplete
- My order is faulty
- I do not wish to keep the goods

If there is no defect or wrong shipment and you still want to return the goods, the buyer pays the shipping costs of the return. Of course, we will help to organise the return shipment for you.

**Please note: Typical wood properties (→ pages 7 to 11) are not defects.**



### The procedure

- Do not use:** Used material cannot be claimed! Store the wood you want to claim in a dry and unheated place (→ page 13).
- Document:** Damages must be documented on the delivery note when accepting the goods and sent to us with a photo. In order to be able to estimate the size of a damage correctly, a reference such as a coin (in case of holes) next to the blemish will help us.
- Contact us:** you can submit the damage directly online and upload pictures:  
[www.betterwood.de/reklamation/](http://www.betterwood.de/reklamation/)

### Contact us

The quickest way to process your complaint is to use our **online form**. You can access this via the QR code above or on the Internet at:

[www.betterwood.de/reklamation/](http://www.betterwood.de/reklamation/)

Of course, you can also send us your complaint by e-mail to [info@betterwood.de](mailto:info@betterwood.de). In any case, you should state the item number, quantity, include pictures and the reason for the complaint.

#### Address for returns

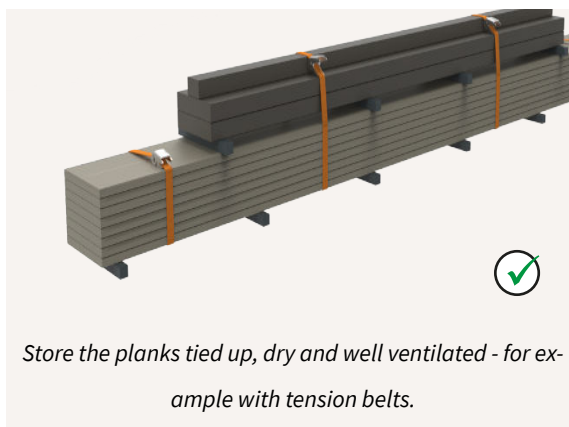
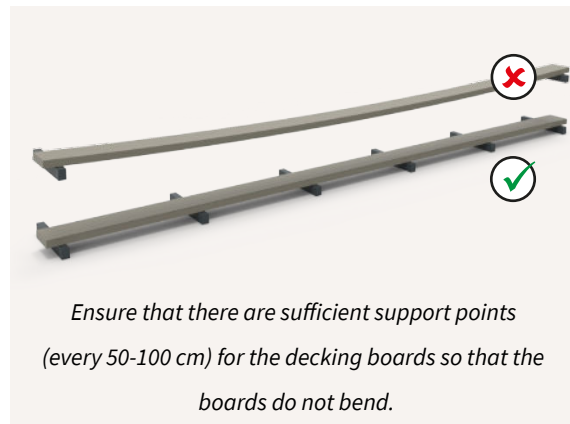
Betterwood Lager  
In der Trift 1  
57489 Drolshagen (Germany)

#### Ways to complain

[www.betterwood.de/reklamation/](http://www.betterwood.de/reklamation/)  
Phone: 030 – 22 45 58 95  
Mail: [info@betterwood.de](mailto:info@betterwood.de)

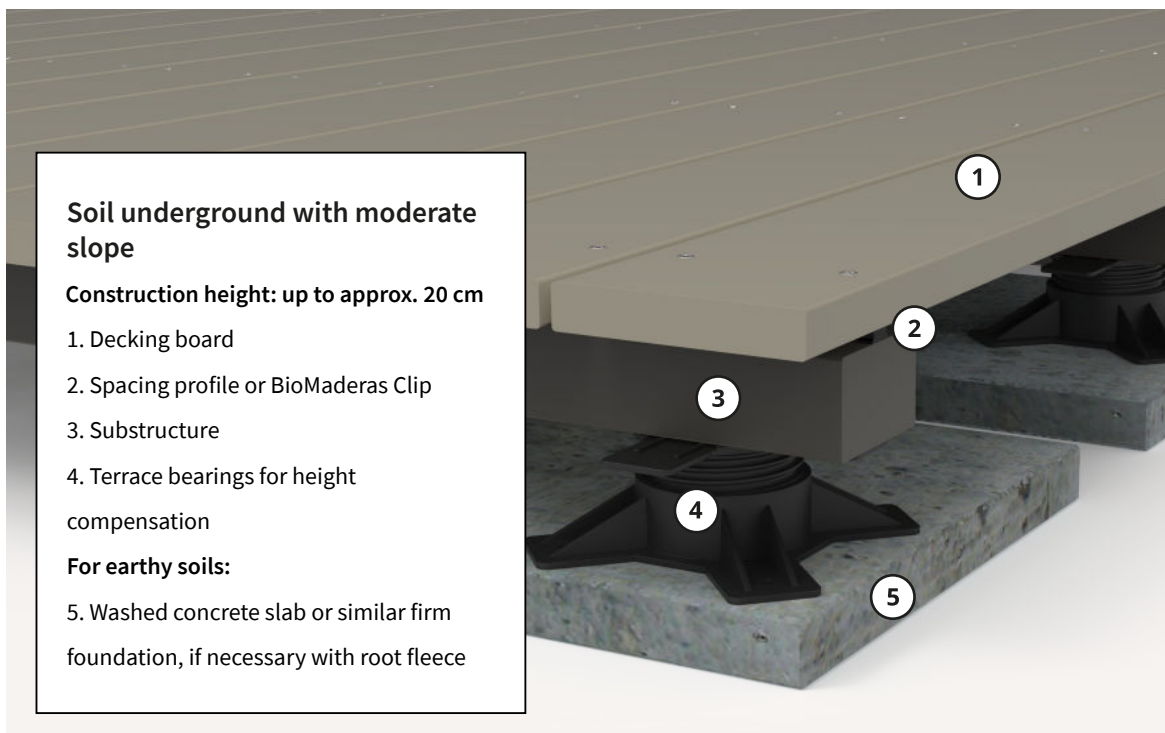
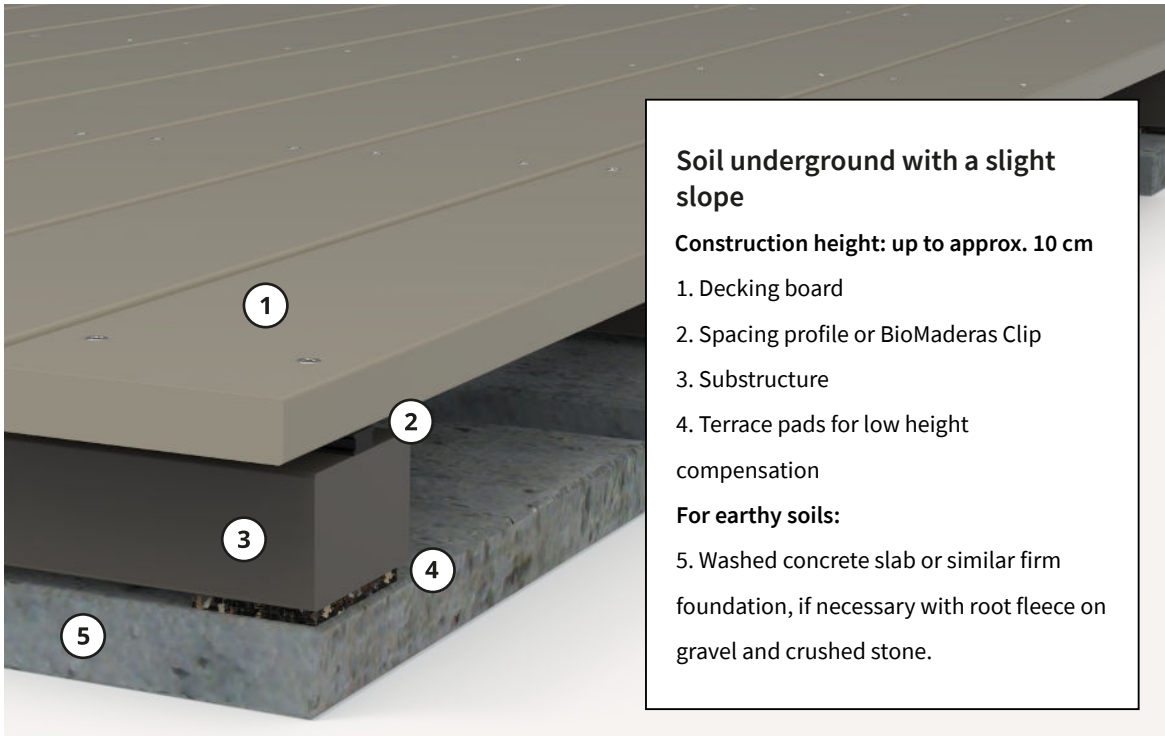
## How can I temporarily store the wood?

Wood can warp during storage. If you do not assemble the goods immediately after delivery, please note the following tips and instructions for proper storage.

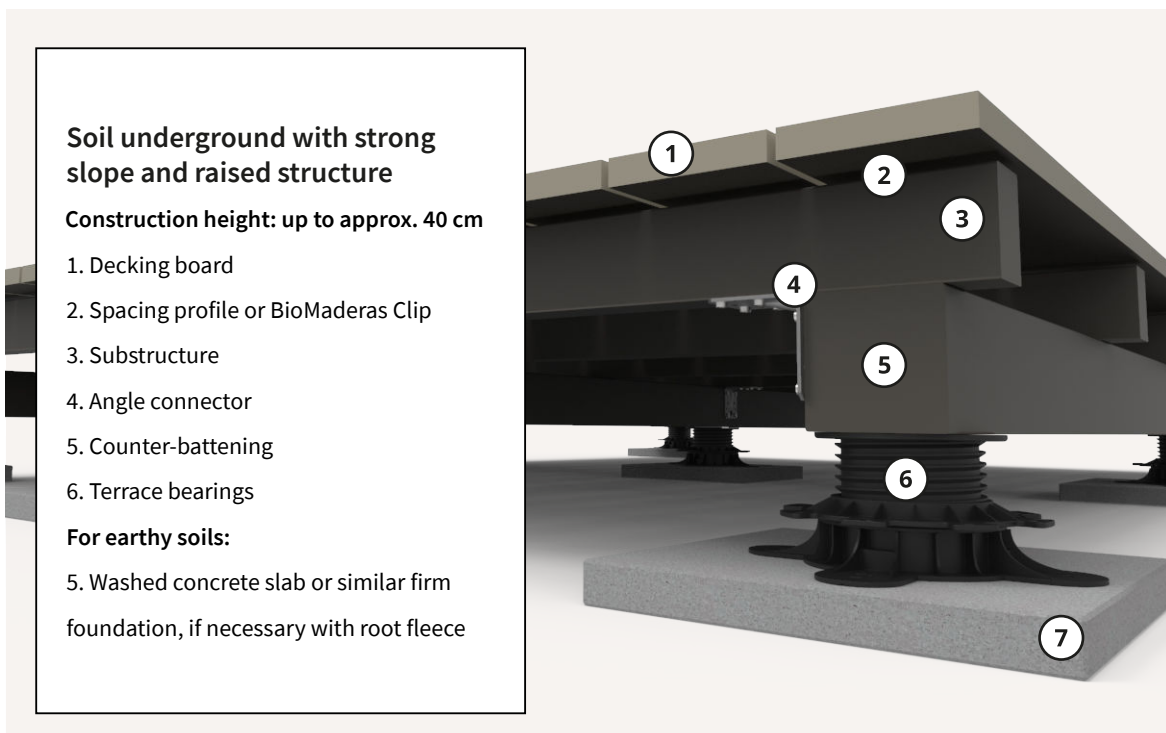
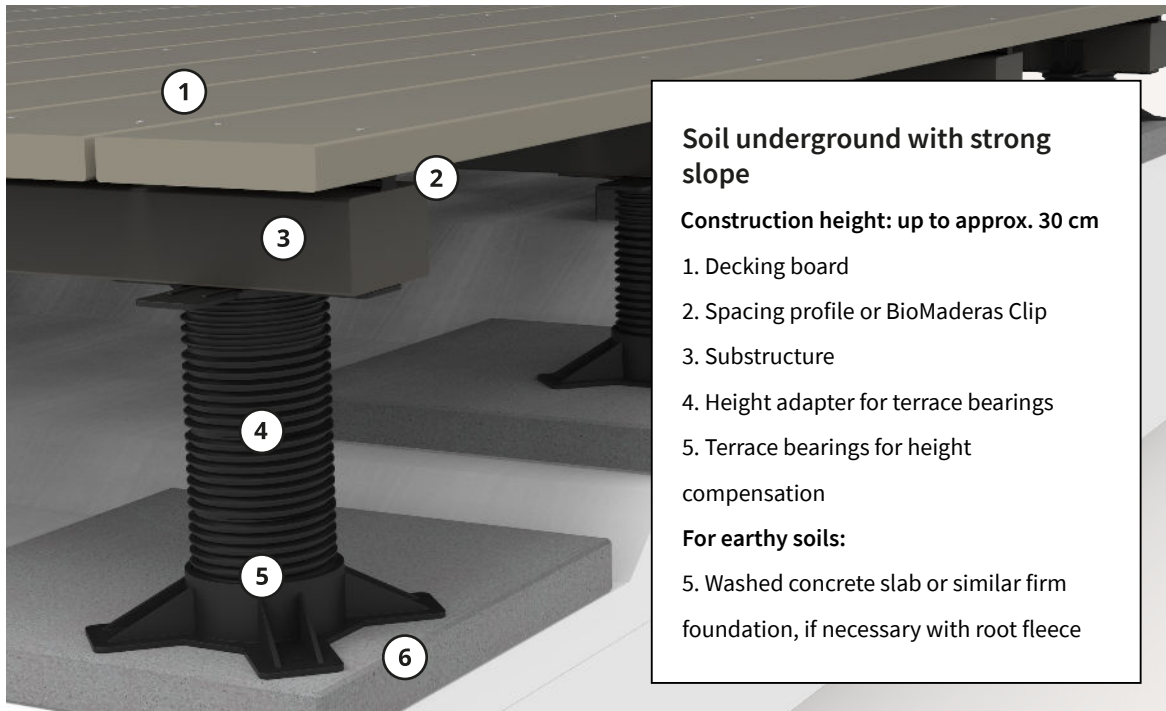


