

swissfiber

Fibreglass  
in construction

**swissfiber deck 04**

Fibreglass decking

deck 04 | November 2008



## **swissfiber deck 04**

### Fibreglass decking

Requirements for safe and durable decking and covering are high. Thanks to its simple assembly, high slip resistance and minimum maintenance swissfiber deck 04 offers an economical and ecological solution.

swissfiber deck 04 is a profile made from fibreglass developed using the material properties to the full.

swissfiber deck 04 is designed for use in existing and new buildings. With its load-bearing capacity, lightweight characteristics and proven ecology flexible and environment friendly solutions are possible.

### Use

swissfiber deck 04 is a profile made of fibreglass, developed for demanding applications such as:

- Decking for pedestrian and cycle bridges
- Work platforms
- Terrace decks
- Load supporting beams
- Bridges
- Covering
- Roofing

### Advantages

The excellent properties of the fibreglass material offer the following advantages:

- Lightweight
- Easy assembly
- Anti-slip
- High mechanical resistance
- Durability



## Technical Data



### Principle

swissfiber deck 04 is a multichamber profile made of fibreglass. The physical dimensions are similar to those of a wooden plank. The profile was developed using the material properties to the full, creating a load-bearing component with excellent properties.

As required each plank can be provided with an anti-slip coating.

Generally the planks are prefabricated in the factory. deck 04 is bonded to the substructure or fixed in place with screws or rivets.

### Material

swissfiber deck 04 profiles are made of fibreglass, a composite material consisting of glass fibres and a polyester matrix which is manufactured by machine in a pultrusion procedure.

- Polyester matrix (UV stabilised)
- Reinforced glass fibres, approx. 60%
- Silica sand coating (optional!)

### Colour

RAL 7016 Anthracite

### Surface

Through the special surface structure of deck 04 the slip resistance is also guaranteed in wet weather conditions.



### Installation

As the individual components are lightweight assembly is very easy. The individual planks can be installed by hand.

Planks can be prefabricated in the factory. deck 04 is bonded to the substructure or fixed in place with screws.

## Technical Data

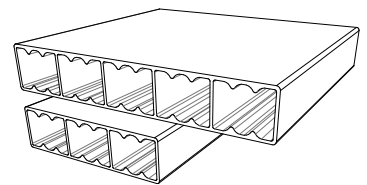
### Formats and technical data

Type swissfiber	deck 04 / 30	deck 04 / 18
Shape		
Cross section	298 mm x 51 mm	180 mm x 51 mm
Cross sectional tolerances	+/-1 mm	+/-1 mm
Weight	ca. 6 kg/m	ca. 4 kg/m
Standard lengths	6 m	6 m
Length tolerances	+/-3 mm	+/-3 mm

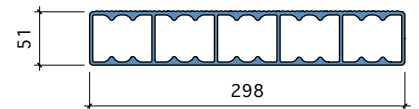
### Characteristics

E-module	23'000 N/mm <sup>2</sup>
G-module	3'000 N/mm <sup>2</sup>
f <sub>GFK</sub>	220 N/mm <sup>2</sup>
τ <sub>GFK</sub>	50 N/mm <sup>2</sup>
Fire index	BKZ 5.3 (Self-extinguishing)
Temperature expansion	10 x 10 <sup>-6</sup> K <sup>-1</sup>

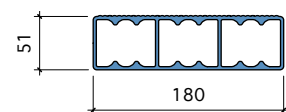
Please do not hesitate in contacting us for more details.



deck 04 5/30



deck 04 5/18



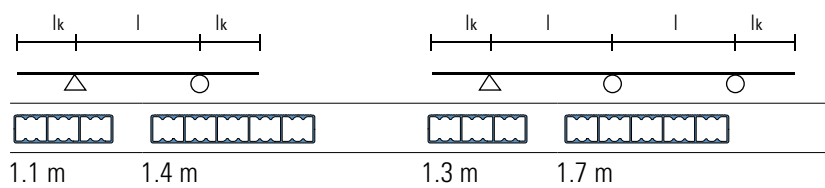
### Span

Depending on the static system and on the load the following maximum ranges are possible:

#### Pedestrian bridges and balconies

Single beam

Continuous beam



Maximum overhang 350 mm

Minimum support width 100 mm

Note: if horizontal load from traffic has to be taken into account, fillers must be used to stabilise the profile.

### Fixing

Various methods can be used to fix in place:

e.g. screws, rivets, glue, clamps.

#### Mechanical fixing

The following mechanical fixing methods are possible:

Screwing or clamping (see fig. P.9).

#### Fixing points

Each profile must be fixed in at least one point per support to the substructure.

Perpendicular to the profile the fixing material must always be positioned between the two «mounds» in the individual chambers. T-bolts work well for fixing the profile to the innerside.

Note: Ensure no point loading occurs through soiling, sharp edge profiles etc when attaching.

#### Edge spacing

4x screw diameter should be kept from the edge of the profile to where the hole begins. This edge spacing applies only to the longitudinal direction of the profile.

