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INSTALLATION GUIDE DUOFUSE®

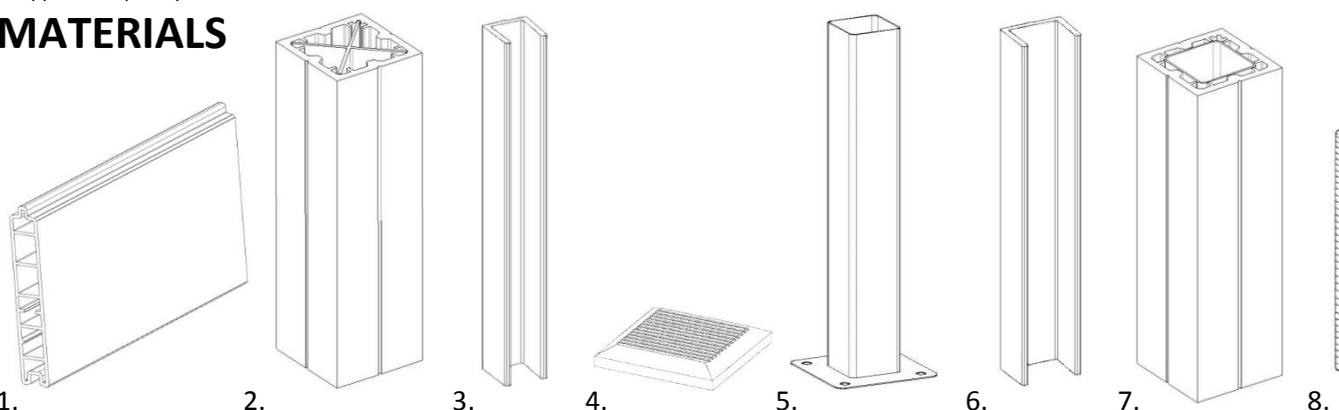
TONGUE AND GROOVE BOARDS SYSTEM

The Duofuse® wood composite boards system is much more durable than wooden fences, and correct installation is necessary to enjoy the fences for years.

We recommend reading through the entire installation instructions before starting, and please **check the website for the latest installation instructions**. **Plastivan disclaims responsibility for damage caused by, or failure of, the product as a result of faulty installation caused by failure to follow these instructions.** Failure to follow these instructions will void Plastivan warranty. All fencing and profiles should be acclimatised for minimum 24 hours before starting the installation. Remove packing if present. Stack the boards horizontally and cover against rain and sunshine. Do not install the fencing in temperatures below 5°C. Wood composite cuts, drills and installs similar to solid wood using standard wood working tools. We recommend carbide-tipped saw blades. Use a drill with low speed and high torque. Wood Plastic Composite products can in no circumstances be used as structural elements. Wood composite cuts, drills and installs similar to solid wood using standard joinery tools. The colours and the surface brushing may differ slightly from production deliveries and are not contractual. **We advise not to mix boards from different production batches. You can see the manufacturing date on the top of each board.**

When the fences have been exposed to some showers, water circles and drips may occur. This is a temporary process which is caused by the release of lignin out of the wood. By rinsing the fences with a garden hose the water circles disappear temporarily. After some time this process stops and the water circles disappear completely.

MATERIALS



- | | | |
|---|--|---|
| 1. Boards: | 15x2.7x180/200cm | Reinforced with galvanised steel - HxWxL. |
| 2. Composite post: | 9x9x270cm | Reinforced with an aluminium core. |
| 3. Small U-profile: | 2.7x3.5x182/202cm | Fitting system for the boards and to use as finishing profile above the upper board.
In the installation guide we refer to the small U-profile as "horizontal U-profile" and "vertical U-profile" depending on the way it is used. |
| 4. Cover cap: | 11x11x1.7cm | To avoid water infiltration in the composite post. |
| 5. Internal post holder | tube: 6x6x60cm
plate: 15x15x0.3cm
holes: 1.2x1.2cm M10 | Galvanised steel, only needed when fixing the posts on a terrace, concrete floor or wall instead of fixing it into the ground. |
| 6. Large U-profile: | 4.2x3.5x182cm | Only needed if a concrete gravel board is used at the base. |
| 7. Composite gate post: | 9x9x270cm | Reinforced with galvanised steel profile, including 4hinge holes with insert, bolts and washers.
Only needed for attaching the gate. |
| 8. Stainless steel rod: | 0,8x40cm | (Optional) to support the fence. |
| - Wood screws: | 4.5/5.0 x 25/40 | Stainless steel or galvanised, non-self drilling wood or chip board screws (to attach the U-profile to the composite post). |
| - Suitable plugs, stainless steel screws and L brackets | | (when fixing to a wall) |
| - Stabilised sand: | Semi-dry mixture of ballast, sand and concrete (200kg per m ³ mixture).
This mixture can also be bought ready to use at a specialised store. | |

OR:

- Concrete/Rapid concrete: Advised in cases of exposure to heavy wind (open field, ...)