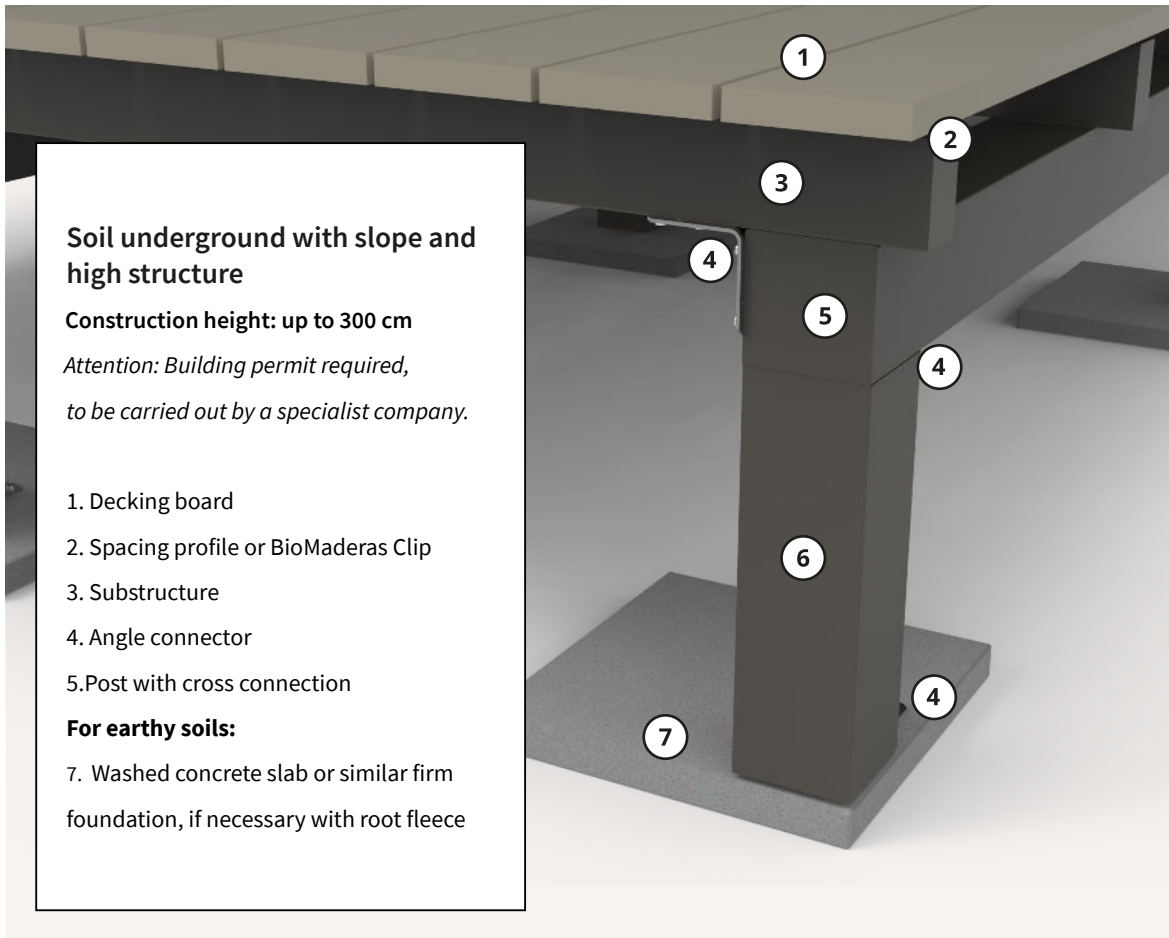
## How is a terrace built up?

*How to construct a terrace correctly is also determined by the soil underground and the desired construction height. Please note that the following construction methods can also be combined with each other - for example, if different construction heights are required on one surface.*









**Soil underground with slope and high structure**  
**Construction height: up to 300 cm**  
*Attention: Building permit required, to be carried out by a specialist company.*

1. Decking board
2. Spacing profile or BioMaderas Clip
3. Substructure
4. Angle connector
5. Post with cross connection

**For earthy soils:**

7. Washed concrete slab or similar firm foundation, if necessary with root fleece

**Building regulations**

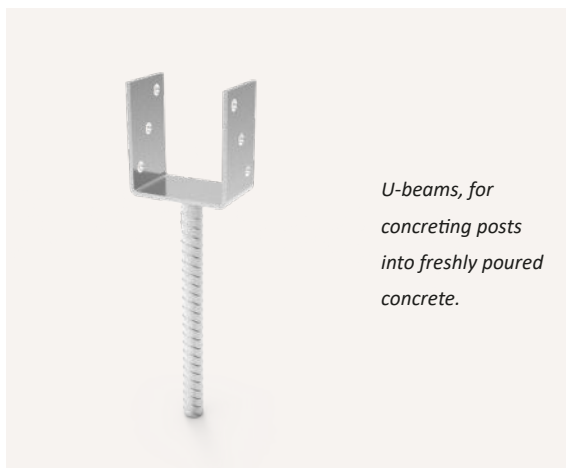
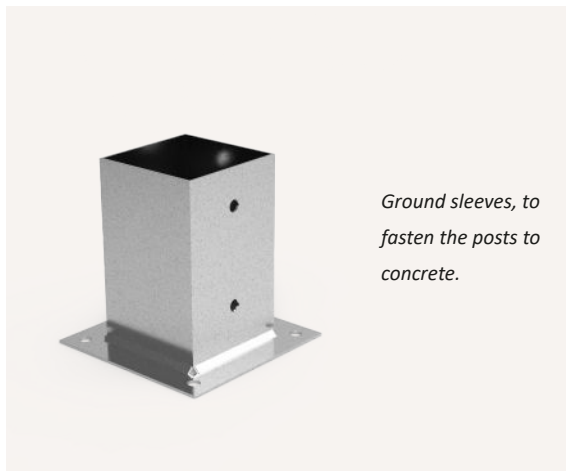
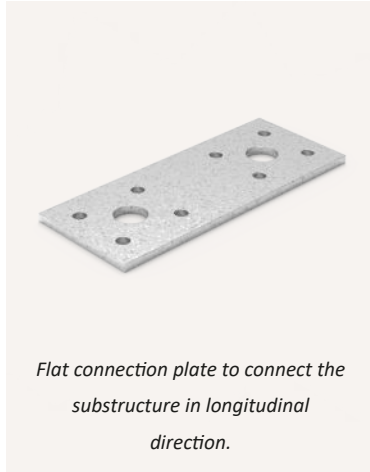
Depending on the type and size of the planned terrace, regional building regulations and possibly specialist rules of the carpentry trade must be taken into consideration before construction work begins. The requirements may differ from region to region, so it is advisable to obtain relevant information in advance.

**Typical mistakes when building a wooden terrace**

- ! Soil **not compacted** = terrace may sag downwards
- ! Terrace **bearings** on gravel = bearings can sink, terrace sags down
- ! Terrace bearings **too small** = Material can fail, always use XL-bearings for 90x90mm beams

## How do I connect the substructure?

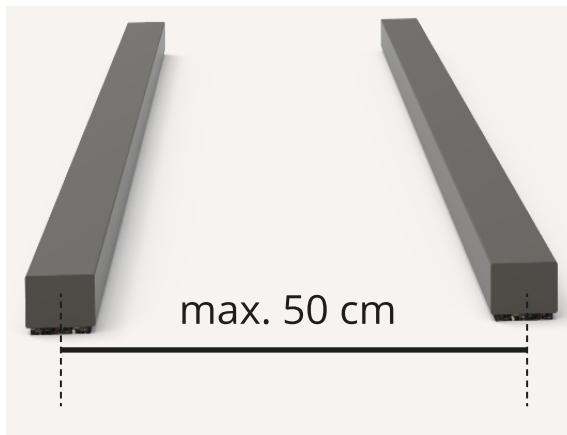
The following connectors are used to connect the construction timbers to each other or to the foundation. You can reach the suitable screws via the QR code on the right side.





## How do I build a substructure?

*The substructure is the supporting framework of your wooden terrace. The substructure is laid out at the beginning of the terrace construction, after the work on the foundation is completed. Here you determine the height and alignment of your terrace. A slope for the planks can also be defined at this point - but it is not necessary for smooth planed decking boards with durability class 1 to 2.*

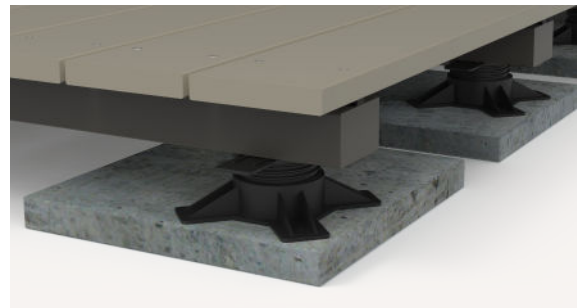


### Distance between substructure beams

The axis dimension (measured from center to center) of the substructure rows should not exceed 50 cm, so that the decking boards can be screwed sufficiently often and the risk of warping is minimized. The substructure should not sit directly on the fundament. Terrace pads or terrace stilt bearings prevent waterlogging and create a ventilation gap.

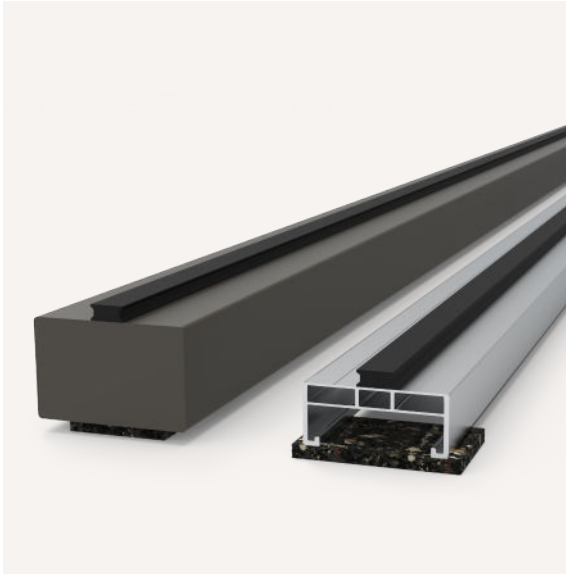
### Terrace stilt bearings

Stilt bearings allow for easy height adjustment of the wooden terrace. The stilt bearing stands on the foundation (e.g. concrete slab) and raises the substructure to the desired level. Using stilt bearings ensure good ventilation and prevent waterlogging.



### Adjust height

The stilt bearings can be adjusted in height by simply turning them. The substructure beams can share a stilt bearing at the joints where they meet. The number of times a substructure must rest on a supporting point (here: stilt bearing) depends on the strength of the substructure beam. Stilt bearings specify a minimum construction height of 35 mm. In flatter areas, terrace pads can also be used and stacked up to a maximum of 35 mm if required.

