



# Technical specifications

<b>Size</b>	1800/147 mm	
Special size	width 110 - 302 mm; length 700 - 2500 mm	
Dimensional variation length	± 2.0 mm	EN 12467
Dimensional variation width	± 1.0 mm	EN 12467
<b>Thickness</b>	13 mm	
Thickness tolerance	-1.0 mm /+2.0 mm	
Thickness tolerance within one shipment	± 1.3 mm	EN 12467
Edge straightness (Level 1)	± 0.05 %	EN 12467
Perpendicularity (Level 1)	± 2.0 mm/m	EN 12467
<b>Physical characteristics</b>		
Swelling	0.384 mm/m	DIN 18202
Shrinkage	0.737 mm/m	
Bulk density	2.0 - 2.42 kg/dm <sup>3</sup>	
Bending tensile strength	> 18 N/mm <sup>2</sup> (MOR*)	EN 12467, Class 4
E-modulus for deformation calculation	approx. 10,000 N/mm <sup>2</sup>	
E-modulus for restraint calculation	approx. 30,000 N/mm <sup>2</sup>	
Dead load / Mass per unit area (13 mm)	26 - 31.5 kg/m <sup>2</sup>	
Thermal expansion coefficient	10*10 <sup>-6</sup> (-6) 1/°k	DIN 51045
Building material class (panel   system)	A1 - non-combustible   A2-s1, d0 - non-combustible	DIN 4102   EN 13501
Temperature stability	according to humidity up to 350°	
Specific heat capacity	approx. 1,000 Joule / (kg * K)	
Thermal conductivity	lambda: approx. 2.0 W / (m * K)	
Moisture expansion	0.05 %	EN 12467
<b>Weather resistance</b>		
Water impermeability	given	EN 12467
Heat-rain-alternate test	given	EN 12467
Frost resistance	given	EN 12467
Frost-defrost-alternate test	given	EN 12467
UV-light resistance	light- and UV-stable colour pigments	DIN 12878
Hot water resistance	given	EN 12467
Wet storage resistance	given	EN 12467
<b>Fastening</b>		
Fastening exposed	rivets, screws	
Fastening concealed	adhesive, Rieder Power Anchor	
Substructure	aluminium, steel, wood	
Joint width	min. 8 mm	
<b>Reinforcement</b>	with alkali-resistant glassfibres in the matrix (Cem-FIL, Approval Z-3.72-1731)	
<b>Edge formation</b>	Cut edges are unfinished and sharp-edged with a coarseness of about 1 mm on the visible face. Glassfibres may emerge at the edges.	
<b>Colours**</b>	Through coloured panels; 12 standard colours; special colours on request.	
<b>Surface**</b>	matt: even surface ferro light: sandblasted at lower pressure ferro: sandblasted at higher pressure	
<b>Assembling and weather protection</b>	hydrophobicity	

\* MOR: Modulus of Rupture; Design values deviate from MOR in accordance with national rules and regulations. National approvals, rules and regulations apply to the calculation of the rated resistance.

\*\*Because concrete is a natural product, each glassfibre reinforced concrete panel is regarded as a single piece. Differences in colour, structure and texture are characteristic and intended. Efflorescences or small, visible pores are not defects. The light resistance varies depending on the colour. Differences in the surface appearance, which do not affect the fitness for purpose of the panels, are permitted. EN 12467 / Data sheet Exposed concrete 02/2004 [Publisher:BDZ/DBV]

Subject to the particular quotation documentation. The technical description of product characteristics should not be interpreted as a contractual commitment on the part of the manufacturers. Despite careful inspection, no liability can be accepted for the correctness, completeness and topicality of the document. This is particularly true for typographical errors or subsequent changes to technical specifications. öko skin | EN 02/2017



# Colours & Surfaces

## Many design options

öko skin offers a wide range of design options for facades and decorative applications. The selection of twelve different colours offers a wide range of designs to meet individual expectations. The play of colours within a certain colour shade is intentional and enhances the vivid character of concrete as natural building material. Each palette includes the three surfaces ferro, ferro light and matt. We recommend the mixing of concrete slats from various pallets and layers for an optimal installation result.

## Natural colours

öko skin has a distinct advantage over other colour-treated materials - namely the consistent colouring of the whole panel. The mixture of the desired colour is created before the actual production process. The colour becomes part of the product by being added in the blending of the raw materials. Other products are in some cases only superficially treated and coloured, resulting in significant quality differences.

öko skin is coloured by ferric oxide colours and natural additions and subsequently sandblasted. The natural, authentic colours of öko skin fit well in landscapes and blend with nature and the environment.

## Colour fastness and UV stability

Liquid colours for colouring cement-bonded building materials comply with the DIN EN 12878. The pigments used in the liquid colours are light-, UV- and weather-resistant and not soluble in water, alkalis or diluted acids. Factors such as natural fluctuations in raw materials used, panel and air moisture, dirt and light sources must be taken into consideration. The appearance of the panels may even become brighter due to dehydration. Changes caused by age, weather or environment specific influences are natural processes that cannot be influenced from a production point of view and are therefore not considered as material defects. The technical characteristics of the panel are not affected by these.