Attention!: The Duofuse slat wall system cannot be used as fall protection railing on balconies, terraces, ... placed on a height above 1m height. L brackets, screws or plugs are never supplied by Plastivan NV. Please buy these at specialized shops.

TOOLS

(depending on the way of fixing)

Garden spade / post hole auger
Water level
Mason rope or normal rope
Screwdriver
Drill
Wood drill (and stone drill)

Countersink
Measuring tape
Sliding mitre saw / Jig saw / handsaw
Carbide tipped saw for cutting the boards
Laser

BASIC RULES

Height fence

By using the Duofuse® tongue and groove system, multiple combinations of panel frame (heights of 15cm to 195cm) are possible depending on the number of boards used. The fences can also be built in cascade, e.g. first fence 120cm high, second 150cm high,...

The boards can be placed directly on the soil as they will not rot. The fences can swell as a result of moisture absorption in width and height, therefore make sure the post exceeds the screen by minimum 5.5cm in order to leave enough expansion space.



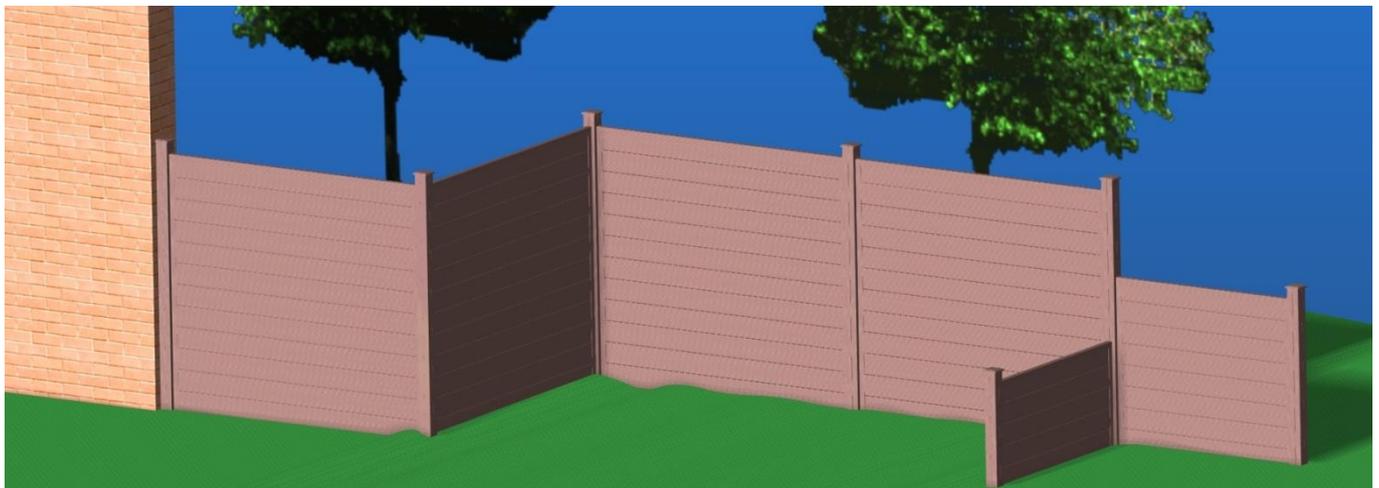
Length fence

Standard length of the boards is 180/200cm but boards can be cut to any length. By the presence of reinforcement profiles in galvanised steel, carbide tipped saw is necessary to cut the boards.

A minimum of 1cm gap is needed to be left at both ends to allow for expansion of the boards. When taking into account the thickness of the U-profile (0.5cm), the boards need to be at least 2x1.5cm smaller than the distance between two posts.

For the standard length of the fences the distance between two posts is 183/203cm.

These values apply if installation is under dry circumstances with boards which were stored in a dry environment.