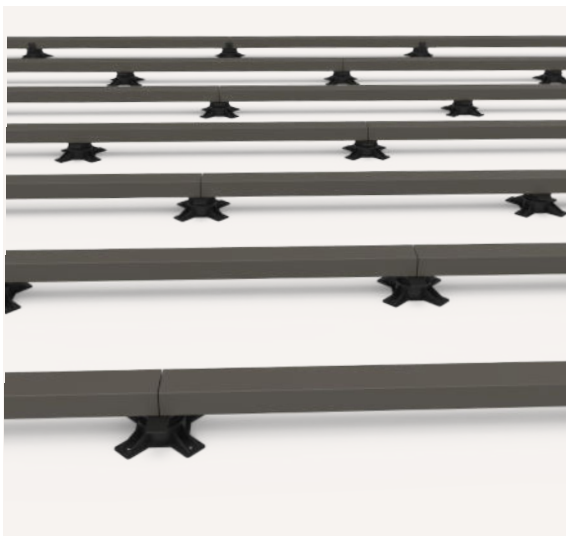


### Create a space between plank and beam

A spacing profile creates a gap between the substructure and the decking board, thus providing better ventilation and avoiding waterlogging. This increases the service life of the terrace and reduces the risk of stripped screws. For the combination of a flat aluminum substructure and wooden planks, you should definitely use the spacing profile. In general, we recommend an aluminum substructure only for teak decking boards. In case of a concealed screwing system with clips, better ventilation is already ensured by the system itself, so that a spacing profile is not necessary.

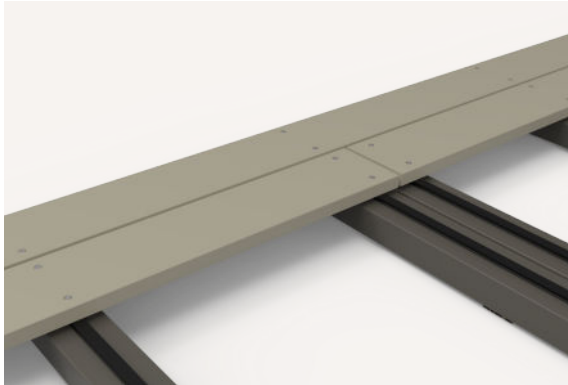
### Screw the construction to the floor

The substructure can be screwed to the subfloor. This is not necessary in every case, because the weight and crosswise screwing of decking boards with the substructure beams makes the terrace very stable. Therefore, many terraces are installed without being screwed to the fundament. In the case of counter-battening, the structural timbers should be screwed together.



### Connecting the beams

If the length of the substructure beams do not reach the entire depth of the terrace, the construction timbers must be connected. In this case, it is recommended to avoid a continuous butt joint between the rows, but to lay the beams in an offset / bonded arrangement.

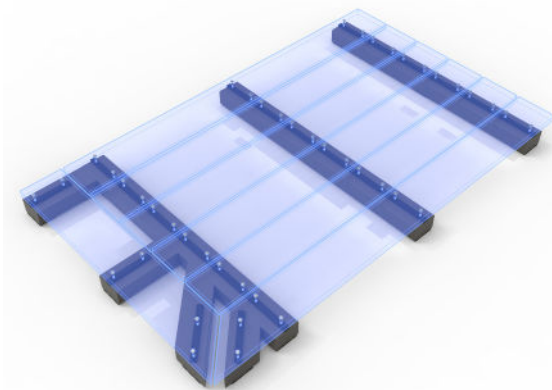
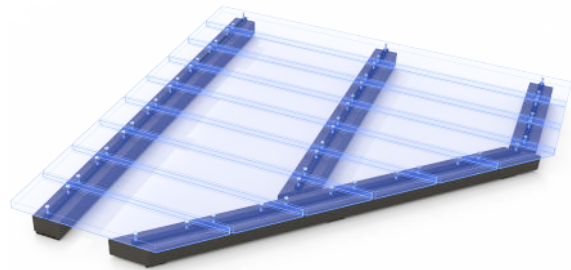


### Substructure at board joints

If you lay your decking boards in composite, we recommend laying a double substructure row with 5 cm spacing at the points where a decking board ends and a new board begins. This way the screwing points of the planks are not too close to the edges and the risk of waterlogging underneath the plank joints is reduced.

### Substructure on diagonals

If the terrace surface has diagonal sides, the planks must also end on a substructure. Otherwise, the ends of the boards will hang in the air and without being screwed will warp.



### Substructure for miter and frieze

If you want to lay mitered decking boards - i.e. planks that meet at corners - the ends of the planks must end on a substructure. As a rule, a double substructure row is required here. If you are planning a frieze as a frame for the terrace area, proceed in the same way at the corners.

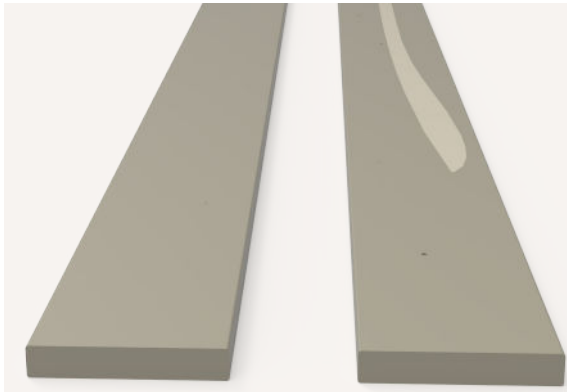
## Typical mistakes when building a wooden terrace



- Substructure **spacing** too large = decking boards may warp, screws may crack
- Substructure **without ventilation** = service life shorter, risk of warping increased
- Substructure **not very durable** = the service life of the wooden terrace is shorter
- Substructure made of **aluminum** = screws can break off
- No shear area** between plank and substructure = screws can break off

## How to install the decking boards?

*The substructure is in place. Now comes the visible part of your wooden terrace: the decking boards. Here you can find out what you should bear in mind when installing the planks.*

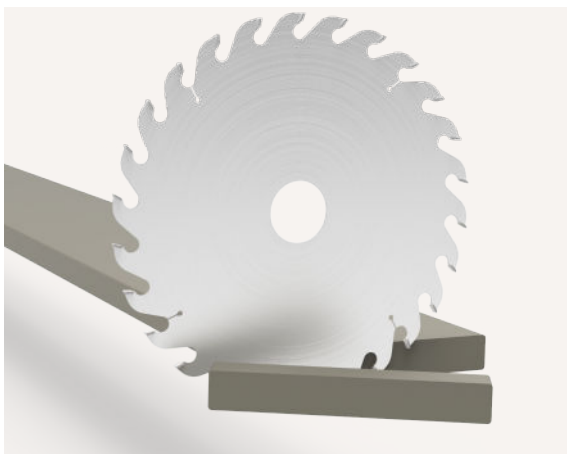


### Top and bottom side

Before installing, keep in mind that the decking boards have a top and bottom side, even though both sides can be used as the top in most cases. The top side is characterized by having as few blemishes as possible.

### Distance from house walls

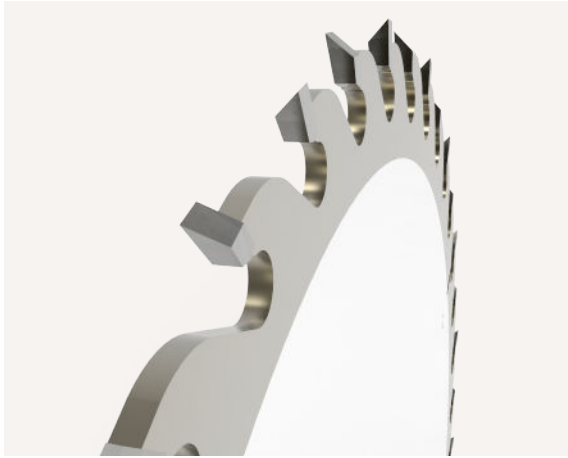
Lay the decking boards across the substructure. Start at the edge of the terrace by screwing the first plank to the substructure. If you are laying the planks parallel to a house wall, start from the wall. Ensure a distance of at least 20 mm to solid structures (house walls, closed railings or terrace edgings) to ensure ventilation of the terrace from below. Otherwise, waterlogging may occur, which will reduce the service life of the terrace and increase the risk of warping.



### Cutting the decking boards

The planks have catalog dimensions, which means they usually have a few centimeters more than specified. This gives you the opportunity to cut clean edges to the desired length. In addition, end cracks can be removed. In case of continuous laying (without joints), it is also possible to lay the planks as delivered and to make a final cut at the end of the construction process to adjust protruding ends.



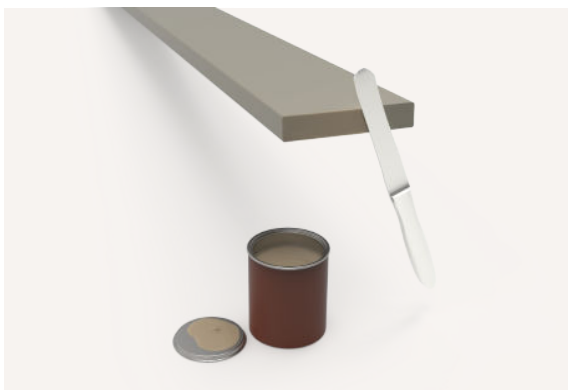
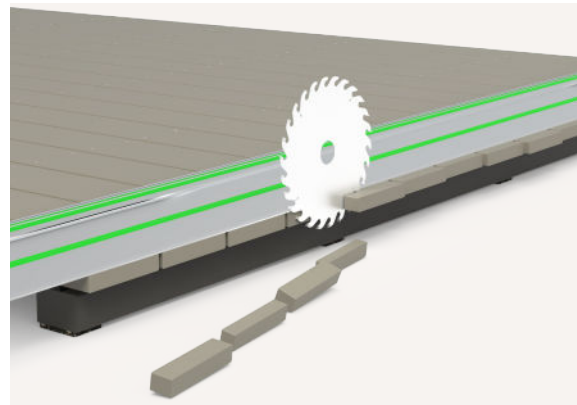


### The right saw blade

For cutting our tropical hardwoods, we recommend carbide saw blades (HM or also HW saw blades) with a medium to high number of alternating cutting teeth. The suitable size of the saw blade depends on the size of the machine used.

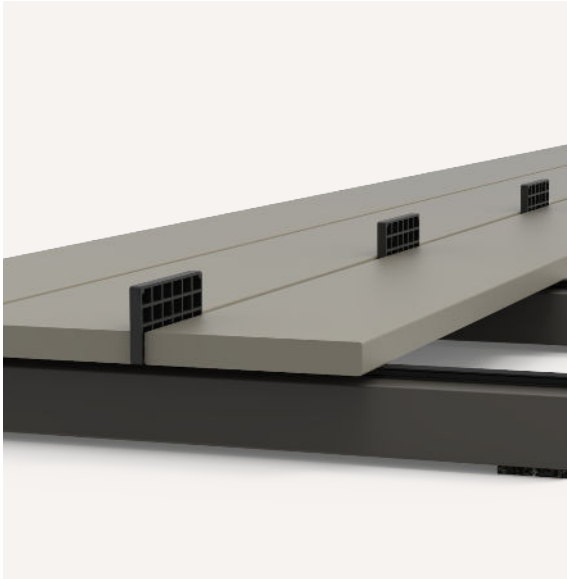
### End cut

The best way to achieve a clean finish of the decking after installing the planks is to make a guided finishing cut. Use a guide rail and hand-held circular saw for this purpose. You can also use a plunge saw or shadow joint cutter to make a finishing cut on solid structures.



### Waxing edges

Freshly cut edges should be waxed with BioMadera's end-grain sealing wax to reduce the risk of cracking ends.

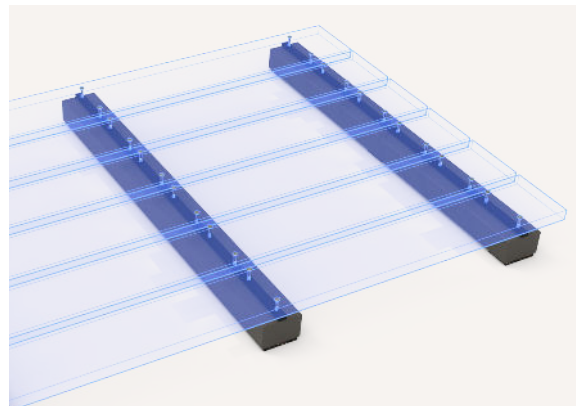


### Installing boards with joints

Decking boards should be installed with an expansion joint of 5 mm to 8 mm - depending on the width of the planks and the ventilation of the deck. For decking boards with a width between 50 mm and 95 mm, a joint of 5 mm is sufficient. Decking boards with a width of 120 mm should be laid with a 6 mm joint, decking boards with a width of 145 mm with a 8 mm joint. A joint of at least 5 mm at the longitudinal ends of the planks helps the drying of the wood. Use spacers during installation to achieve a uniform joint pattern.

### Distance of screwing points

Our tropical decking boards should be screwed to a substructure beam at the beginning and end and at least every 50 cm. The protrusion of the plank from the substructure should be less than 8 cm from the first and last beam. Otherwise, the risk of warping of the planks cannot be controlled.