## Colour differences in production batches

Glassfibre reinforced concrete is a natural material. The characteristics of the raw materials such as the colour of cement lead to variations in colour within a panel, between individual panels or between different production batches. To avoid any discrepancies, we recommend ordering the total amount instead of part orders, and ordering spare panels with the first delivery.

Due to technical reasons printed colours may differ from the original shade.



## ferro

Sandblasted: blasted at higher pressure, surface is rougher



## ferro light

Sandblasted: blasted at lower pressure, surface is finer than ferro



## matt

Even surface, mottled appearance, natural blushing effect



Small air bubbles and porosity are possible: data sheet on exposed concrete 02/2004 (Publ.:BDZ/DBV)

# Characteristics

## Vivid signs of a natural building material

Concrete is a natural product and Rieder sees it as such, with all its vital signs and characteristics. Living surfaces with the interplay of colour shades and light cloud effects, rather than dead and clinical surfaces are characteristic of öko skin. Even in the colouring of the concrete matrix, the focus is placed on meeting the ecological requirements of modern design. This is why the production involves natural raw materials to ensure the authenticity of all products. The demand for low porosity, homogeneous colour and strictly uniform smooth surfaces is not part of our sustainable philosophy. We consciously avoid chemical treatment and artificial materials to preserve the authenticity of the „green“ product öko skin. Colour and texture variations are a feature of our natural product.

## Concrete lives

As the panels are not chemically treated or painted, small defects, dents, tension lines, efflorescences or flaws and textures may be visible (Data sheet exposed concrete 02/2004 [Publ.:BDZ/DBV]).

When cement sets, it separates calcium hydroxide. This dissolves in water and can migrate to the concrete surface. When the water evaporates, the calcium hydroxide is returned to the surface and is converted to calcium carbonate (lime). If this natural process is intensified by unfavourable conditions, it leads to deposition of calcium carbonate, which is visible as a white efflorescence. Efflorescences are a natural feature of all cement-bonded composite materials.

## Part of nature - resistant & stable

Glassfibre reinforced concrete is not an artificially created material that exists cut off from the natural cycle of the environment. As adaptable and extraordinary the concrete skin is, it is just as authentic. öko skin is part of a natural cycle. Influencing variables for possible colour changes are temperature variations and differences in air humidity. Concrete is hygroscopic. It absorbs moisture and gives it off again irregularly.

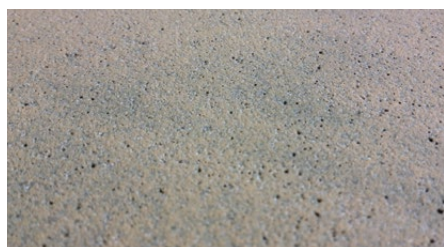
A typical feature of highly-compressed, high-quality concrete surfaces is so-called blue- and green discoloration, which can occur in particular in bright colours or fresh panels. They can be attributed to a natural hardening and drying process of organic substances. Tests and experiences have shown that this blue colouring on the cladding may disappear under the influence of UV radiation and light. This occurs based on the climatic and environmental influences. Heat, insolation and dryness can in particular accelerate the process.

## Note

The surface characteristics described apply to the visible side of the cladding panel. öko skin sample panels can never reflect all of the above characteristics. In large-scale cladding applications, optical phenomena occur that cannot be detected on small sample panels.

Visual changes like micro-cracks (tension lines) do not affect the technical characteristics of öko skin. The static functions, the long-term stability and fire resistance are not affected.

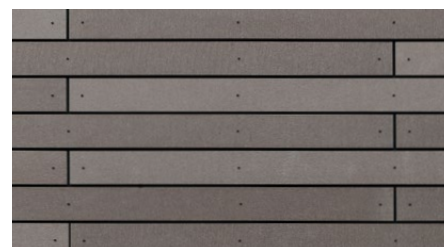
Blue tint



Texture



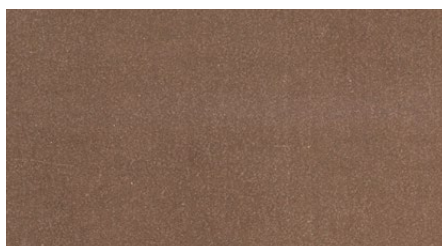
Colour play



Blowhole



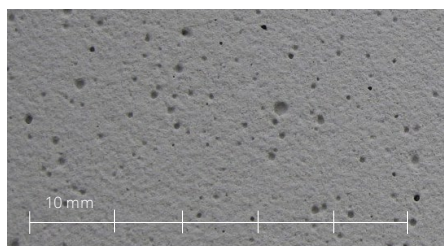
Mottling



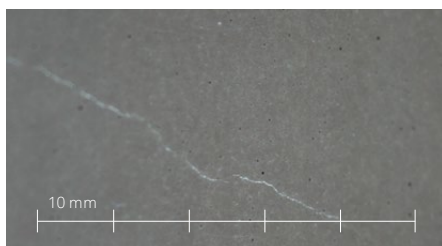
Depression



Pores



Tension line



Colour variation