PROCEDURE INSTALLATION FENCE

Avoid colour difference:

As the boards and the posts have been brushed, it is necessary to install the boards and posts in the same direction each time. **The boards need to be inserted with the mark on the same side of the board (front or back). You can find the mark on every board (see red arrows).**



Avoid damage of the wood composite materials:

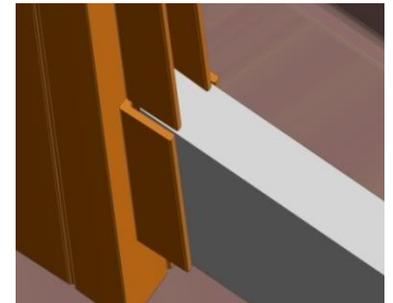
- Use a slow drill speed when fixing a screw.
- Hammering on posts, boards or U-profiles is not allowed.
- Avoid installing wood composite material in temperatures below 5 °C.
- Counter sunk pre-drilled holes are essential for fitting.

Step 1 : Shortening the posts (optional)

If you need to trim a pole do so at the top of the post (i.e. the side where there is no label). The wood composite post can be cut with an ordinary wood saw or circular saw. The aluminium cross (normal post) or the steel profile (gate post) should be cut with a metal saw. When using the internal post holder you will have to shorten (for a screen of 1.8 m high) the wood composite pole at a length of 1.85m and the aluminium cross at a length of 1.25m as the internal post holder itself is 60cm high.

Step 2: When using concrete gravel board (optional)

When you want to use a concrete gravel board – up to 4cm thick – beneath the fence, you can attach it with the large Duofuse® U-profiles (width 4.2cm). Attach these U-profiles to the posts with at least 2 stainless steel screws of 4.5/5.0 x 25/40mm (max. intersection 40cm).

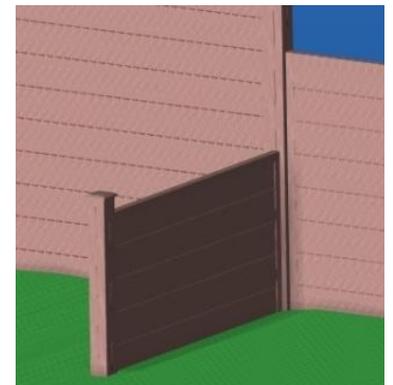


Step 3: Assembly of the U-profiles

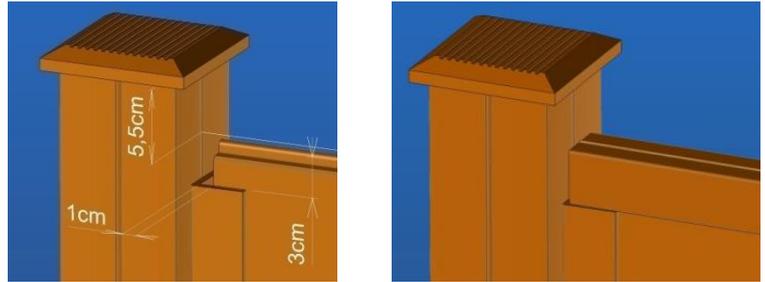
In order to create a corner or extra raised beds, you can attach at more than one side a U-profile (up to 4).

Attach the U-profile to the post with stainless steel screws of 4.5/5.0 x 25/40mm (max. intersection 40cm). Attach the U-profile each time at the same distance from the top of the post; e.g. 9cm.

- Attach the U-profiles to the posts before mounting the post in/onto the ground. This makes it easier.
- When using a concrete gravel board you can attach the small U-profiles (width 2.7cm) to the post only after that the gravel board has been placed between the large U-profiles.



When you want to finish the upper board with a horizontal U-profile (Step 7.1), make sure that the boards are 3 cm higher than the vertical U-profiles, so that the horizontal profile can be placed onto the upper board. Therefore you will have to cut the vertical U-profiles by 5cm before attaching to the posts (the boards are 180cm high, the U-profile is 182cm long and the vertical U-profile should be 3cm beneath the top board).



TIP:

Since the boards will expand slightly in the length and the height in the course of time, a gap of approximately 2 cm between the vertical and the horizontal U-profiles will arise after a few months. You can avoid this by cutting the vertical U-profiles 2cm less (so to cut 3cm off instead of 5cm). During the first months however you will not be able to mount the horizontal U-profile. After a few months, when the boards have expanded, this will be possible. You will then have the advantage that you will not have a gap between the vertical and the horizontal U-profile .