### Typical mistakes when building a wooden terrace



**Distance between substructure** more than 50 cm = planks warp, screws may crack

**No shear area** between plank and substructure = screws may crack

**Joints** too narrow = planks may contact each other, when they expand

**Protrusion** of the planks more than 8 cm = plank ends can warp

**Distance to house walls** less than 2 cm = lack of ventilation, higher risk of warping

## How do I fasten the decking boards with visible screwing?



*Screwing the decking boards from above is the classic and well-proven method. Here you should work neatly, countersink the decking screws evenly and screw them in alignment - that is, in a straight line to create a harmonious overall appearance.*

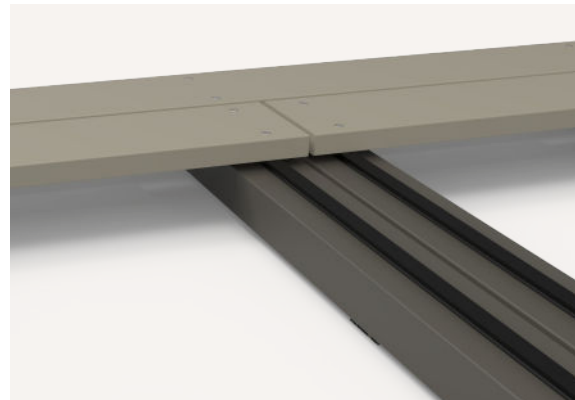


### Material

For a long service life of your wooden deck, use non-rusting BioMadera's stainless steel decking screws. For drilling, we recommend a stainless steel or tempered tool steel chrome plated bit to prevent oxidation spots on the deck boards. If you do not work with stainless steel, carefully sweep your wooden deck after installation to avoid oxidation points.

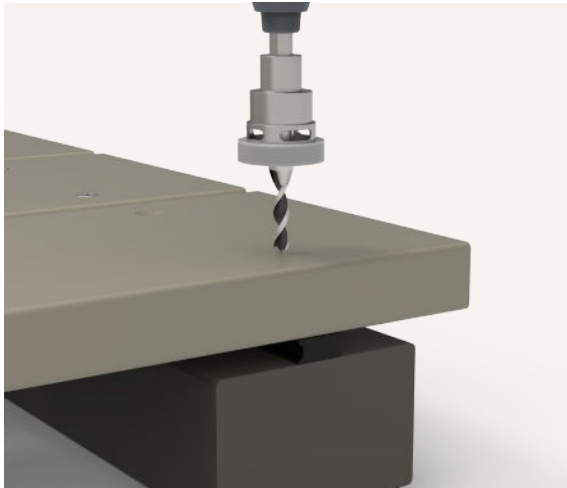
### Spacing profile on substructure

The spacing profile is placed lengthwise on the center of the substructure beam. By placing and screwing the planks on the spacing profile, it lies firmly between the substructure and the decking. It ensures that the wood is well ventilated and the screws have a shear area, which reduces the risk of stripping screws.



### Screw points

Decking boards with a width of at least 70 mm are screwed to the substructure with two screws. For narrower boards, it is sufficient to use only one decking screw per intersection of decking board and substructure. The position of the screw should be 1.5 cm to 2.5 cm from the edge of the plank. At the joint (where two plank ends meet), the screws should be 2.5 cm to 8 cm from the edge.

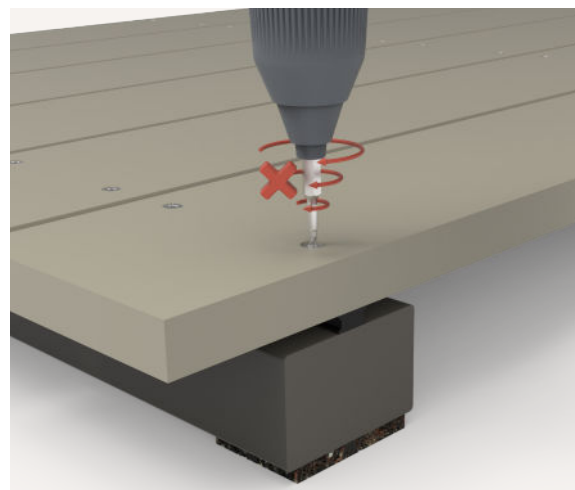


### Pre-drill, countersink, screw

Pre-drill the holes before screwing, because all decking boards from our company are made of very dense and hard wood. Pre-drilling reduces the risk of splintering and cracking screws. The hole should be 2 cm to 2.5 cm into the substructure. Mill out the holes with a countersink so that the screw heads can be sunk in alignment with the wood. Tip: Use a drilling template.

### Do not apply too much force

For screwing, use a cordless screwdriver and not a drill. The screws can easily be damaged when screwing them in. This damage does not have to show immediately, but it can lead to stripped screw heads after some time. Therefore, great care must be taken during this work step (→ page 44).



### Typical mistakes for visible fastening



**No shear area** between the plank and the substructure = screws may crack

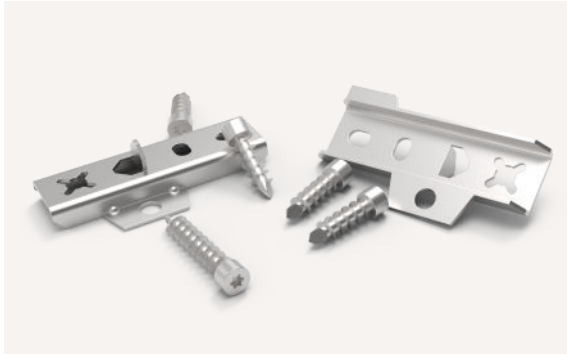
Screws **too close** to the edge of the plank = wood can crack and splinter

Too **much force** when screwing = material fatigues and reduced durability of the screws



## How do I fasten the decking boards with concealed screwing?

*A concealed fastening screwing system has slight technical advantages over visible fastening. There are different systems on the market. We recommend our proven and well tested BioMadera's clips for concealed fastening. For other systems we have to exclude liability.*

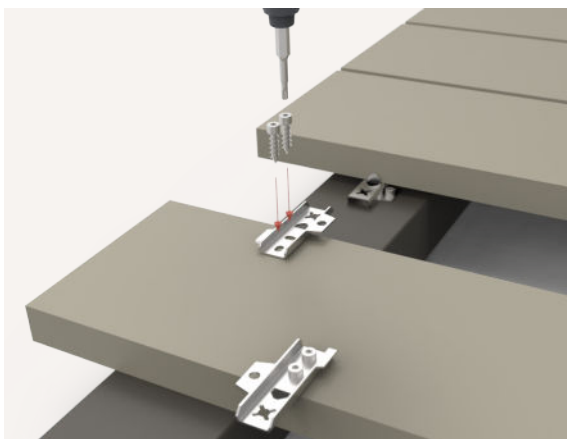
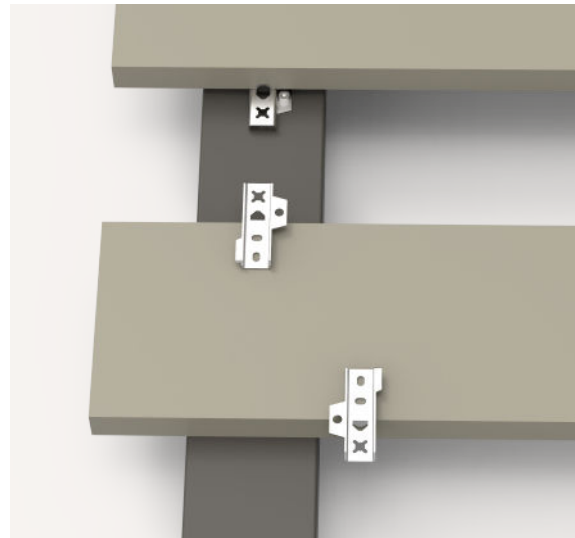


### Material

For each decking board/substructure intersection, you will need two BioMaderas stainless steel clips, four shorter screws to attach the clips to the underside of the decking board, and one longer screw to attach one of the clips in the substructure. Use a stainless steel bit to prevent oxidation spots on the planks.

### Positioning clips on decking boards

Turn the decking board with the B-side facing up and attach the two clips slightly offset from each other. The clip, which will later be screwed into the substructure, must in any case be fastened to the decking board at the position that will later lay on the substructure. This is not necessary for the clip that is pushed under the already installed row of decking boards - the clip pushed underneath can be up to 3 cm next to the substructure.

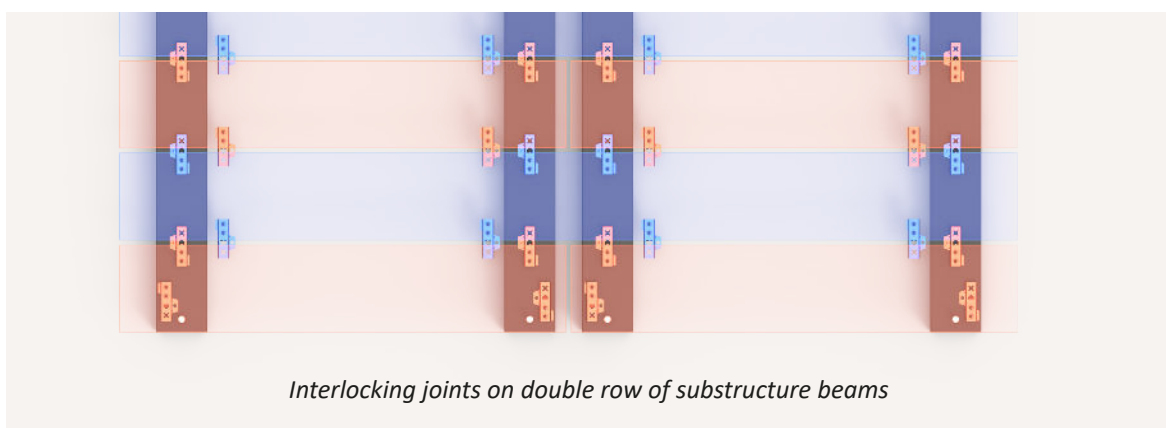
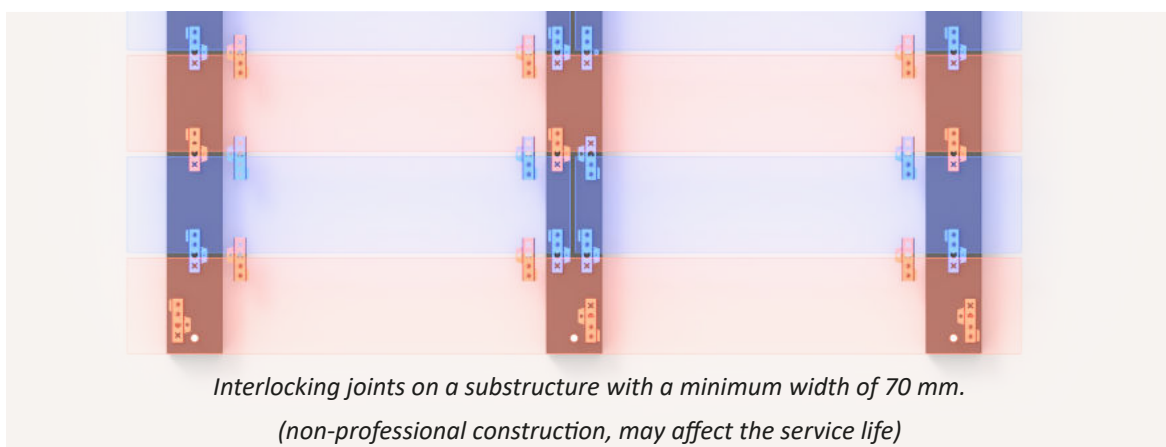
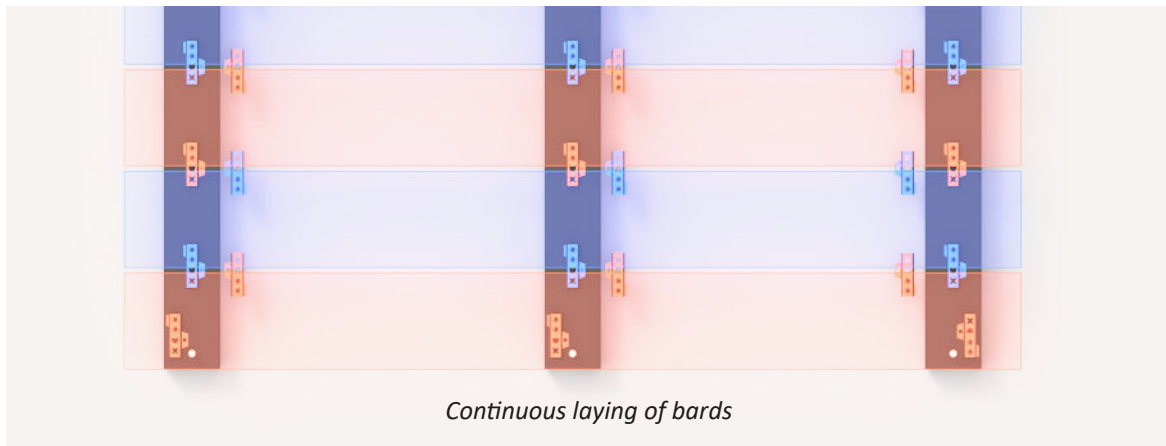


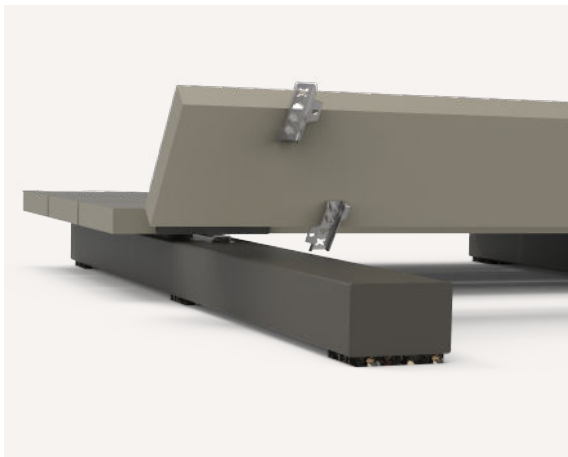
### Screw the clips to the decking boards

Screw the clips to the underside of the decking boards using two of the shorter stainless steel screws. For very hard woods such as Cumaru, Garapa or Jatoba, the screw holes must be pre-drilled with a 3 mm drill. For the 17mm screw, pre-drill about 1 cm to 1.2 cm into the plank.