### Temperature expansion

The temperature expansion coefficient is  $10 \times 10^{-6} / \text{K}$ . This corresponds to approx. 0.1 mm/m per 10 degrees Celsius.

### Fix and gliding points

Due to the varying temperature expansions between fiberglass and steel, wood, aluminium or plastics we recommend that assembly be carried out with mechanical fixing materials always using fixed and gliding points.

### Execution of fix point

The purpose of the fix point is to hold swissfiber deck 04 in position. Generally one fix point should be executed for each profile.

### Execution of gliding point

Any movements of the fiberglass profile relative to the load-bearing structure should occur at the gliding points. This means that an oblong screw hole should be made. Expansion at right angles to the profile direction can be ignored when fixing. To measure the length of the oblong hole the maximum profile length on the object is decisive.

### Joints

Due to temperature expansions joints must be made at right angles to the direction of the profile. We recommend joint widths of at least 5 mm. In the case of longitudinal joints their dimensions must be ascertained for each object.

### Special solutions

When replacing existing decking the existing hole pattern is often used to avoid damaging the carrier section with new holes. For this purpose plastic straps or steel girders may prove useful as an intermediate layer (see fig. Page 9)

When using plastic straps ensure that the length change of the strap is taken into consideration. A joint must be provided between straps.



## Planning and installation

### Finishing



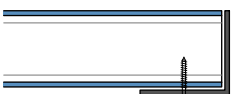
Plastic cover



Cover with plastic pegs



Plastic pegs



Steel or aluminium brackets.  
Brackets can be clamped or  
screwed.

### Chemical fixing – bonding

To fix swissfiber deck 04 we can also recommend bonding solutions.

In principle, both rigid and elastic bonding can be used. No new holes are required when bonding and the work process can be better under good weather conditions than with mechanical fixing. Bonding has proven worthwhile when used with good quality prefabrication.

### Prefabrication

In-house bonding has proven very worthwhile. To save time and expense, it may be worth bringing prefabricated components to the site thus reducing on-site costs.

### Lengths

Storage length is 6 m

### Slip resistance

swissfiber deck 04 profiles do not come coated as standard. A coating can be applied on request.

### Profile sealing

Depending on use it is recommended that the profile ends be sealed with caps (see fig. P.8)

### Mechanical work

Fibreglass is a very tough material. It also has a very high glass content. With suitable tools: drills, cutters, saw blades (diamond studded) and the corresponding high cutting speeds the profiles can be cut in the same manner as wood.

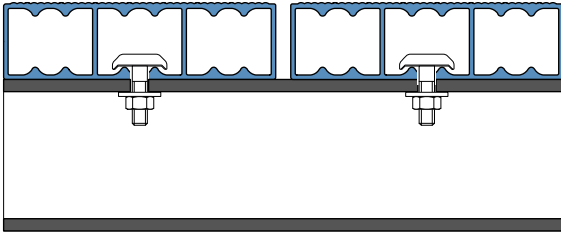
### Cutting edges

We recommend that cutting edges be sealed for highly exposed or long-term use (moist, under water).