Step 4: Mounting of the posts

There are 3 possibilities to attach the posts:

- Against a wall
- Into the ground without fence post supports
- On a terrace, concrete floor or wall by using internal post holder

4.1 AGAINST A WALL

- Saw the post with a metal saw to the desired length.
- Drill the post with a metal drill (diameter the same as the diameter of the screw) (Photo 1)
- Place the post on the right place, water level to the wall and drill the holes (with a masonry drill) through the post into the wall.
- Withdraw the post, drill the plug holes (with a masonry drill) into the wall and place the plugs.
- Make sure the head of the screw is fixed against the aluminium cross and not to the outside of the wood composite post. For this make the hole in the outside of the wood composite pole larger (Photo 2) so you can securely tighten the screw up against the aluminium cross (Photo 3)

If the wall is not vertical, you can place a small wedge between the post and the wall. Alternatively you can use stainless steel L brackets to mount the post to the wall instead of direct fixing.



Photo 1



Photo 2

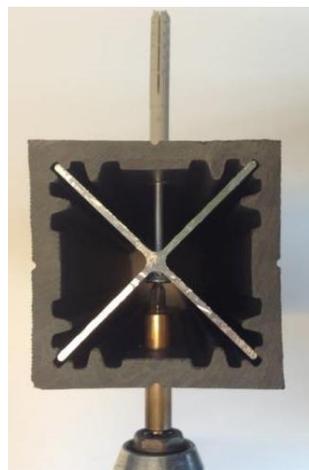
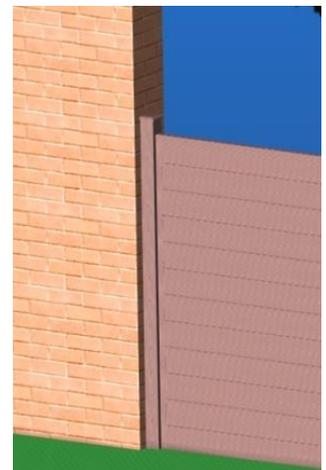


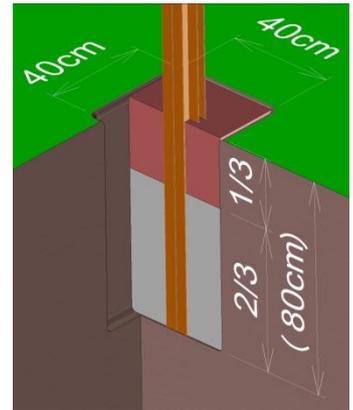
Photo 3



4.2 INTO THE GROUND WITHOUT FENCE POST SUPPORTS

1/3 of the length of a post needs to be into the ground. For a fence of 180cm, 80 to 85cm into the ground is sufficient. For a fence of 195cm, you will have to use the posts of 300cm.

- Dig a hole of 40x40cm and 80cm deep and place a tile in the hole to avoid sinking of the post.
- Place the post in the hole.
- Fill the hole completely or at least for 2/3 with stabilised sand, concrete or rapid concrete. When using (rapid) concrete, wait until the concrete has become hard. Fill the rest of the hole with soil which you press hard. In doing so you can sow or plant against the pole.
- Use a level to make sure the post is standing 100% straight.



4.3 ON A CONCRETE FLOOR OR WALL BY USING INTERNAL POST SUPPORT

- Mount the post supports with the suitable screws, bolts and/or plugs to the ground. In some cases, it is necessary to make chemical anchoring to ensure a firm anchoring. If in doubt consult an expert.
- Place the pole over the post support. You will have to saw the post with the aluminium cross to the desired length.

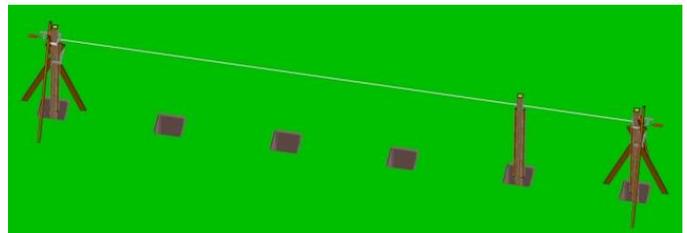
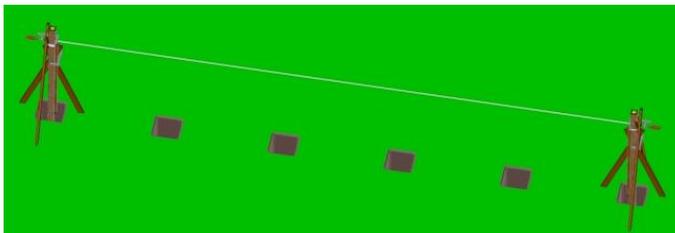
The wood composite post can be cut with a normal wood saw or circular saw. The aluminium cross (normal post) or the steel profile (gate post) should be shortened with a metal saw. When using the internal post support you will have to shorten the wood composite pole (for a screen of 1.8 m high) at a length of 1.85 m and the aluminium cross at a length of 1.25 m.