### Positioning of the clips for different laying pattern

Depending on the laying pattern of the planks, there are different positions of the clips. Here is a small overview. The blue clips are screwed to the blue plank, the orange clips are screwed to the orange plank.



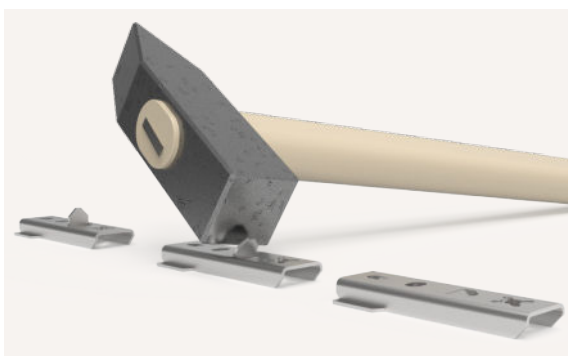
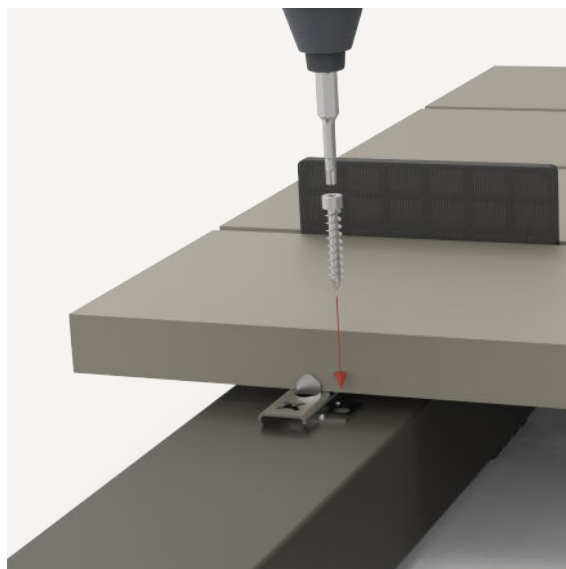


### Slide the clip under the decking board

Turn the decking boards with the A-side up and slide the clip under the already fixed row. The clip, which is pushed under the row of planks, prevents the plank from bending up. This clip does not necessarily have to be on a substructure, but can be next to it (at a distance of max. 3 cm). Attention: This clip is not screwed into the substructure.

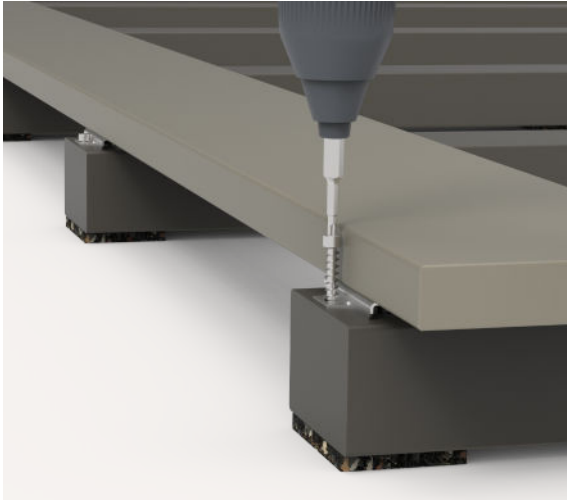
### Screwing the clip into the substructure

Now fasten the decking board (use spacers for even joints) with one clip under the already fixed row of boards. The other clip lies on the substructure and must be screwed into the substructure with the longer stainless steel screw. Here, the substructure must be pre-drilled about 2 cm deep for the screw hole. Repeat this and the previous steps until the decking area is completely covered with decking boards.



### Fastening the first and last plank

There are two ways of connecting the first and last planks on the substructure with concealed screwing. For both options, the so called stop pin of the clip must be flattened for one of the clips per screwing point.

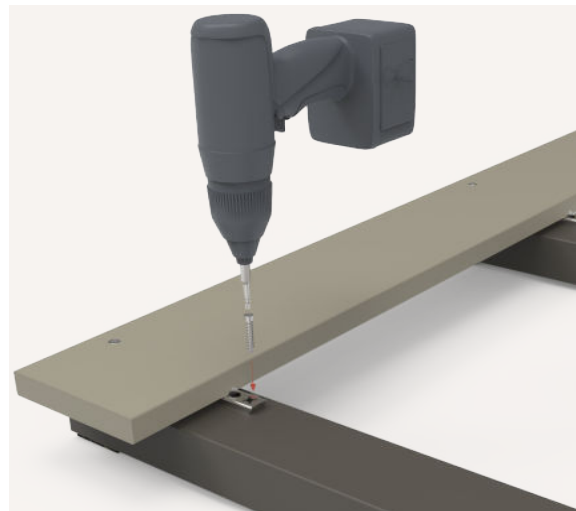


### Option 1

Screw a clip in parallel direction into the underside of the plank, so that the eyelet for the substructure screw protrudes from the side. For this purpose, the stop pin of the clip must be flattened. The substructure needs to stick out at least 8 mm from the plank. The eyelet must be accessible and not be blocked by a fixed structure (e.g. house wall) to allow screwing from above.

### Option 2

For this option, use one visible stainless steel screw per substructure/decking board intersection for fastening the first and last row of boards. In order to maintain a distance between the plank and the substructure, one clip is screwed under the plank. The decking screw is screwed into the substructure at a distance of 1.5 cm to 2.5 cm from the decking edge with pre-drilling through the plank.



### Typical mistakes for concealed fastening



**All clips screwed** to substructure = increased risk of stripping screws.

**Clip fastened** to plank with only one screw = clips hold less, planks can warp

**Too much force** when screwing = material fatigues and reduced durability of screws



## How do I cover the sides of a terrace?

*Covering the sides prevents the substructure of the terrace from being visible. While it is optically appealing, it can also reduce the service life of the terrace, if the side planks prevent good ventilation from below.*

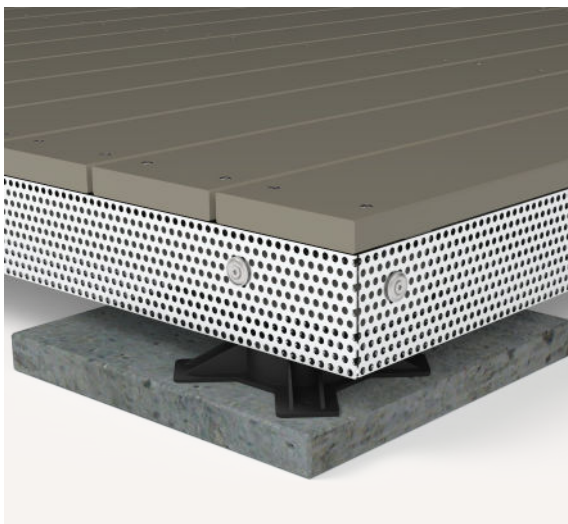


### Slide in the substructure

Covering side planks are usually screwed to the substructure. Therefore, it is necessary to count this already in when laying the substructure. The substructure should be moved in at least one plank thickness so that the cover is in line with the decking.

### Fastening a wooden cover

The cover plank is fastened to the substructure with decking screws. Make sure that there is a gap of at least 5 mm to the decking. In addition, the side plank should be screwed every 50cm. Earth contact should be avoided and for structural wood protection, the more air that blows between the cover and the foundation, the better. If needed, the side plank can be cut lengthwise.

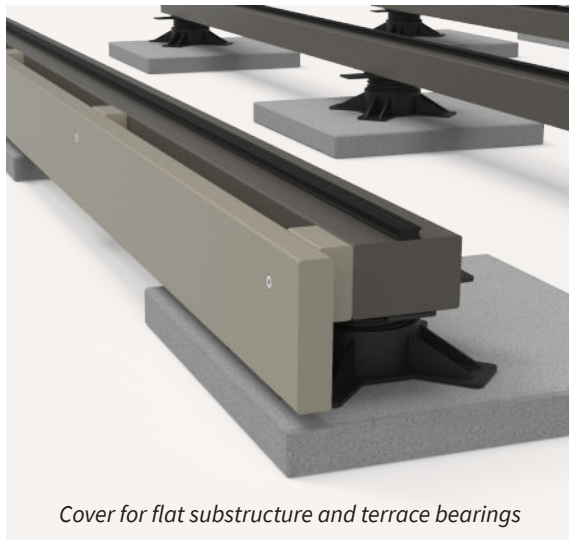


### Fastening an aluminum cover

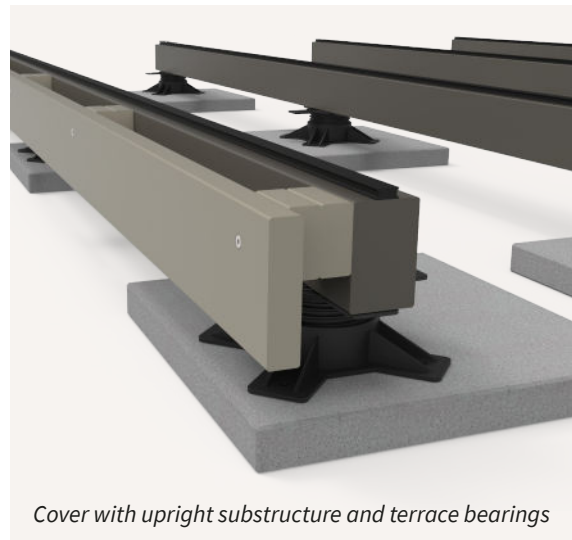
The aluminum cover is also attached to the substructure. Since the perforated profile is only 3 mm thick, the substructure must be moved in less here than with a wooden cover. The aluminum facing is fastened to the substructure with sheet metal screws. Ground contact is possible and constructive wood protection is not restricted, since the perforation of the profile allows ventilation.

### Covering the sides with terrace bearings

The feet of the terrace bearings have a larger base area (16.7 cm x 16.7 cm) than the substructure (for example, 4.5 cm x 7 cm). Therefore, the feet will protrude beyond the decking area, if you do not indent the substructure at the side edges accordingly. To ensure that the boards can still be fastened at the sides as a cover, the substructure must be doubled up at the connection points.



*Cover for flat substructure and terrace bearings*



*Cover with upright substructure and terrace bearings*

### Typical mistakes when covering the sides of a terrace



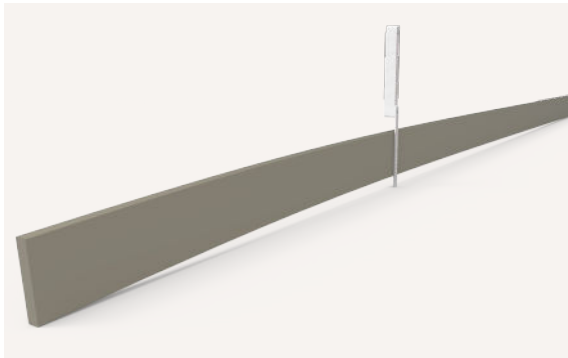
**Side planks not considered** when laying the substructure = no clean finish

The joints between the cover planks **too small** = poor ventilation, lower durability, greater warpage

Wooden side planks in **contact with the ground** = low durability, no ventilation

## How do I straighten crooked decking boards?

Wooden decking boards are not always 100% straight. This is usually not a problem when building terraces: slight curvatures can be compensated for when screwing by pressing the plank straight. Warpings cannot be ruled out and are a tolerable feature of wood.