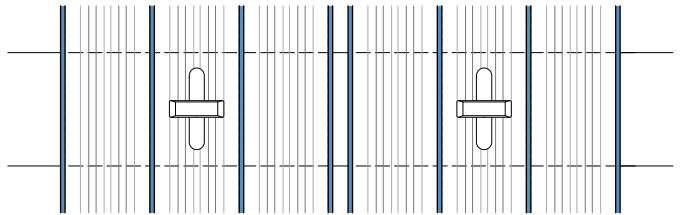


## Fixing variations

### Assembly from below: Steel

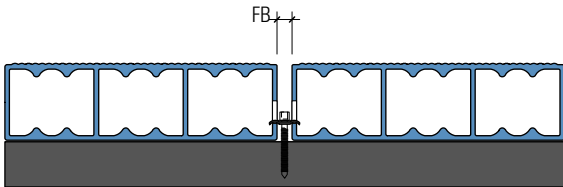


Vertical cut



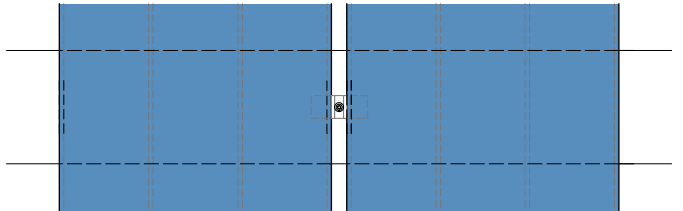
Horizontal cut

### Assembly from above:



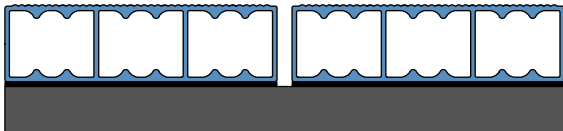
Vertical cut

FB: Width of joint depending on fixing tool

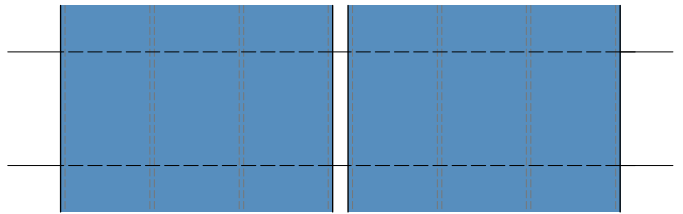


View

### Bonding



Vertical cut



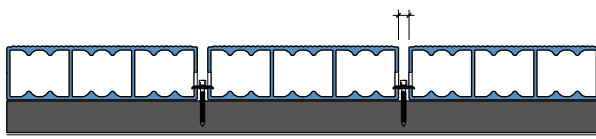
View

## Special solutions

### Fixing to plastic strap



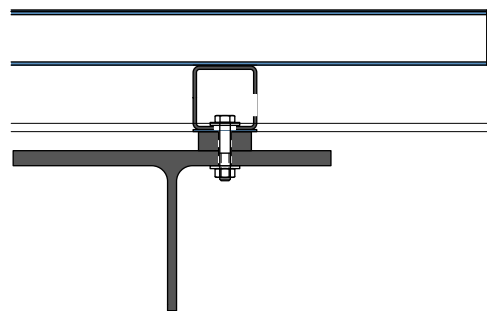
Vertical cut



Vertical cut lengthwise

Plastic strap fixed to existing hole pattern  
deck 04 screwed with strap

### Fixing with steel profile as intermediate layer (bonded)



Vertical cut

## References



1

**Bridge decking Passerelle Talacker  
Katzenbach, Talackerstrasse  
Zürich 2005**

Design: erz

System: swissfiber deck 04, screwed



2

**Höngg pedestrian bridge  
Mühlehaldenbach, am Giessen  
Zürich 2003**

Design: swissfiber

System: swissfiber deck 04, glued



3

**Roofing  
ARA Buholz waste water facility  
Emmen 2004**

Design: AM Dach & Fassaden

System: swissfiber deck 04, screwed



4

**Balcony decking family home  
Former mayor's house  
Igis 2004**

Design: swissfiber

System: swissfiber deck 04, glued

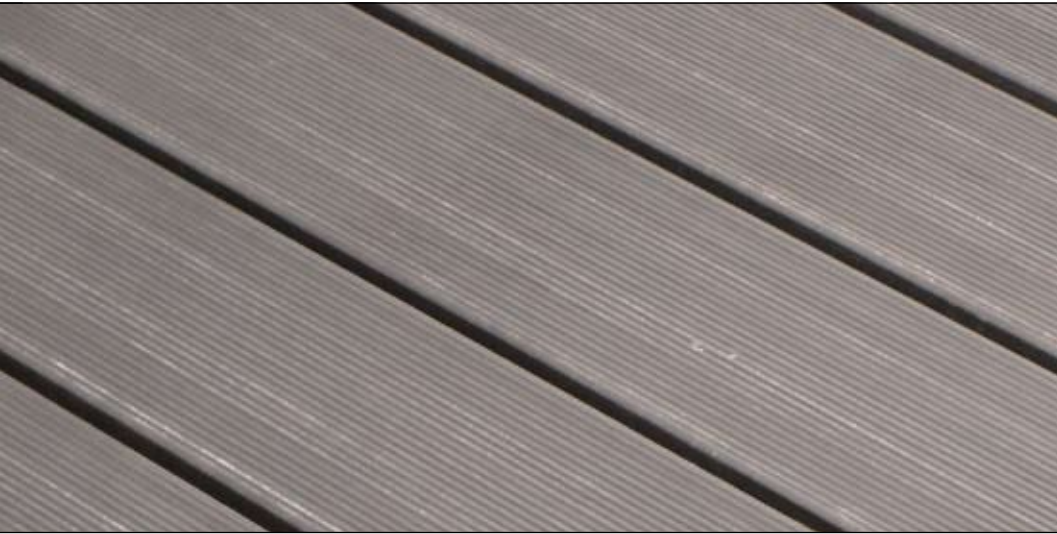


5

**Wave breaker  
Hafen Wollishofen  
Zürich 2004**

Design: IB sk+

System: swissfiber deck 04, screwed



## Contact

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# Your swissfiber team

## Fibreglass in construction

We are an authorised partner for the production and supply of fibreglass components. You work together with our experts in materials, procedures and civil engineering, who understand your special requirements and provide successful systematic searches for solutions and experience. As independent specialists we objectively assess available technologies, product costs and design and develop solutions and alternatives.

### Our focus

- Engineering, material and procedure engineering
- Service from design to supply
- Knowledge of the construction, water technology, chemistry and in electrical supply industry
- Networks to high schools, testing institutes, raw materials suppliers and manufacturers

### References

- Facade construction: Translucent and large format façade systems
- Rail technology: corrosion-resistant noise protection posts
- Tunnelling: Corrosion-resistant and fire retardant coverings
- Scaffolding: light scaffolding floors
- Civil engineering: Non-slip and weather-proof surface for bridges
- Water technology: Lighter and corrosion-resistant elevating floors

Contact us! We will be happy to advise you.

swissfiber deck 04 November 2008