The screws to attach the U-profile to the post, should be 25mm long when used with the internal post support. If longer screws are used, these cannot be screwed completely.



Step 5: Order of placing the posts

If applicable always start against the house, shed or other fix point. After installing the first post, install the last post. Anchor sturdily the first and the last post. Fix the last post temporary. This can be done by using 2 temporary struts. When installing the last screen the last post can be fixed permanently with concrete, stabilised sand,... . In this way a slight miscalculation or deviation can still be corrected. To be sure that all posts are as high you can use a transparent flexible hose filled with water or a laser. Stretch a (mason) rope between the first and the last post. Then place the second post and install the first fence.



Step 6: Installation of tongue and groove boards

Place the boards from above into the U-profiles.

To avoid colour differences, the boards need to be inserted with the mark at the same side of the board (front or back). You can find the mark on every board (see red arrows).

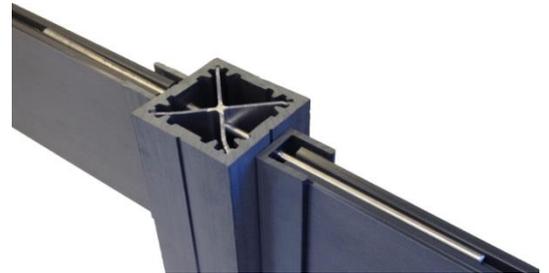
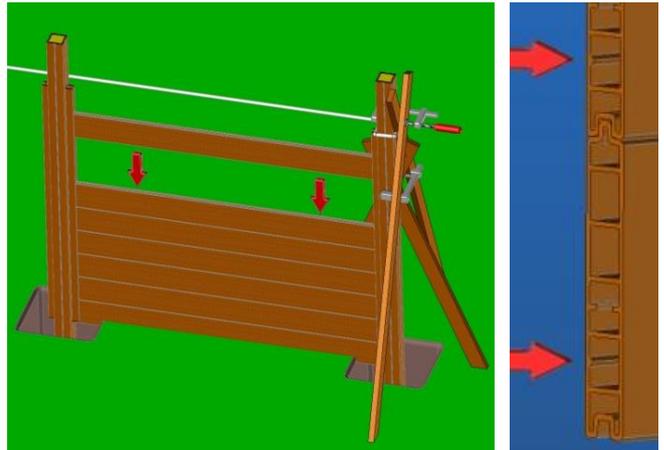
Press the boards to each other. An expansion space of min. 1cm at both sides needs to be respected. Avoid damaging of the boards.

If the screen is placed on grass or other soft surfaces, make sure that the screen cannot sink into the ground.

Support the screen at ground level at 3 places by means of tiles, concrete slab or other hard material.

The lowest board is thus supported. This will ensure that the boards cannot sink into the ground over time.

You can also use the optional rod, which supports the lowest board in combination with extra steel reinforcement in the lowest board. To do this, you drill a hole through the pole and slide the rod through the pole. The lowest board will then rest on this rod.



Then place the next post and build the next fence. Do not place all posts, but build fence after fence. Check during and after sliding the boards that the next post is still vertical. When placing a corner or an extra intersection, repeat the above steps.

Step 7: Finishing

7.1 Horizontal U-profile

You can finish the fence by placing the small U-profile on top of the upper board (See tip step 3). For a nicer finish you can sandpaper the upper side of this profile manually.

When each fence has been completed, add the horizontal U-profile. In this way you can verify whether the used distances of the boards, posts and vertical U-profiles are correct. Make sure the U-profile is level on top of the upper board. You can achieve this by placing long level on top of the U-profile and adjust carefully with a rubber hammer.



7.2 Cover cap

The posts are to be finished by gluing the inside edges of the cap to the post. Apply sufficient glue to the inside edges of the cap. Use a construction adhesive or sealant. Press down firmly on the pole for the duration that the glue requires. By doing so a natural air flow inside the post can be ensured. Attach the cover caps after all horizontal U-profiles have been put in place. For posts placed against a wall, the cover cap needs to be cut at one side.