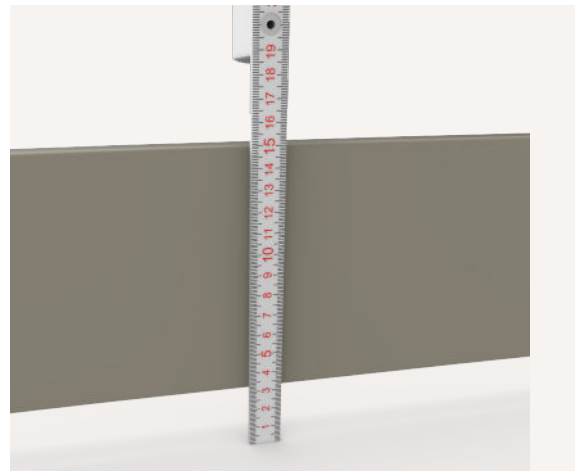


### Measure correctly

To evaluate the warpage of the plank, calculate the curvage over the entire length and determine the average value. To do this, turn the plank onto the narrow edge on a straight surface so that the curvature forms a bridge. At the highest point, the distance to the floor is measured.

### Warpage in percent

For this purpose, the distance from the highest point of the plank curvature to the floor is divided by half of the plank length. If you take the result x 100, you have determined the warpage as a percentage of the whole plank. If the value is 2% or less, the processing of a plank is not problematic. If the value is higher, the installation should be possible with assistance. Please do not hesitate to contact us in this case.



#### Example calculation:

$(3 \text{ cm distance from the floor} \div ((300 \text{ cm plank length}) \div 2)) \times 100 = 2 \% \text{ warpage.}$

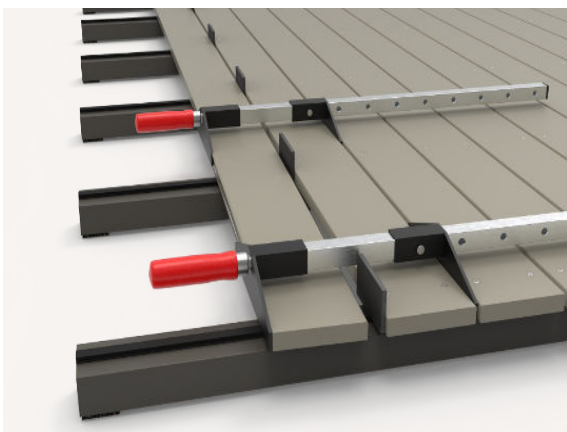
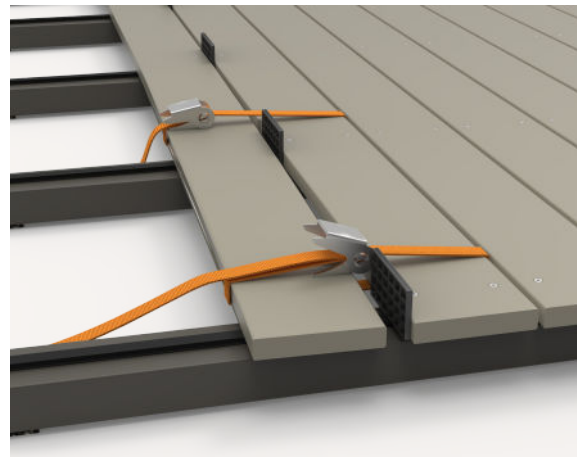


### Pressing the decking boards

Press curved decking boards straight against the spacers and fix them from start to finish. Pressing and screwing the planks is best done by two people: one person presses the plank straight, the other person screws the plank into the substructure.

### Lashing straps

Lashing straps make it easier to press the decking boards against the spacers. Screw the plank from one end to a couple connection points with the substructure and pull the other end straight by using the lashing straps before screwing. To do this, strap around one to three of the already screwed planks to pull in the plank that is still loose. Place a protector between the ratchet and the plank to prevent scratches.



### Plank clamps

Plank clamps work on the same principle as screw clamps: By turning together the clamps placed in the joint, the loose plank is pulled straight up against the spacer. Now the plank can be screwed with an even joint. The plank clamp is released and can be used for the next plank, which makes the straightening of crooked decking boards very easy.



## How does my terrace age?

*Wood ages like people - over time comes the gray. Outdoor decking boards lose their natural wood color due to sun and rain and acquire a gray-silver patina. This process can be slowed down by oiling, but not completely stopped.*



*Fresh, darkened, grayed.  
Top not oiled, bottom oiled.*

### Graying

The wood color changes over time. Jatoba and Garapa initially darken in sunlight before graying sets in. Therefore, you should not base your choice of wood species on color alone, but always keep the aging process in mind. From a technical point of view, graying of the deck is not a problem: it does not reduce the durability of the wood. However, fungi can also attack the wood, causing unsightly spots and stains, and even affect the service life. In this case, wood care not only has a cosmetic effect, but also extends the durability of the wood.

### Cracking

Hairline cracks on the surface and end cracks at the cutting edges of the planks can be counteracted by oiling and waxing. However, over a period of 20 years or more, they cannot be avoided.



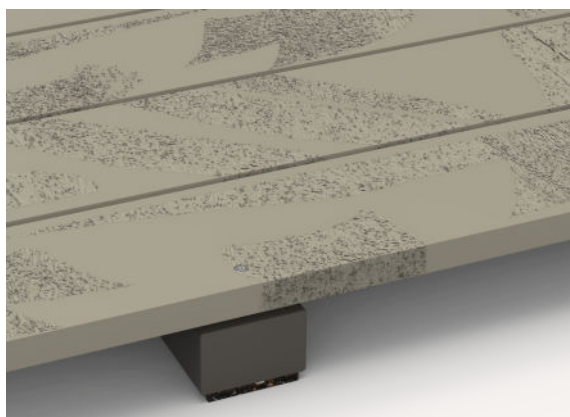
*Stains due to excessive oil application*

### Stains

Stains on decking boards can have very different causes: Flying algae, metal residues from lawn fertilizer, iron dust, water, incorrect oiling - all of these can cause the boards to look unpleasantly in a very short time. Fungi problems occur rarely with tropical woods and can be distinguished visually well, but also lead to stains. The vast majority of stains can be easily removed with a terrace cleaner based on oxalic acid. Impregnating the planks is effective against fungal infestation and should only be applied when this has actually occurred to avoid for the future.

## How do I sand my terrace?

*There are several reasons why a deck is sanded: When wooden fibers rise after the first watering, when stubborn stains can't be removed with a cleaning - or when the old wooden deck simply needs to be freshened up.*

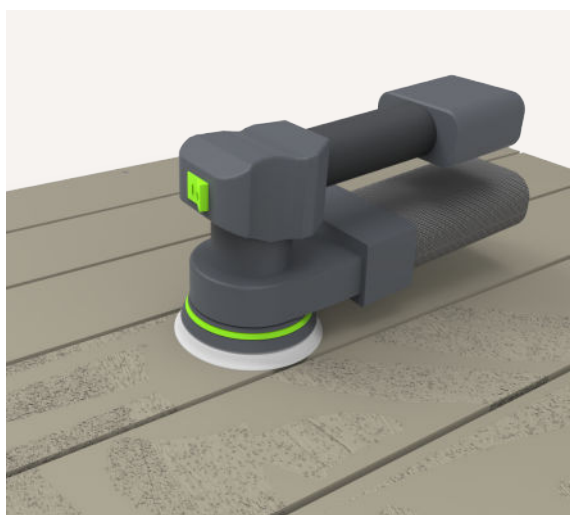


### Rough surface

With tropical hardwoods like Cumaru, the high density brings with it a pronounced alternating twist growth. As a result, wood fibers grow directions. These are not fully processed and form rough spots on the plank. If you sand the planks after laying and before oiling, you will get a smooth surface.

### Tool and materials

Depending on the needs and size of the area, all sanding tools can be used, from sanding blocks to orbital sanders and belt sanders. The grit of the sandpaper depends on the need and type of wood. Very hard woods like Cumaru are sanded with an 80 grit in the first sanding pass. For less hard woods such as teak, a 120 grit is sufficient.



### Instructions

- Clean the planks after installation or wet them. This will make the wood fibers stand up.
- After drying, look to see where the fibers stand up and rough areas form.
- Sand the areas with an 80 grit sanding paper. If needed, a fine sanding with 120 grit can be done in the second sanding pass.
- After that, you should vacuum or sweep the floorboards and oil them if necessary.

## How can I clean the terrace?

*Cleaning the freshly laid wooden terrace ensures effective oiling. In addition, a wooden terrace can accumulate dirt over time. Annual cleaning can remove this dirt and thus prolong the service life. If the wood color is to be renewed, the decking boards should be treated with decking oil after cleaning. As a general rule, do not use high-pressure cleaners.*



### Dirty wooden terrace

Leaves and dirt should be removed promptly. Especially after the winter, moss, algae and dirt can easily have formed on the decking boards. In some cases, this biofilm also makes the decking boards slippery. A cleaning with our terrace cleaner provides an effective remedy for this.

### Watering the terrace

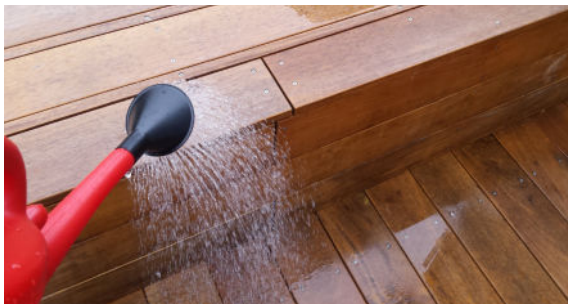
Before you apply the terrace cleaner, the surface should still be wet from rain or from watering. This way, the cleaning solution will not soak into the wood as much, but will remain on the surface - where it is supposed to work.



### Mixing the solution

BioMaderas terrace cleaner is stirred into lukewarm water at a ratio of 1 kilogram to 10 to 15 liters. One kilogram is sufficient for about 10 square meters of wooden terrace.



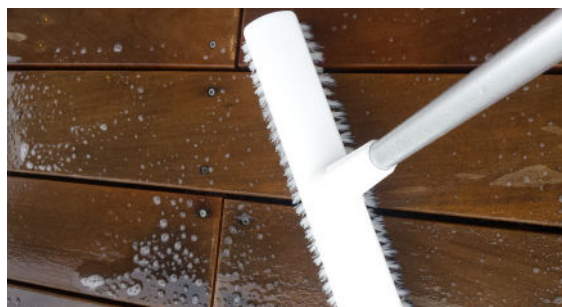


### Application

Apply the solution generously to the already wet wooden deck. Allow the terrace cleaner to act on the wooden terrace for at least 15 minutes.

### Scrub

After the soaking time, carefully scrub the deck with a root brush or scrubber. This will loosen the dirt from the planks.



### Rinsing off

Afterwards, the terrace is rinsed off with clear water. Excessive water pressure - such as from a high-pressure cleaner - destroys the wood structure and harms the durability of the planks. When the terrace is completely dry, it can be oiled, if the wood color is to be emphasized again.

### Cleaned wooden terrace

After your terrace has dried, it should be silver-gray again, clean and no longer slippery. If dirt remains, the cleaning process can be repeated.



### Typical mistakes when cleanign a terrace



**Not enough application time** of the cleaner = no effective cleaning

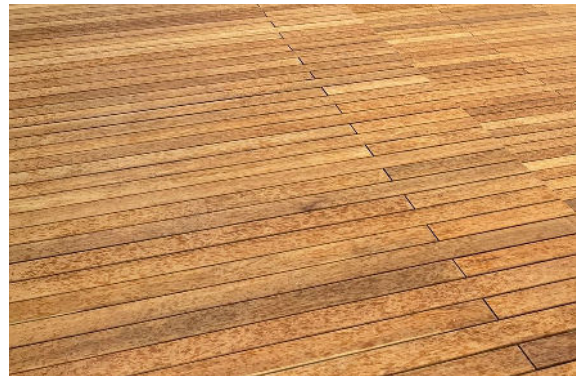
Cleaner on acid-sensitive surfaces such as **metal, glass, facade**

= discoloration possible, rinse immediately with water

Use of **high pressure cleaner** = damage to surface of decking boards and reduced life span

## How do I oil my terrace?

*To reduce the risk of cracking, the surface of the terrace should be oiled after installation and cleaning. If you want to preserve the wood color, you should repeat the application at least twice a year with BioMaderas light terrace oil.*



### Either clean...

Tropical wood should be cleaned with BioMaderas Terrace Cleaner before the first application of oil. When freshly laid, the wood is still highly saturated with ingredients that prevent the oil from penetration. Cleaning washes out the wood ingredients. Once the planks are dry after applying the cleaning solution, they can be oiled.

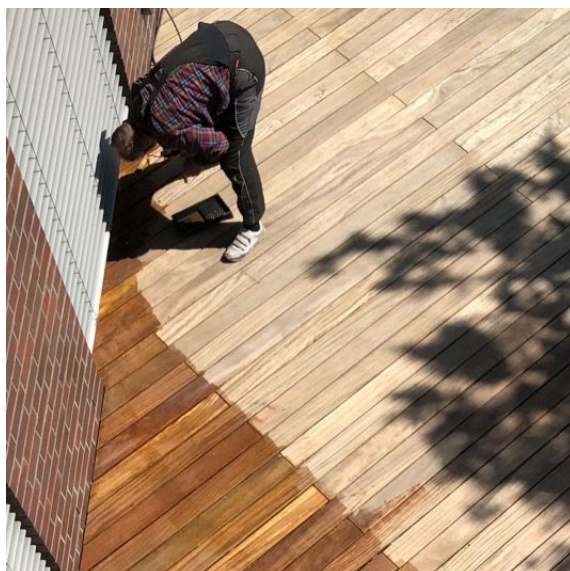
### ...or let it weather

Alternatively, the wood can first be exposed to the surrounding weather conditions for 1 to 3 months before the first oil is applied. However, during this time there is an increased risk of cracking on the surface of the planks. The sooner the fresh wood is oiled, the sooner it may have to be re-oiled if the color is to be preserved.

### Guidelines and tips for oiling

- Always treat an area that can be finished within the processing time.
- Before oiling, the wood should be dry.
- Do not oil below 8 degrees Celsius outside temperature.
- Oil only dust-free and clean surfaces.
- Stir the oil well before and during use.
- After oiling, the terrace should not get wet for 8 hours.





### 1. Application

Apply BioMaderas Terrace Oil thinly and evenly to the dry, untreated planks with a lint-free cotton cloth, brush or roller.

### 2. Finishing touch

Remove residues (oil not absorbed into the wood) within 20 minutes with a lint-free cotton cloth or rub it in

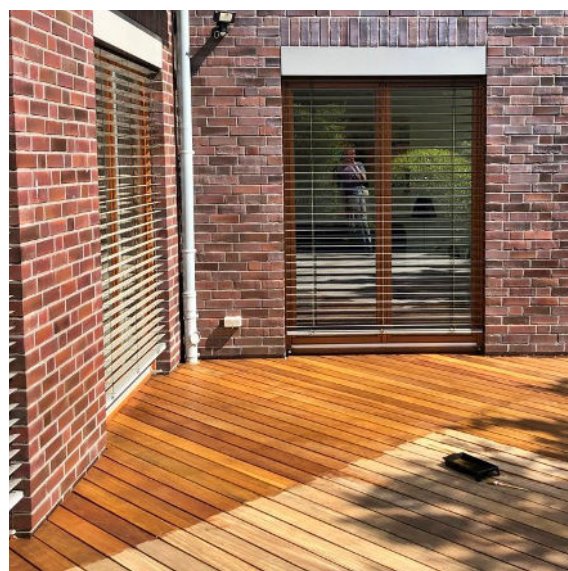
Tip: first use a scrubber with root brush and then to finish a cotton cloth

### 3. Second application

After the first application, wait approx. 1 hour until the surface has dried. Then apply the second coating and remove excess oil again.

### 4. Finished treatment

After a resting period of about 8 hours, the surface can be walked on and may also get wet.



### Typical mistakes when oiling a terrace



**Too much oil** = sticky spots, layer formation, soiling.

Oiling **below 8 degrees Celsius** outside temperature = oil cannot be absorbed, stains, sticky spots

**Excess oil not polished** in or removed = sticky spots, layer formation, stains

**Oiling fresh wood** before cleaning = oil cannot be absorbed well; color retention lower, but still protection against cracks

## How do I maintain my terrace?

*What are the right care products for your wooden terrace depends mainly on what the goal of the treatment is. Here you will find an overview of suitable products.*



### BioMaderas Terrace Oil

**Effect:** Wood color is preserved longer, cracking is reduced.

**Application:** Once for initial protection or twice a year for longer color retention.

BioMaderas Decking Oil is specially formulated for tropical wood decking boards. One liter is sufficient for about 15 square meters of terrace. The oil is available in three variants:

**Colorless:** For effective protection against cracking.

**Light:** For protection against cracking and longer color retention.

**Dark:** For already grayed surfaces that are to be colored again. Wood structure is partially covered.



### BioMaderas End-grain Sealing Wax

**Effect:** Protection against end cracks and moisture.

**Application:** Once after cutting the ends of the plank.

The end-grain sealing wax significantly reduces the formation of cracks at the cut edges and should be applied after cutting the planks.

### BioMaderas Impregnation

**Effect:** Prevents fungal and mold attack.

**Application:** Only on less durable wood, sapwood or in poorly ventilated areas.

The impregnation protects the wood from fungal attack. However, since it is biocidal and the terrace wood from BioMaderas has a naturally high resistance against wood-destroying fungi, we recommend its application only in poorly ventilated and damp areas of the terrace or for low-durability woods such as larch or spruce.

### BioMaderas Terrace Cleaner

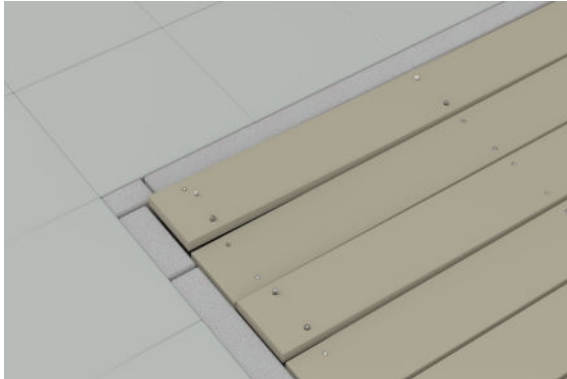
**Effect:** Removes dirt, algae and old oil.

**Use:** As needed.

BioMaderas Terrace Cleaner is based on oxalic acid and has proven to be an effective way of cleaning dirty and grayed terraces.

## Typical mistakes and how do I avoid them?

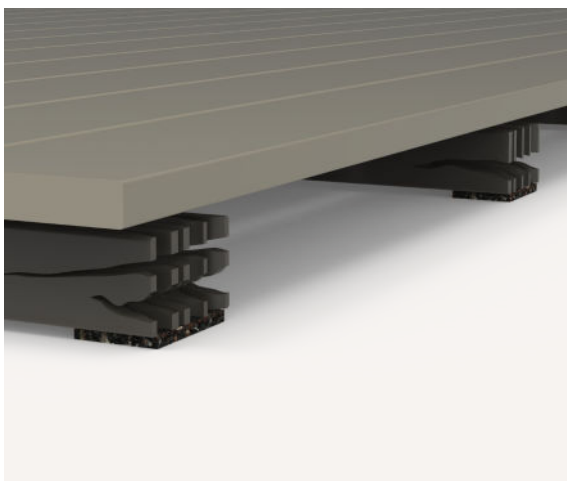
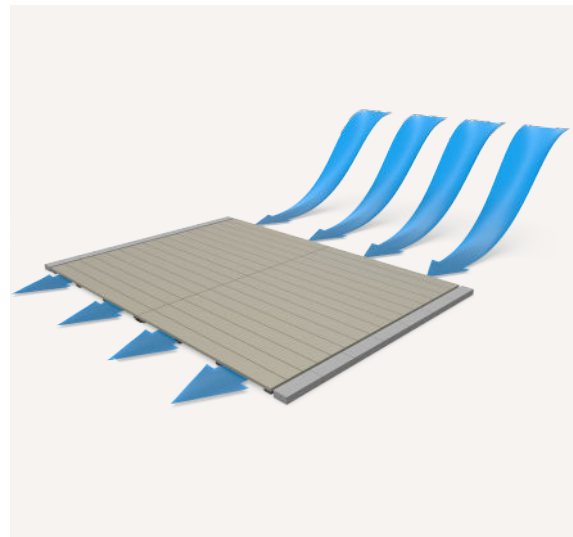
*To build a wooden terrace is not rocket science. Nevertheless, there are typical mistakes that can happen again and again. Here you can find out what they are and how to avoid them.*



### Insufficient ventilation

**Consequence:** If the terrace is not well ventilated from below, waterlogging can occur. This can lead to a variety of problems: Planks can warp, screws can break, and the durability of the wood is significantly reduced if it cannot dry off well.

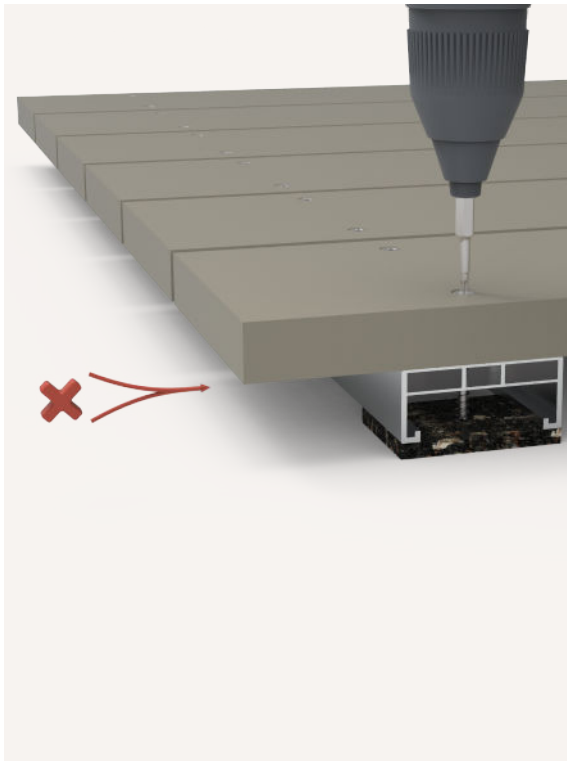
**Solution:** Include ventilation profiles at the edges of the decking. Increase the construction height with terrace bearings or a counter batten. Also plan for joints when covering up the sides, if necessary use a perforated sheet as a cover instead of planks. Keep a distance of at least 2 cm from solid structures (house wall, curbs). Water should be able to drain off in the sub-floor. This can be achieved with crushed stone, gravel and grit or a sufficient slope. Avoid water barriers: Create a space between the underground and the substructure with terrace pads so that water is not blocked from flowing.



### Substructure not durable

**Consequence:** The substructure is not as durable as the decking. In the worst case, the terrace has to be renewed, even though the decking would have been usable for years to come.

**Solution:** Decking and substructure should have a similar service life. The durability class informs about the durability of a wood species. Plank and substructure should not be more than one resistance class apart.



### Wooden decking boards on aluminium substructures

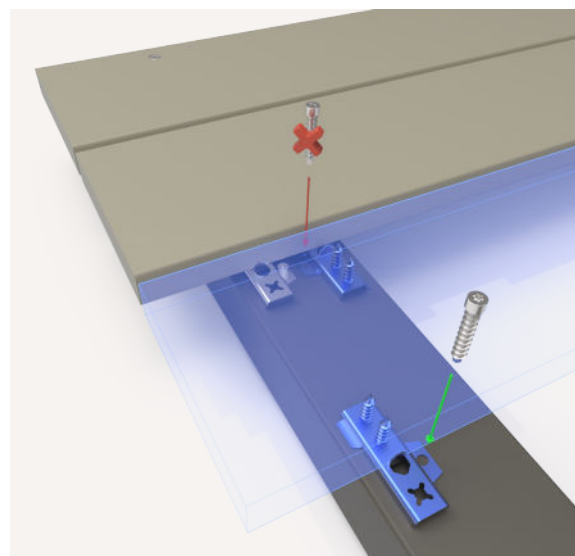
**Consequence:** As a natural product, wood expands when moist and contracts when dry. In comparison, aluminum as a metal is rigid and does not move. If the two materials are screwed together, there is an increased risk of breaking screws over time because the wood exerts strong pressure. In addition, there may be creaking noises.

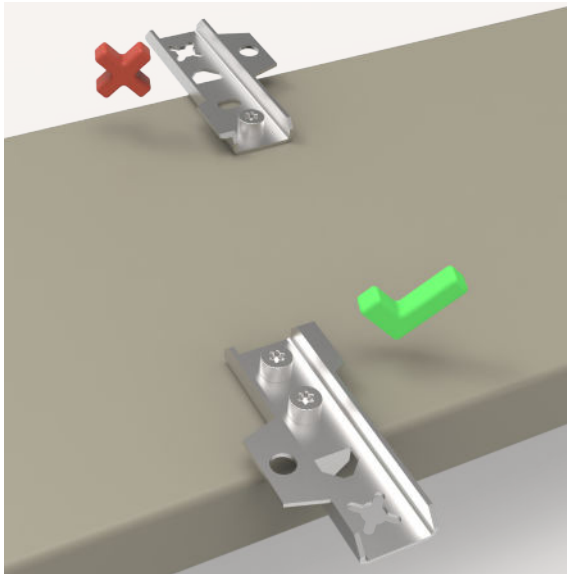
**Solution:** Plan a shear area. For fastening with visible screwing, this can be achieved by using a spacing profile that is laid between the substructure and the plank. With concealed fastening, the clips themselves create the necessary distance. A substructure foil, which is laid on the aluminum substructure, helps to prevent creaking noises.

### Clips screwed on both sides

**Consequence:** Tension in the wood due to temperature and humidity fluctuations cannot dissipate. This can cause the screws to break and lead to above-average cracking.

**Solution:** Clips are screwed into the substructure on one side of the plank only. The clip pushed underneath is not screwed into the substructure, and can even be up to 3 cm next to the substructure. This allows the plank to move horizontally and relieve tension in the wood. If necessary, loosen the screws on one side.





**Clip attached to plank with 1 screw**

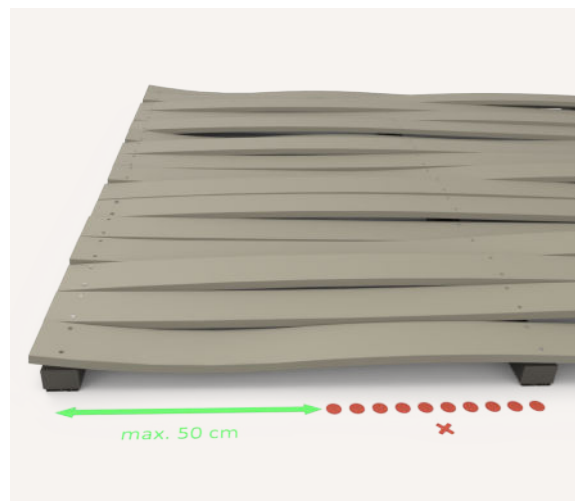
**Consequence:** Decking boards do not hold and may warp, if clips are attached to the back of the plank with only one screw.

**Solution:** Each clip is fastened to the back of the plank with two screws. The required screws are included with the Biomaderas clips.

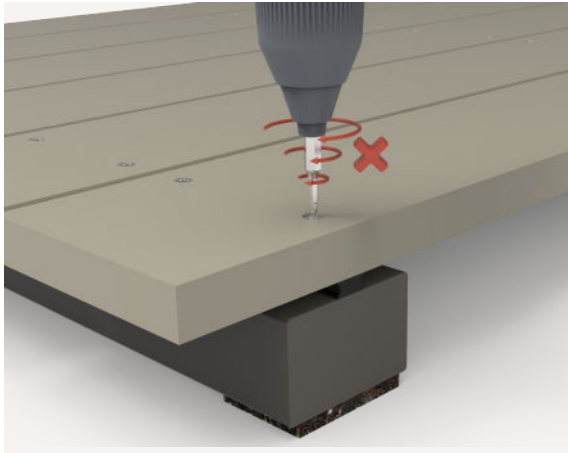
**Too few screwing points**

**Consequence:** Tropical hard wood can develop enormous force due to its high density. If the plank has too few fixing points, it can bow and warp. In addition, the screws can break.

**Solution:** Screw the planks at the beginning and end and leave a maximum spacing of 50 cm between screwing points. Allow the ends of the planks to protrude by a maximum of 8 cm. Use two screws per fixation point when building your terrace with visible screwing.







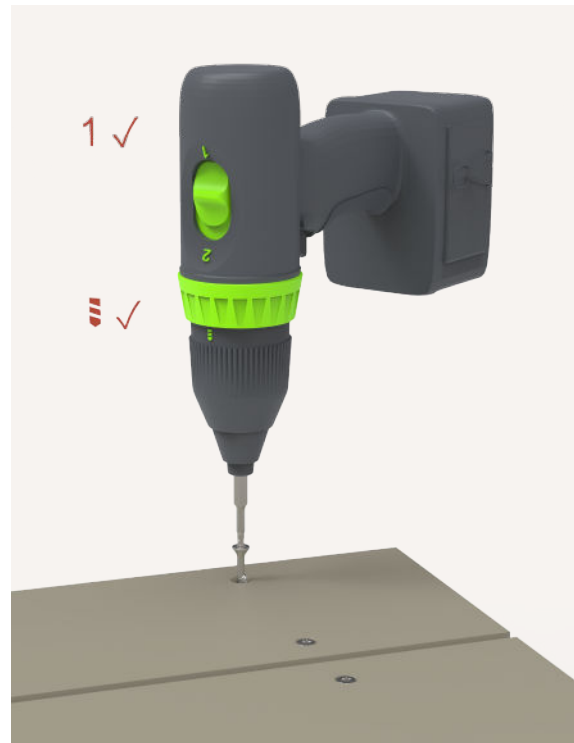
### Excessive force when screwing in

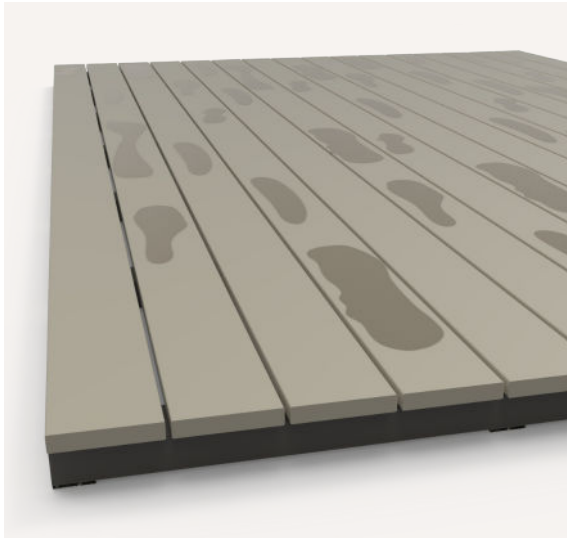
**Consequence:** The head of screws can break over time if the screw was subjected to excessive force when being drilled in. Drilling with too much force causes the material to fatigue unnecessarily and, in the worst case, the screw will break off after some time.

**Solution:** Screw in carefully. Tip: Screw carefully and without differential, instead of unintentionally screwing with too much force. By switching off the differential, your own finger feeling is the brake.

If you want to try screwing without a differential, you should set the cordless screwdriver to drilling power and to the lowest gear - often referred to as 1 of 2. Be sure to lower the speed toward the end of the screw-driving process until the screw is seated neatly in the wood.

After a few screwings, you will quickly develop the right feel for this way of screwing.





### Too much oil

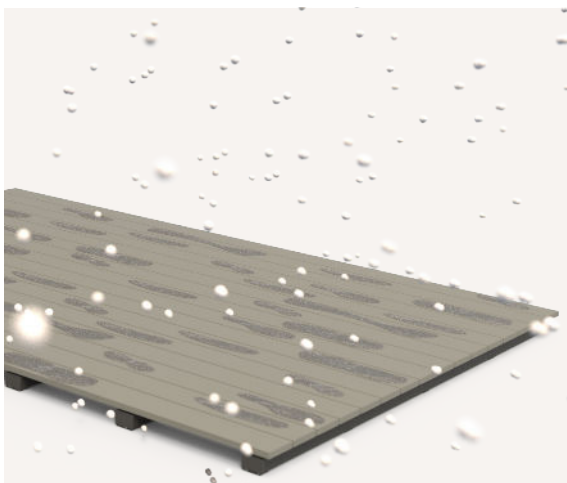
**Consequence:** Sticky spots may form. Sunlight and dirt can cause stains. Scratches can become visible in an oil layer that is too thick.

**Solution:** Oil sparingly. If stains and sticky spots have already occurred, clean the terrace with BioMaderas Terrace Cleaner to remove all the oil. If this does not work: use sanding paper. When the wood is dry, oil the planks sparingly and remove excess oil spots with a cotton cloth.

### Joints too small

**Consequence:** The joints close as the planks expand when they become wet. Water can no longer drain off. In the worst case, the planks can push each other up. The terrace must be rebuilt with larger gaps.

**Solution:** Maintain the recommended joint distances with the spacers depending on the wood type and plank width.



### Temperature during oiling below 8 °C

**Consequence:** The oil is not absorbed properly. Stains and sticky spots form, which quickly become dirty.

**Solution:** Apply the oil only when the temperature remains constantly well above 8 degrees Celsius for a few days. It should also be dry.

## What are the most important tips when building a terrace?

*Every wooden terrace is unique and every terrace construction presents new challenges.*

*Nevertheless: The following four tips always apply.*

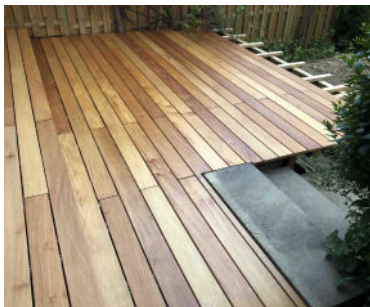
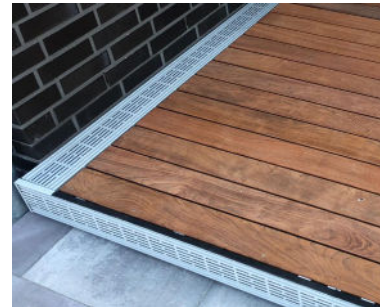


### 1. Wood is wood

Wood comes from the forest - and not from the factory. Therefore: Each plank is unique, no two are alike. As a natural material, wood lives, works, and changes with time. It loses its color, it expands and contracts, it ages and forms cracks. Be aware of these typical characteristics, then you will have a lot of pleasure from your wooden terrace.

### 2. Ventilation and drainage

A wooden deck should be sufficiently ventilated so that it can dry well at all times and not be damp over extended periods of time. Therefore, the following characteristics are decisive for the durability of a terrace: construction height of the terrace, joint spacing between the planks and distances to solid structures as well as additional ventilation in case of covering up the sides.

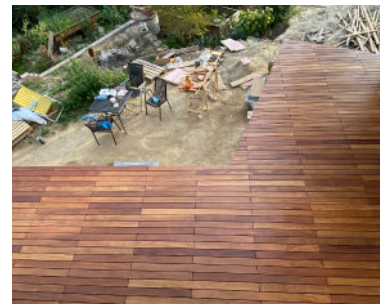


### 3. Distance between fixation points

All decking boards should be screwed into a substructure at the beginning and end and at least every 50 cm. Otherwise, the risk of warping of the planks cannot be controlled.

### 4. Theory and practice

Even the best planning cannot foresee everything: House walls are rarely absolutely straight, decking boards swell and shrink, and sometimes a small detail is not considered on site and only becomes apparent during construction. Every terrace construction can hold unforeseen challenges and requires improvisation talent on site. We are happy to advise you during the construction process.

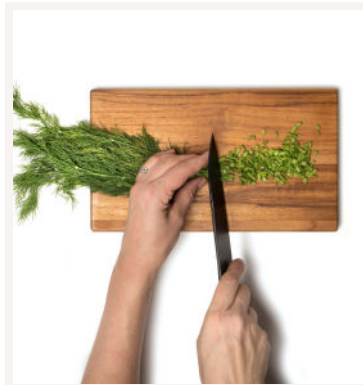


## Terrace is finished - what else is there?

*You have done it. You've worked on the foundation and adjusted the height, you've sawed, drilled and drilled hundreds, maybe thousands of screws. Reward yourself with a cutting board or garden furniture - made of certified wood with sustainable origin, of course.*



*Folding chair N°4*



*Cutting board N°102*



*Garden lounger N°1*



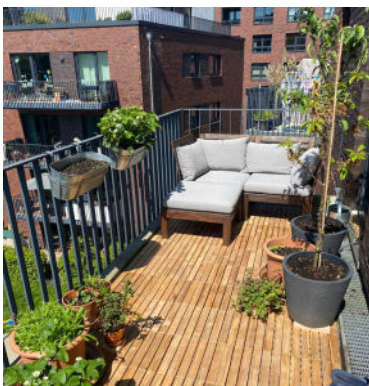
*Teak cutting boards*



*Wooden tops from Teak*



*Güde knives with teak handle*



*Teak decking tiles*



*Teak hard wood floorboard*



*Teak kitchen countertops*



Betterwood is taking a new approach to the timber trade: sustainable, fair and transparent. The FSC 100 % seal is a sign of compliance with these principles. However, we do not rely on the certificate alone, but are on site ourselves and buy directly from the producer without intermediates. That way we know the forests and sawmills from which our wood comes - and that is why we know: This forestry works sustainably without harm to the environment and without the use of pesticides. In this way, people can live from and with the forest and its displacement by agriculture is stopped. This is how we achieve our goal: to protect the forest through responsible use.



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